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# The Rockefeller Foundation

*Annual Report*

1917

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THE ROCKEFELLER  
FOUNDATION

The Rockefeller Foundation  
61 Broadway, New York

378,31

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# **THE ROCKEFELLER FOUNDATION**

## **Report of the President**

1

*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, 1917, to December 31, 1917, 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, and the Director of the Rockefeller Institute for Medical Research as regards the special war activities of the Institute that have been supported by the Foundation.

*Respectfully yours,*

GEORGE E. VINCENT,

*President.*

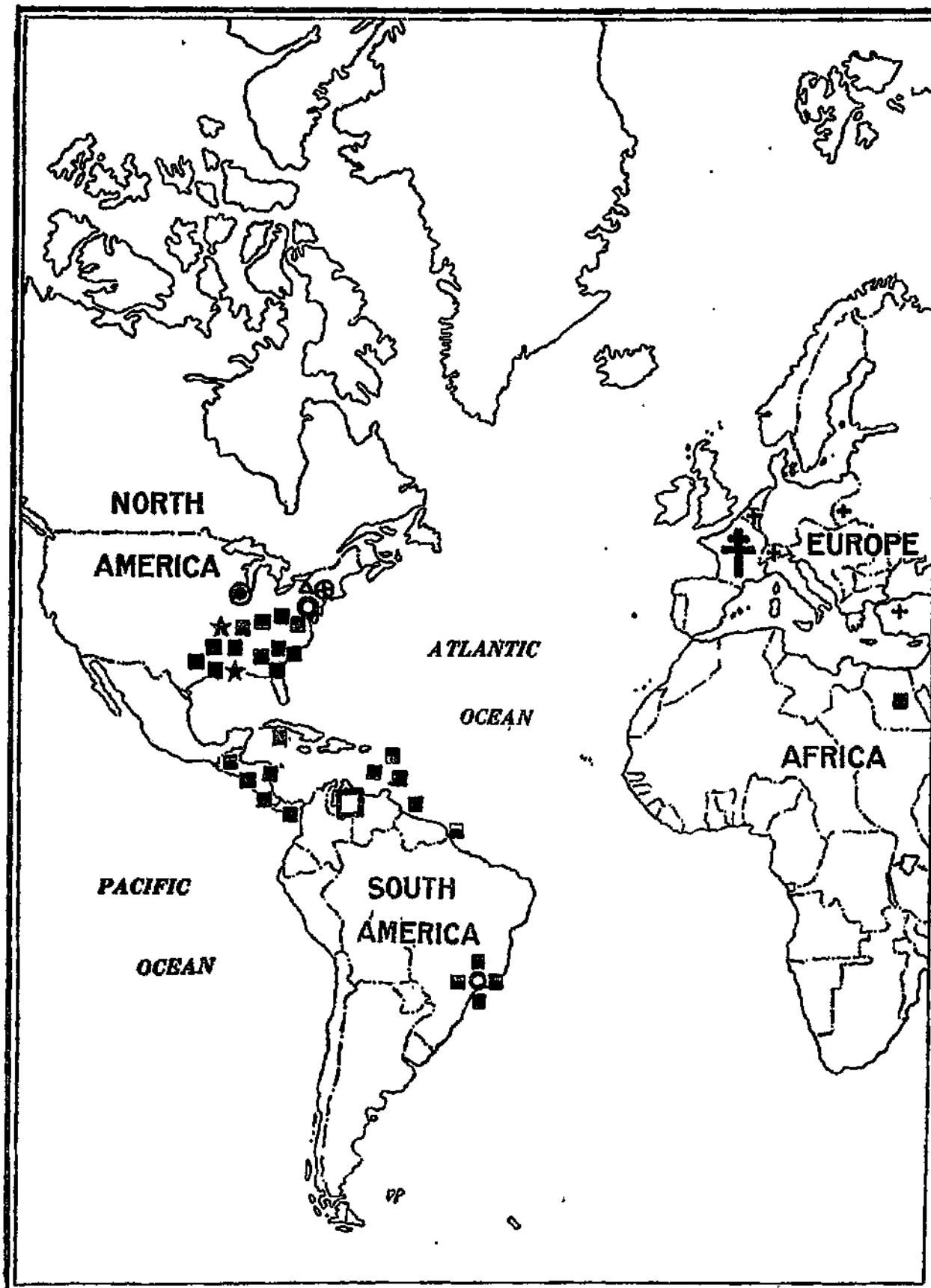
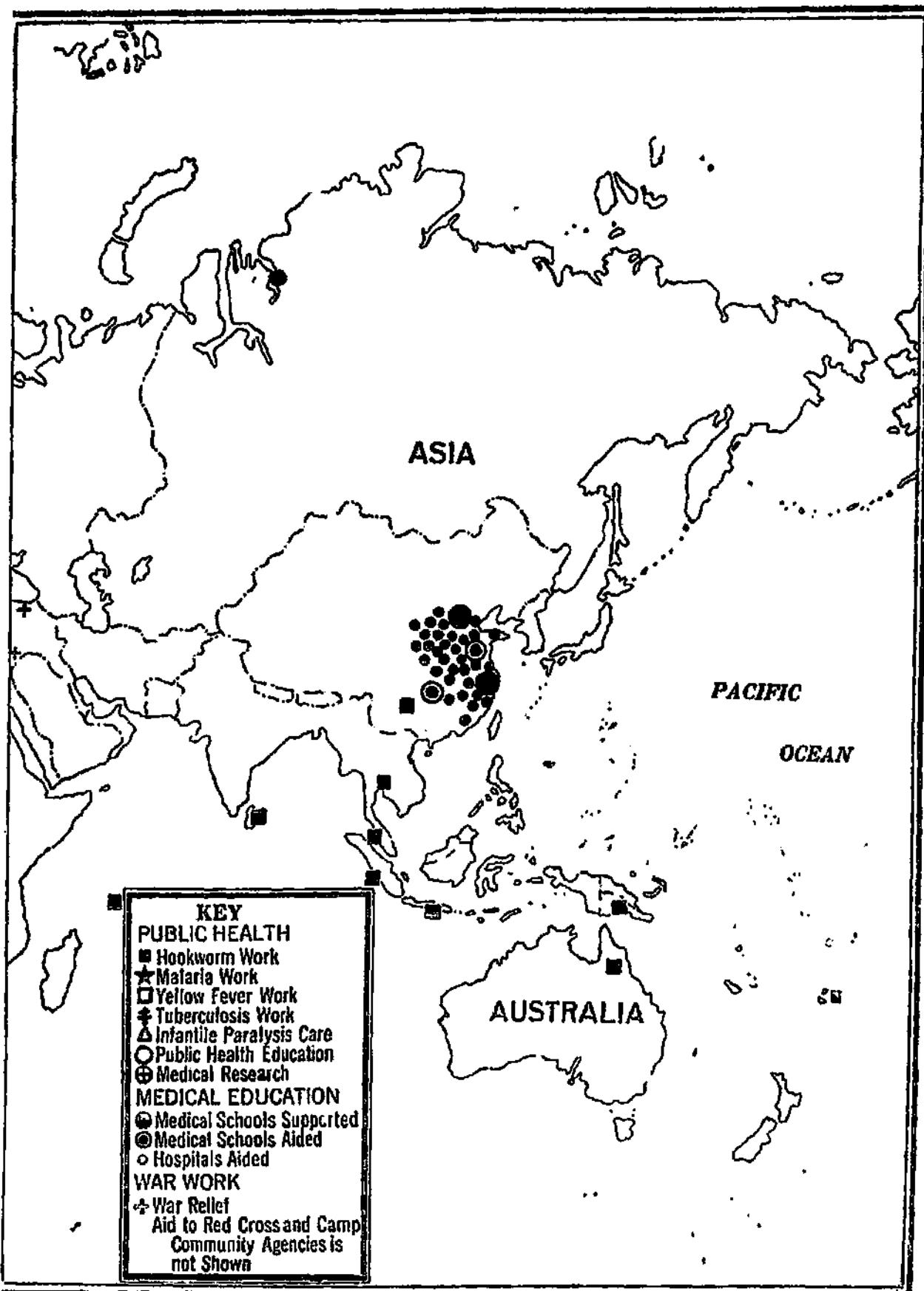


Fig. 1—Scope of Activities of The Rockefeller Foundation.



Work Through Other Agencies Not Indicated

THE ROCKEFELLER FOUNDATION  
OFFICERS, MEMBERS AND COMMITTEES  
1917

*Chairman of the Board of Trustees*  
**JOHN D. ROCKEFELLER, JR.**

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Starr J. Murphy  
Wickliffe Rose

**Edwin R. Embree, Secretary**

### *Finance Committee*

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A. Barton Hepburn Starr J. Murphy

### *Members*

To Serve Until the Annual Meeting of 1920

**Charles W. Eliot**  
**A. Barton Hepburn**      **Charles E. Hughes**  
                                  **Wickliffe Rose**

**George E. Vincent**

*To Serve Until the Annual Meeting of 1919*

**Frederick T. Gates** **John D. Rockefeller, Jr.**  
**John D. Rockefeller** **Julius Rosenwald**

Martin A. Ryerson

**To Serve Until the Annual Meeting of 1918**

# THE ROCKEFELLER FOUNDATION

## OFFICERS, MEMBERS AND COMMITTEES

1918

*Chairman of the Board of Trustees*

JOHN D. ROCKEFELLER, JR.

*President*

GEORGE E. VINCENT

*Secretary*

EDWIN R. EMBREE

*Treasurer*

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A. Barton Hepburn

Frederick Strauss

*Members*

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Simon Flexner  
Harry Emerson Fosdick

Harry Pratt Judson  
Starr J. Murphy  
Frederick Strauss

*To Serve Until the Annual Meeting of 1920*

Charles W. Eliot  
A. Barton Hepburn

Charles E. Hughes  
Wickliffe Rose

George E. Vincent

*To Serve Until the Annual Meeting of 1919*

Frederick T. Gates  
John D. Rockefeller

John D. Rockefeller, Jr.  
Julius Rosenwald

Martin A. Ryerson



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# THE ROCKEFELLER FOUNDATION

## FINANCIAL RESOURCES

The income of The Rockefeller Foundation would pay the current expenses of the United States Government for only seven hours; if the principal were used this would be exhausted in five days. The public functions of the city of New York could be supported for 12 days out of income, and for six months and 26 days out of endowment. At the present rate of expenditure the American Red Cross would consume the total income of the Foundation in 17 days, and the principal in less than ten months. It has been estimated that \$207,000,000 are disbursed annually for private charity in the United States. If The Rockefeller Foundation were called upon to assume this burden its income would carry the budget for twelve and one-half days; its invested funds for about seven months.

In the light of these facts it is obvious that the resources of the Foundation, measured by the needs of governments and large social undertakings, are relatively limited. Widely disbursed in aid of a large number of existing agencies, the income would have little appre-

ciable effect; it might even chiefly replace rather than supplement gifts from other sources. Only by concentrating its funds upon a few convincing demonstrations and statesmanlike programs can the Foundation justify its existence, and constructively "promote the well-being of mankind throughout the world."

While it is true that the Foundation's income could not pay any appreciable share of society's bill for administration and charity, it is also a fact that for purposes of experiment, of demonstration, and of fostering comprehensive projects, the institution has substantial resources. On December 31, 1917, the principal fund of the Foundation had a book value of \$120,765,-865 and a market value of about \$105,000,000. The income of this fund for the year 1917 was \$7,153,852. To this were added a balance carried over from 1916, a gift by Mr. John D. Rockefeller of \$5,500,000, and the sum of \$5,000,-000 taken by vote of the Trustees from the principal fund.

The Founder's relinquishment in July of the right he had reserved in his deed of gift to control the annual expenditure of \$2,000,000 of income for purposes consistent with the charter, did not add to the total income of the Foundation. It did, however, including reserve from former years, increase by nearly \$2,000,000 the

sum at the complete disposal of the Board in 1917. In 1918, the entire income will be available for unrestricted use.

### INROADS UPON PRINCIPAL

Table I on page 22, showing receipts, disbursements, and obligations in 1917, presents in summary form the Foundation's current resources and the different purposes to which these are being devoted. In order to understand this budget one must distinguish between "appropriations" and "disbursements." For example, in May, 1917, the Foundation appropriated \$5,000,000 to the American Red Cross, and agreed to pay this sum in ten monthly instalments of a half million dollars each. Seven such payments, a total of \$3,500,000, were included in the disbursements of 1917; the remaining \$1,500,000 will appear in the budget of 1918.

The cash balance carried forward into the year 1918, \$11,629,048, seems at first glance to be a large sum. It will be noted, however, that all but \$1,271,338 of this amount will be needed to meet appropriations and pledges for the next fiscal year. If the Foundation were to continue during 1918 to support war work at the present level of appropriation, almost the total

income from investments accruing in that year would be required for this purpose alone. This means that unless gifts for war activities are sharply reduced, the year 1919 will see a demand for further inroads upon the principal fund. Only the large gift by the Founder, his relinquishment of the right of designation, and the appropriation of \$5,000,000 of principal by the Trustees enabled the Foundation to disburse and pledge so extraordinary a total in 1917.

#### SUPERVISION OF POLICY BY THE TRUSTEES

During the year the stated meetings of the Board were so rearranged as to fall early in December, late in February, and at the end of May. At the meeting on December 5, 1917, the officers presented, in a docket which was sent to members a week in advance, a review of the appropriations made since the Foundation was chartered, budget estimates for the year 1918, a forecast of income and expenditures up to 1922, an outline of policies, and a general program for the immediate future. After full discussion, the Trustees approved a budget and sanctioned certain lines of procedure. At the same meeting officers were elected and salaries were fixed by the Board as a whole. Thus the Trustees participated in a careful review of the

TABLE 1: *Receipts, Disbursements, and Obligations in 1917*

<i>Income Available</i>	<i>Disbursements</i>
Balance—January 1, 1917..... \$5,407,282	War Work..... \$5,944,969
Income collected during the year..... 7,153,852	International Health Board..... 557,829
	China Medical Board..... 501,422
<b>\$12,561,134</b>	Rockefeller Institute..... 8,127,914
	Founder's Designations..... 942,251
	Miscellaneous—
	After care of infantile paralysis cases, Mental Hygiene, School of Hygiene and Public Health, Miscellaneous..... 277,035
	Administration..... 105,666
	<b>\$11,457,086</b>
<i>Extraordinary Funds Available</i>	<i>Obligations</i>
Portion of Principal Fund made available for appropriation..... \$5,000,000	Payments to be made on appropriations and pledges for 1917 and prior years..... \$4,133,973
Gift of Mr. John D. Rockefeller..... 5,500,000	Payments on appropriations and pledges for 1918..... 6,223,737
Portion of Estate of Laura S. Rockefeller Fund made available for appropriation..... 25,000	
	<b>\$10,357,710</b>
<b>TOTAL..... \$23,086,134</b>	Balance carried forward available for appropriation..... 1,271,338
	<b>11,629,048</b>
	<b>TOTAL..... \$23,086,134</b>

Foundation's activities and in formulating plans for the coming year. Twice during the year the Trustees were invited to sit with the Executive Committee to consider large appropriations—one to the American Red Cross and one to the Young Men's Christian Association. These meetings were in effect special meetings of the entire Board. The Executive Committee by sending its minutes to the Trustees keeps them constantly informed of the steps by which their policies are being carried out.

#### FREEDOM OF ACTION AND LIMITATIONS

Government activities are, for the most part, necessarily and properly deliberate; they are limited by legal and administrative restrictions. A Foundation has, within the provisions of its charter, relatively a free hand. Only such an institution could, for instance, select the world's leading authority on a certain disease, provide a staff and all necessary funds, and send him to foreign countries in order to eradicate from the world one of the deadliest of infectious maladies. It would be a mistake, therefore, for The Rockefeller Foundation to hamper itself by adopting inflexible rules, or to tie its own hands with red tape.

Yet there are things which it cannot success-

fully or wisely do; such as, for example, give money or make loans to individuals, or invest in securities which have a philanthropic rather than a business basis, or assist in securing patents, or aid altruistic movements which involve private profit. It must also refrain from supporting propaganda which seek to influence public opinion about the social order and political proposals, however disinterested and important these may be. Thus, appeals to finance in whole or in part a speakers' bureau in behalf of the war, the teaching of patriotism in the public schools, and an advertising campaign for national prohibition have been denied on principle.

### THE PRESENT PROGRAM

Demonstrations such as those which are being made at home and abroad in the field of public health, well-organized cooperative undertakings, like the camp and community plan for the welfare of American soldiers, a comprehensive program of inquiry of the sort which the National Committee for Mental Hygiene is carrying out, represent characteristic Foundation policies. The aim always kept in mind is not to assume governmental or social functions, but to show that certain things can be done success-

fully, and then as soon as may be to turn these over to the community.

The "well-being of mankind throughout the world" so obviously depends upon the winning of the war by the forces of freedom, that the Foundation is devoting by far the largest part of its available resources to the support of war work. At the same time, activities which are improving public health and thus contributing to human progress are being maintained in many parts of the world. The several projects which are described in the pages which follow are all parts of a program which aims at helping to win the war, and at making a better world after the war.

#### WORKING WITH THE RED CROSS AND THE CAMP COMMISSIONS

With the entrance of the United States into the war, The Rockefeller Foundation decided to withdraw its War Relief Commission from Europe and to put a large sum at the disposal of the American Red Cross, which, reorganized under a War Council, has undertaken comprehensive programs of relief, both to the allied armies and to the civilian populations of the war-stricken countries. Negotiations were also opened with this organization with a view to its

assuming responsibility for the care of the 500 Belgian children whom the Foundation had been maintaining in Switzerland since 1915. This policy of consolidation has been followed because, in the opinion of the Trustees, it is unwise to multiply independent and often overlapping agencies of war relief. The times call for unified, well-organized effort in this field. The only work which the Foundation is directly administering in Europe is an antituberculosis campaign directed by the Foundation's International Health Board, and intimately related to the American Red Cross's relief and health activities in France.

The Government has from the outset insisted that the training camps—especially those of the National (draft) Army—are not to be thought of as necessary evils to be mitigated, but as positive educational institutions of immense potential value. Whereas in the past the worst elements of communities have been mobilized to exploit and to debauch the soldier and sailor, today the best forces are combining to protect and benefit them.

The cooperation of official commissions and of national and local societies in providing—both within and without the camps—comfort, recreation, social entertainment, educational opportunity, moral safeguards, and idealistic influences

for the American forces, offers a striking example of genuine team-work. To nearly all of the units that make up this vast cooperation, The Rockefeller Foundation has given sums which aggregate approximately \$4,800,000, or about eight per cent. of the total budget for the entire undertaking. Table 2 on page 29 enumerates the different organizations, together with the war budget of each, and the amount appropriated to it by the Foundation.

#### MENTAL DISEASES IN WAR AND IN PEACE

The present war has shown strikingly that mental and nervous diseases play a prominent part in military medicine. The term "shell shock" has been hit upon to describe a wide range of cases from simple cowardice to true paralysis. To diagnose accurately and to treat successfully these nervous disorders has become a pressing need. During the months of May and June, 1917, Dr. Thomas W. Salmon, a recognized authority in this field, visited the British Isles, at the expense of The Rockefeller Foundation, and there made a study of the nature and treatment of nervous diseases in military hospitals. His report has been of value to the Surgeon General's office in formulating an army policy for the treatment and hospital

TABLE 2: *Contributions to Camp and Community Welfare—Budgets of the Several Organizations for the Period in General from July 1, 1917, to June 1, 1918, showing Amounts Contributed by the Foundation*

ORGANIZATION	Total Budget	Contributed by Rockefeller Foundation
Y. M. C. A.....	\$50,000,000	\$3,500,000
Y. W. C. A.....	5,000,000	650,000
Jewish Camp Welfare.....	1,000,000 <sup>1</sup>	100,000
Knights of Columbus.....	2,000,000 <sup>2</sup>	100,000
Camp Community Fund (Recreation Association).....	4,000,000	220,000
Training Camps Commission.....	150,000 <sup>3</sup>	75,000
Special Work with Commission of American Social Hygiene Association, etc.....	153,000 <sup>4</sup>	125,000
<b>TOTAL.....</b>	<b>\$82,303,000</b>	<b>\$4,770,000</b>

<sup>1</sup> Part of a much larger general war fund raised by the Jewish Committee. The Foundation's gift was specifically to the camp work feature of that fund.

<sup>2</sup> This figure includes only subscriptions in 1917. The Knights of Columbus war work budget to the end of 1918 totals \$7,500,000.

<sup>3</sup> This figure does not include \$750,000 appropriated by Congress.

<sup>4</sup> This figure does not include services of men in many cases contributed to this work by societies with which they are connected

care of nervous cases, and also in devising a plan for examining volunteers and drafted men in order to exclude persons who are mentally or nervously unfit for military service.

In helping the Surgeon General to recruit the specialists needed for this work, in providing quickly supplies and expense funds which the Government either could not furnish at all or only after long delays, the National Committee for Mental Hygiene rendered during 1917 prompt and expert aid. Funds for these purposes are being furnished by The Rockefeller Foundation. Dr. Salmon, commissioned as a major in the Medical Officers Reserve Corps, has been sent to France to assume charge of that branch of the army medical service which has been entrusted with the care of "shell shock" and other nervous casualties.

During 1917 the Foundation has continued to support the program of the National Committee for Mental Hygiene in making surveys of methods of public care for the insane and the feeble-minded, and in carrying out demonstration studies of abnormalities in a given community and of the mental characteristics of criminals. The care of the insane and the feeble-minded varies widely in the different States of the Union. It lags, on the average, far behind the progress made in the treatment

of other forms of disease. The public attitude toward mental maladies is still affected by superstition and ignorance. The persons in charge of State and county institutions and the attendants are too often conventionally minded, frequently untrained, occasionally indifferent, and at times even brutal. While many are good, too often State hospitals are either wholly lacking or are quite unequal to their responsibilities.

Since 1915, surveys of conditions have been made and recommendations formulated in 12 States. In a number of instances the results were prompt and striking. For example, in one State, a month after the report of a survey made at the Governor's request appeared, the legislature appropriated a half-million dollars for rehabilitating and modernizing in management the State Hospital for the Insane. In another State, during 1917, on the basis of a plan formulated by Dr. Salmon, \$600,000 was granted for a similar purpose.

The first report of the Psychiatric Clinic at Sing Sing Prison has appeared recently. This includes studies, supervised by the National Committee for Mental Hygiene, of the personal histories and mental and moral characteristics of 600 persons successively admitted to the institution during a period in 1916-1917. These

records indicate that a large percentage of criminals are mentally abnormal and point to the conclusion that the system for dealing with convicted persons ought to be modified. The results of this study have had an influence upon the formulation of new plans for institutional organization in New York State.

In connection with a children's court in a large city, studies have been made of mental traits, moral qualities, and environmental influences. It is believed that the results of these investigations will throw light upon the problem of juvenile delinquency and suggest better methods of dealing with it.

#### CARING FOR VICTIMS OF INFANTILE PARALYSIS

To the after care of the New York children who in the epidemic of 1916 were victims of infantile paralysis, the Foundation has made contributions through a special committee for New York City and through the State Charities Aid Association. A large number of children have been supplied with braces, the use of which in most cases is only temporarily necessary. By systematic massage and special exercises gratifying results have been secured; hundreds have been wholly restored or are on the way to com-

plete recovery, while in the case of many others, disabilities are being minimized. Plans have been made to continue the clinics and home treatments which have proved so successful.

Not only have hundreds of children been cured or greatly improved by this after care, but important knowledge has been acquired which will prove of great value in dealing with the problems of infantile paralysis in the future. An important by-product of the after care work in New York City has been the cooperation of various outpatient agencies which, under the guidance of a central committee with funds at its disposal, have developed common standards and methods of treatment. It would be an excellent thing for the city if this plan were extended to include the standardizing of all the services in which the dispensaries of Greater New York are engaged.

#### THE TRAINING OF SANITARIANS .

Impressed by the need of fostering research in the field of preventive medicine and of providing thorough training for public health officers, laboratory personnel, field workers, nurses, and inspectors, The Rockefeller Foundation, in 1915, offered to bear the cost of establishing and maintaining, as a part of Johns Hopkins

University, a School of Hygiene and Public Health. During the academic year 1917-18 a notable faculty is being recruited, policies are being determined, and plans for a special laboratory and administration building are being prepared. Dr. William H. Welch resigned his professorship in the Johns Hopkins Medical School to become director of the new school.

While this institution will necessarily maintain close relations with the Medical School, it will not be subordinate to that division of the University. The School of Hygiene and Public Health will have its own quarters, its own faculty, its own problems and purposes, its own distinct body of students, and will develop from the outset a corporate individuality and a professional spirit.

The preliminary bulletin of the new school announces the conditions of admission and the courses of instruction which will go into effect with the opening of the institution in October, 1918. The terms of admission are most liberal; at the same time the requirements for degrees set a high standard. Not only will regular full-time students be provided for, but arrangements will be made by which health officers in active service may resort to the school for short, intensive courses. The departments so far organized are: Bacteriology and Immunology,

Dr. William H. Welch; Physiology, Dr. William H. Howell; Chemistry, Dr. E. V. McCollum; Biometry and Vital Statistics, Dr. Raymond Pearl. Instruction in Sanitary Engineering will be organized by Professor Charles J. Tilden, and lectures on Sanitary and Administrative Law will be given by President Frank J. Goodnow.

For quarters during the first year, a recently vacated University building is being renovated and equipped. It is hoped that the new laboratory will be ready for occupancy soon after the end of the war. While the School properly begins its work conservatively and unpretentiously, there is reason to expect that it will gradually win recognition as a national—even an international—center of research and teaching, and thus come to play a leading part in the fields of preventive medicine and public health administration which are today being so rapidly extended.

#### PUBLIC HEALTH WORK IN MANY LANDS

It was chiefly the experience of the International Health Board of The Rockefeller Foundation, in health work at home and abroad, that called attention to the need of a school such as has been established in Baltimore. This Board has developed definite aims, constructive policies, and consistent programs. The Tuber-

culosis Commission in France was properly put in charge of this agency of the Foundation. The appended report of the General Director, Wickliffe Rose, shows that during 1917 steady progress has been made by the International Health Board in conducting its warfare against hookworm disease, malaria, and yellow fever; in promoting public health administration; in securing the passage of better sanitary laws; in persuading governments to increase their expenditures for preventive medicine; in encouraging public health education; in gathering information concerning medical education in South America, and in increasing knowledge about the effective treatment of certain infectious diseases.

Work for the control of hookworm disease was extended during the year 1917 to three of the States in Brazil, to Siam, the Fiji Islands, Seychelles Islands, and to four additional States of the Union—Alabama, Arkansas, Georgia, and Maryland. In one country, Antigua, the work which had been undertaken in 1915 was completed. The Board was at work during the year in 37 areas, which included 12 American States and 25 foreign states and countries. Late in the year 1917, the International Health Board began in the Pinghsiang Colliery in Kiangsi Province, China, its first attempt to deal with hookworm control in mines. The moisture and high tem-

peratures in underground workings offer favorable conditions for the development of the eggs.

### HELPING GOVERNMENTS TO ASSUME RESPONSIBILITIES

Only a study of the report of the General Director of the International Health Board can make one fully realize the detail and the value of the work which is being carried on by its staff of 556 persons scattered over the world. It is gratifying to note, therefore, that governments everywhere are showing willingness to assume an increasing share of the expense involved. Such response is a real test, for unless governments are prepared to assume responsibility for controlling hookworm and other infectious diseases, the service of a private foundation can at best be palliative, ephemeral, and in the end futile.

Governments, stimulated by the facts brought to light by the International Health Board, are enacting sanitary laws. For example, 20,000 latrines—essential to preserve the soil from the pollution which spreads hookworm infection—have been recently erected under legal compulsion in the villages of Kalutara Province in Ceylon. Greatly improved sanitary laws and administrative codes have been adopted in the West Indies, in Seychelles Islands, and in Guate-

mala. In certain countries individual planters and large estates are cooperating with the Board by bearing all or a large part of the expense.

### A WORLD-WIDE RESEARCH STAFF

The staff of the International Health Board constitutes a unique agency for cooperative research. Scores of specialists assigned to stations in many parts of the world are under the direction of a single administration, and may be quickly instructed to test under a wide variety of conditions a new discovery or a promising theory. For example, the Board's Commission to the Orient, which returned in August, 1917, from a visit to the Malay States, Java, and Fiji, reported that methods of hookworm control could be improved. If, after additional experiments, these new methods continue to prove promising, they will be submitted to the whole staff for testing and further report. The Commission to the Orient also made studies of the mental, physical, economic, and social effects of hookworm disease upon an infected population.

### BEGINNING A CAMPAIGN AGAINST MALARIA

In the fight against hookworm disease, the staff of the International Health Board has come frequently in contact with malaria. This malady is

prevalent not only in the Orient but also in certain American areas, particularly in the Southern States. The depressing effects of the disease on bodily and mental vigor, on personal happiness and community spirit, are well known. The detailed reports of demonstrations which have been conducted in communities in Arkansas and Mississippi disclose a quick response to the methods employed, reveal the fact of low per capita costs, and show in how short a time towns and villages can be convinced that it pays to appropriate funds for public health purposes.

#### COOPERATION WITH SOUTH AMERICAN INSTITUTIONS

The real aim of the International Health Board is not merely to specialize in two or three infectious diseases, but by concrete demonstrations in the control of these maladies, to fix attention upon problems of public health and to induce governments to give more attention to this fundamental need. The Board inevitably becomes interested in the training of public health officials and in medical education in foreign countries. It has recently, for instance, shown such an interest in South American progress. Dr. R. M. Pearce, in behalf of the Board, made an investigation into medical education and

public health activities in Brazil, Argentina, and Uruguay. As a result, the International Health Board has agreed to assist the University of Sao Paulo (Brazil) in establishing a Department of Hygiene. This will be directed for five years by an American professor. At the end of this period he will be succeeded by a Brazilian, who will meantime have been trained in the United States. Two fellowships have also been provided for bringing promising Sao Paulo physicians to this country for training in public health.

In similar fashion a department of pathology is being created in the Belo Horizonte Medical School. A fellowship has been granted for the training in the United States of a Brazilian pathologist who will in due time assume charge of this new department. These initial attempts to establish relations with foreign medical centers, and to encourage student migration and exchange professorships, are full of significance for the future.

#### PLANS TO ERADICATE YELLOW FEVER

But for the war, Surgeon General Gorgas and his colleagues would have sailed in the early summer of 1917 for South America to begin a campaign for ridding the world of yellow fever. In 1916 he had headed a commission of the Inter-

national Health Board to South America and had delimited the seed-beds of the disease. The sources of the infection are believed to be at Guayaquil on the west coast of South America, in a region along the south shores of the Caribbean Sea, in a strip along the north Brazilian coast, and in a certain area on the west coast of Africa. General Gorgas, as the leading authority on yellow fever, was appointed chief of an expedition to eliminate infection from these regions. He was requested to nominate men for his staff and sufficient funds were granted for carrying out the undertaking.

Although General Gorgas has had to devote himself to his war duties and the main effort has therefore had to be postponed, representatives of the Board, as scouting parties, have been on guard in certain regions. The real fight against yellow fever will come when the war is over. It is hoped wholly to exterminate yellow fever from the world.

#### A FLOATING DISPENSARY AND HOSPITAL

Dispensaries and physicians have of late been peacefully penetrating areas of the Philippine Islands and demonstrating the fact that, for purposes of placating primitive and suspicious peoples, medicine has some advantages over

machine guns. The Sulu Archipelago contains 300 or more islands almost out of touch with the rest of the world. These, with many remote villages along the shores of Mindanao, include areas which heretofore have not been accessible to medical men. In 1915, Bishop Charles H. Brent and Dr. Victor G. Heiser, proposed that a dispensary and hospital ship be equipped and manned for service to the populations of the Department of Mindanao and Sulu, generally referred to as non-Christians. The International Health Board offered to meet the cost of remodeling and fitting out a Government vessel, and agreed to contribute towards its maintenance for five years, on condition that at the end of that time the entire expenses should be assumed by the Philippine authorities.

On November 12, 1917, the ship "Busuanga" was put in service. The ship is fitted with a modern operating room, a ten-bed hospital ward, a pharmacy, and suitable quarters for the crew and for the staff, which includes an American doctor, a Filipino assistant, a bacteriologist, an American chief nurse, and two native nurses. This floating dispensary will touch regularly at points on the coasts of Mindanao and the islands of the Sulu Archipelago. Outpatient service will be rendered and emergency operations performed at each port of call. Cases

which require hospital care will be transported in the ship's ward to one of the base hospitals which have been established at Jolo and Zamboanga.

This experiment will be watched with interest, for it will have a bearing upon the international problem of dealing with backward people. It has, moreover, general significance for the development of a system of mobile dispensaries operating from a base hospital. The principle may find expression equally well in a motor-car dispensary, with doctor and nurse, operating through a rural area from a general hospital in an American county.

#### MEDICAL EDUCATION FOR CHINA

Looked at world-wise, it is not far from the Philippines to China, where, through its China Medical Board (under General Director Wallace Buttrick), The Rockefeller Foundation is working out a demonstration of modern medical education and hospital administration. On September 24, 1917, the Minister of Education of the Chinese Republic laid the corner-stone of a new institution, the Peking Union Medical College, which the Board is building in the Chinese capital. This group of laboratories, hospital wards, service buildings, and staff residences will embody all the approved features

of a modern medical center. The external forms will, however, be in harmony with the best traditions of Chinese architecture, and will thus symbolize a desire to make the college not something imposed from without, but an agency which shall in time become an intimate, organic part of a developing Chinese civilization.

In order to prepare students to enter the new medical college it has been deemed best to establish in Peking a pre-medical school which among other things will ensure proper grounding in physics, chemistry and biology, and in the English language, in which instruction in the college is to be conducted. Such a school was opened in Peking in September, 1917, with a faculty of five instructors and a student enrollment of eight. Six members of the college faculty have been appointed; and unless the war creates still further difficulties it is expected that, with a complete staff and fully equipped new buildings, the college will open its doors to students in September, 1919.

The program for China calls also for a medical school and hospital at Shanghai. The war has made necessary the postponement of this building project. The difficulty of securing a staff, the high cost of building materials, the unfavorable condition of foreign exchange, all forbid a present beginning. During the year

1917, the Shanghai Medical School has been incorporated, trustees have been appointed, a provisional charter has been secured from the Regents of the University of New York, and an acting dean, Dr. H. S. Houghton, has been chosen. Plans for buildings are being prepared.

Instead of establishing a separate pre-medical school in Shanghai, the Board has decided to help certain existing institutions to strengthen their curricula and to increase their staffs. Funds have been appropriated to three missionary colleges of unquestioned rank toward the cost of laboratories and equipment, and for additional instructors. In order to establish standards for the guidance of the Board in making future grants, the Trustees have expressed a willingness to finance an educational survey to be made by experts under the auspices of a joint committee, on which the leading missionary societies will be represented. A survey of this kind should result in the classification of institutions, the setting of minimum standards, and the working out of a comprehensive educational program.

#### HOSPITAL SUBSIDIES AND TRAVELING SCHOLARSHIPS

The medical schools in Peking and Shanghai cannot be successful in isolation. They must work in close relations with the preparatory

schools, the hospitals, the medical missionaries, and the modernly trained native physicians who form the nucleus of the new medical profession gradually being created to meet the needs of an awakened China. This cooperation has already taken the form of grants to schools which have been mentioned, and of subsidies to missionary hospitals. During 1917 nearly \$50,000 was given to hospitals in a dozen centers of Northern and Central China.

For a number of years the China Medical Board's hospitals will provide a sufficient number of internships for the graduates of the Peking and Shanghai schools, but in time it will become necessary to place students as interns in outside hospitals. The strengthening and standardizing of a number of such hospitals is so important that the Board has been willing to have a share in stimulating progress in this direction. A study of the situation serves only to make one realize more vividly how much has been accomplished by devoted and self-sacrificing medical missionaries in China.

The new schools and hospitals in Peking and Shanghai will enable the medical missionaries to keep abreast of current discoveries and procedures in medicine, surgery, and public health. Frequent short courses at one of these schools will prove in some respects more valuable than

study at long intervals in the medical institutions of the United States and Europe. Pending, at any rate, the completion of the new schools, the China Medical Board is granting fellowships and scholarships to medical missionaries for study in this country. Aid is also being given to native physicians, nurses, and students to pursue courses in American institutions.

A substantial beginning in the encouragement of student migration on a world-wide basis has been made. During the year 1917, Foundation funds to the amount of \$45,487.24 enabled 57 individuals to come to the United States for training. The group included: one Brazilian doctor, three Chinese pharmacists, three Chinese nurses, seven Chinese students, 12 Chinese physicians, and 31 medical missionaries from China.

The possibilities of extending this plan under the auspices of international committees are being considered. Overtures have come recently from French and Japanese sources. While there will be no concerted scientific boycott after the war, international intercourse in research and teaching will inevitably seek many new channels. The United States will undoubtedly play an increasingly important part in the scientific collaboration of the world.

## FOSTERING MEDICAL RESEARCH AND EDUCATION

The growth of the Rockefeller Institute for Medical Research has called for increasing sums both for equipment and for current expenses. The higher cost of services and supplies has of late demanded still larger maintenance funds. For the last two years the Foundation has voted grants for building projects and for the maintenance of the Institute. During 1917 the sum of \$2,000,000 was appropriated as an addition to its endowment. By these gifts substantial contribution has been made by the Foundation to the work of medical research, the results of which have been of signal importance. Mention has already been made of the war service which the Institute is rendering at this critical period.

Furthermore, research and medical education have been fostered by the Foundation not only through the Institute and in China and South America, but in cooperation with the General Education Board in the United States as well. Toward the comprehensive program for creating a modern medical center at the University of Chicago, the Foundation has pledged itself to give \$1,000,000.

## THE FOUNDATION AS AN INTERNATIONAL FORCE

The many normal activities of The Rockefeller Foundation are not isolated items, each independent of the others. They all fall into a world-wide organization in the interests of scientific knowledge applied to human welfare. Research, medical education, public health administration, surveys and commissions, exchange of specialists, student migration, are different aspects of a large plan and purpose. A glance at the map (Fig. 1, pages 6 and 7) on which the points of Foundation activities are indicated, gives one an impression of world-wide service to mankind.

When at last peace comes, it cannot quickly bring universal confidence and good-will. There may be years of suspicion and bitterness, of misunderstanding and recrimination; there is sure to be keen industrial and commercial competition. Is it too much to hope that such work as the Foundation is doing in many parts of the world may tend at least to emphasize the common interests of mankind in turning science from the destruction of the race to the healing of the nations?



# **THE ROCKEFELLER FOUNDATION**

**Report of the Secretary**



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

I have the honor to submit herewith my report on the activities of The Rockefeller Foundation for the period January 1, 1917, to December 31, 1917.

*Respectfully yours,*  
EDWIN R. EMBREE,  
*Secretary.*



## THE ROCKEFELLER FOUNDATION

The review by The President outlines the policies by which The Rockefeller Foundation is being guided in its work, sketches its present program, and describes the results aimed at and accomplished during the year 1917. The following report depicts the organization and the agencies through which these results were reached, and outlines the methods by which the programs of the several departments were carried out.

### MEMBERSHIP

At the annual meeting in January, 1917, Wallace Buttrick, Charles E. Hughes, Julius Rosenwald, and George E. Vincent were added to the Board. At the May meeting of the Board Dr. Eliot's resignation was presented and accepted with regret.

### EXECUTIVE OFFICERS

Amendments to the Constitution adopted at the annual meeting in January created the new position of Chairman of the Board of Trustees. To this position Mr. John D. Rockefeller, Jr.,

formerly President of the Foundation, was elected: Dr. George E. Vincent, then President of the University of Minnesota, was elected President, succeeding Mr. Rockefeller. Mr. Edwin R. Embree, of Yale University, was elected Secretary, succeeding Mr. Jerome D. Greene, who had served as Secretary since the organization of the Foundation and whose resignation, presented during the previous year, was accepted with an expression of appreciation of his services during the important formative period of the Foundation's history. Mr. L. G. Myers and Mr. Robert H. Kirk were reelected respectively to the positions of Treasurer and of Comptroller.

### MEETINGS

Regular meetings of the Foundation were held in January, May, and October of 1917, the October meeting being adjourned to December to reconvene in accordance with a revised schedule of meetings embodied in newly adopted amendments of the Constitution and By-Laws. At the December meeting, the officers presented for consideration and action the program of work for the coming year together with a preliminary budget.

## EXECUTIVE COMMITTEE

The details of the work, within the general policies approved by the trustees, were determined from time to time by the Executive Committee. This Committee meets regularly the first Tuesday in each month and at other times on call. Twenty-nine meetings were held during the year 1917.

## FUNDS

The funds with which the Foundation carries on its work have undergone three important alterations during the year.

1. The general fund, amounting at the beginning of the year to \$100,000,000, was added to by a gift from Mr. John D. Rockefeller, received on February 23, of securities of market value of \$25,765,506.

A second gift during the year from Mr. Rockefeller, received December 29, of \$5,500,000, was added to income. The following letter from Mr. Rockefeller accompanied the gift:

December 29, 1917.

Gentlemen:

In view of the increasing demands upon the funds of the Foundation arising in connection with the war, and having in mind particularly the large contributions made

to the American Red Cross War Fund and the War Work of the Young Men's Christian Association, I enclose herewith my check for \$5,500,000 to be used as the Foundation may see fit for furthering its corporate purposes.

Very truly yours,

(Signed) JOHN D. ROCKEFELLER.

2. In order to meet the increasing demands upon the Foundation arising in connection with the war, the Trustees voted to use during the year, in addition to income, a part of the principal fund. Five million dollars from the principal was appropriated during the year and the Trustees gave authority to use a second \$5,000,-000, if necessary. It is hoped that the gift of \$5,-500,000 to income from Mr. Rockefeller, received at the close of the year, will make it unnecessary to use the second \$5,000,000 of principal.

3. The Founder released the Foundation from the condition contained in his letter of gift of March 6, 1914, which had obligated the Foundation to hold the sum of \$2,000,000 annually for objects within the corporate purposes of the Foundation which were to be specified by him. In releasing the Foundation from this obligation, the Founder surrendered all right to designate the application of any portion of the income of the Foundation. On this occasion Mr. Rockefeller wrote the following letter:

July 19, 1917.

Gentlemen:

My letter of gift of March 6, 1914, contained the following provisions:

"It is a condition of this gift that from the income of the Foundation the sum of Two million dollars (\$2,000,-000), annually, or so much thereof as I shall designate, shall be applied during my lifetime to such specific objects within the corporate purposes of the Foundation as I may from time to time direct. If at the close of any fiscal year there shall remain any balance of the \$2,000,000 which I have not thus designated during the fiscal year, such balance shall be transferred to the general unrestricted income of the Foundation, to be used as the Foundation shall see fit. Subject to the foregoing provision, the principal as well as the income of this gift may be used in your discretion for any of the corporate purposes of the Foundation."

In view of the increasing demands upon funds of the Foundation, especially those arising in connection with the great war for human freedom in which our country is now engaged, which have led the Foundation to appropriate a part of its principal, as well as all of its income, I hereby release the conditions set forth in the provisions quoted above, and surrender from this date all right to designate the application of any portion of the income of the Foundation, and release the Foundation from any designations heretofore made which have not already been paid.

Very truly yours,  
(Signed) JOHN D. ROCKEFELLER.

## METHODS OF CARRYING OUT WORK

The agencies through which the Foundation accomplishes its work are of two classes:

1. Those agencies which it creates to carry out specific programs.
2. Other existing organizations, unaffiliated with the Foundation, to which it makes appropriations in order to enable them to carry out specific programs.

Agencies of the first class, that is, subsidiary or departmental organizations, have been maintained during the year as follows: (1) The International Health Board, (2) The China Medical Board, and (3) The War Relief Commission.

### INTERNATIONAL HEALTH BOARD

The International Health Board has carried on the main branches of the work of the Foundation in public health in accordance with plans approved by the Board and with funds appropriated by the Foundation.

### CHINA MEDICAL BOARD

The China Medical Board is charged with the Foundation's work in the development of medical education in China.

At the May meeting Mr. Frederick T. Gates resigned from the position of Vice-chairman of the Board, which he had held since its creation in 1915, and from membership on the Board. Changes in the rules of the Board adopted during the year made the President and Secretary of The Rockefeller Foundation, ex-officio, Chairman and Secretary respectively of the China Medical Board. These officers succeeded in these positions John D. Rockefeller, Jr., former Chairman, and Eben C. Sage, former Secretary. In Dr. Buttrick's absence from America for several months during the year, Dr. Houghton, Acting Dean of the Shanghai Medical School, acted for the Director of the Board.

#### WAR RELIEF COMMISSION

The War Relief Commission, which had been maintained in Europe since the early months of the war, was withdrawn in March, 1917. The Foundation, feeling that American effort in European relief should be unified, demonstrated its continued interest in this field of service by a contribution of \$5,000,000 to the American Red Cross.

## ASSISTANCE TO OTHER AGENCIES

In addition to the work carried out through the departmental organizations described above, The Rockefeller Foundation has contributed during the year to the accomplishment of work undertaken by other and unaffiliated organizations.

The work of the year, whether through its own agencies or by assistance to unaffiliated organizations, has been chiefly within the three fields of war work, public health, and medical education.

On pages 63, 64 and 65 (Table 3) will be found a summary of payments made by The Rockefeller Foundation for all purposes during the year 1917. This tabular summary outlines, in terms of expenditures, the work described in terms of aims and results in the President's report. In many instances these payments involve sums expended on account of appropriations made in former years. On the other hand, they represent but partial payments on many of the appropriations made during 1917, which will provide for continuing work during succeeding years. For a full statement of the finances of the Foundation, see the Report of the Treasurer, pages 281 to 344.

TABLE 3: *Summary of Expenditures for 1917*

## I. WAR WORK

*Camp and Community Welfare<sup>1</sup>*

Commission on Training Camp Activities, Auxiliary Fund.....	\$25,000.00
American Social Hygiene Association and New York Committee of Fourteen for work under direction of Commission.....	27,376.71
Camp Community Fund (Recreation Association of America).....	145,000.00
Y. M. C. A.....	1,270,000.00
Y. W. C. A.....	46,974.13
Jewish Welfare Committee.....	100,000.00
	<hr/>
	\$1,614,350.84

*Medical Research and Relief*

War Demonstration Hospital at Rockefeller Institute.....	\$200,000.00
Medical Research of Rockefeller Institute.....	1,836.32
Yale Mobile Hospital Unit.....	25,000.00
National Committee for Mental Hygiene .....	1,798.40
	<hr/>
	\$228,634.72

*Humanitarian Aid*

American Red Cross.....	\$3,544,372.00
Belgian Relief Commission.....	100,000.00
Oxford Committee for Assisting Belgian Professors.....	7,482.43
American Committee for Armenian and Syrian Relief.....	50,000.00
Y. M. C. A., for Prisoners of War and Foreign Armies.....	225,000.00
War Relief Commission Expenditures in Various European Countries.....	175,128.54
	<hr/>
	\$4,101,982.97
Total War Work.....	\$5,944,968.53

<sup>1</sup> An appropriation of \$100,000 to the camp work of the Knights of Columbus will be paid in 1918.

**II. PUBLIC HEALTH****International Health Board**

Hookworm, Malaria, and Yellow Fever Work Throughout the World.....	\$431,992.24
Tuberculosis in France.....	38,481.37
Public Health Education in Brazil .....	8,621.17
Miscellaneous.....	78,734.40
<b>After Care of Infantile Paralysis Cases in New York City and State.....</b>	<b>44,737.49</b>
Studies and Demonstrations in Mental Hygiene .....	48,800.00
School of Hygiene and Public Health of Johns Hop- kins University.....	31,319.70
	<hr/>
	<b>\$682,686.37</b>

**III. MEDICAL EDUCATION AND RESEARCH****China Medical Board**

Development of Medical Schools in Peking and Shanghai.....	\$263,989.26
Assistance to Unaffiliated Medical Schools ....	107,079.10
Assistance to Hospitals.....	48,968.75
Fellowships and Scholarships.....	44,515.39
Miscellaneous.....	36,869.22
<b>Rockefeller Institute, Endowment and Current Ex- penses.....</b>	<b>3,127,913.68</b>
	<hr/>
	<b>\$3,629,335.40</b>

**IV. VARIOUS PHILANTHROPIES DESIGNATED BY THE  
FOUNDER**

Payments prior to July 19, 1917..... \$942,251.42

(The Founder, on July 19, 1917, relinquished all  
further right to designate the application of  
any part of the Foundation's funds.)

**V. MISCELLANEOUS**

(Chiefly payments on continuing pledges of earlier years)

American Academy in Rome.....	\$10,000.00
(Payment on ten-year pledge made in 1914.)	
American Social Hygiene Association .....	15,000.00
Bureau of Municipal Research.....	25,000.00
(Payment on five-year pledge made in 1915 for current expenses.)	
Committee on Scientific Research in Govern- mental Problems.....	9,500.00
(Payment on appropriations and pledges made in 1916.)	

Committee on Reference and Counsel of Annual Foreign Missions Conference of North America.....	50,000.00
(Payment on ten-year pledge made in 1914 for correlating educational work in foreign fields.)	
National Committee for Prevention of Blindness (Payment on five-year pledge made in 1914.)	5,000.00
Study of Industrial Conditions.....	13,868.98
(Continuation of study begun in 1914.)	
New York Association for Improving Condition of the Poor.....	20,000.00
(Payment on ten-year pledge made in 1914 for demonstration of social relief measures.)	
Grand Chenier Bird Refuge, Taxes and Expenses (Taxes and expenses for tract purchased in 1915 and now held as a preserve under State Conservation Commission.)	1,619.52
	<hr/>
	\$149,988.50
	<hr/>

## VI. ADMINISTRATION

Maintenance of Executive Offices and Treasurer's Office.....	\$105,666.28
Purchase of Books and Furniture.....	2,189.86
	<hr/>
	\$107,856.14
Grand Total.....	\$11,457,086.36
	<hr/>



# **INTERNATIONAL HEALTH BOARD**

**Report of the General Director**



*To the President of The Rockefeller Foundation:*

Sir:—

I have the honor to submit herewith my report as General Director of the International Health Board for the period January 1, 1917, to December 31, 1917.

*Respectfully yours,*

WICKLIFFE ROSE,  
*General Director.*

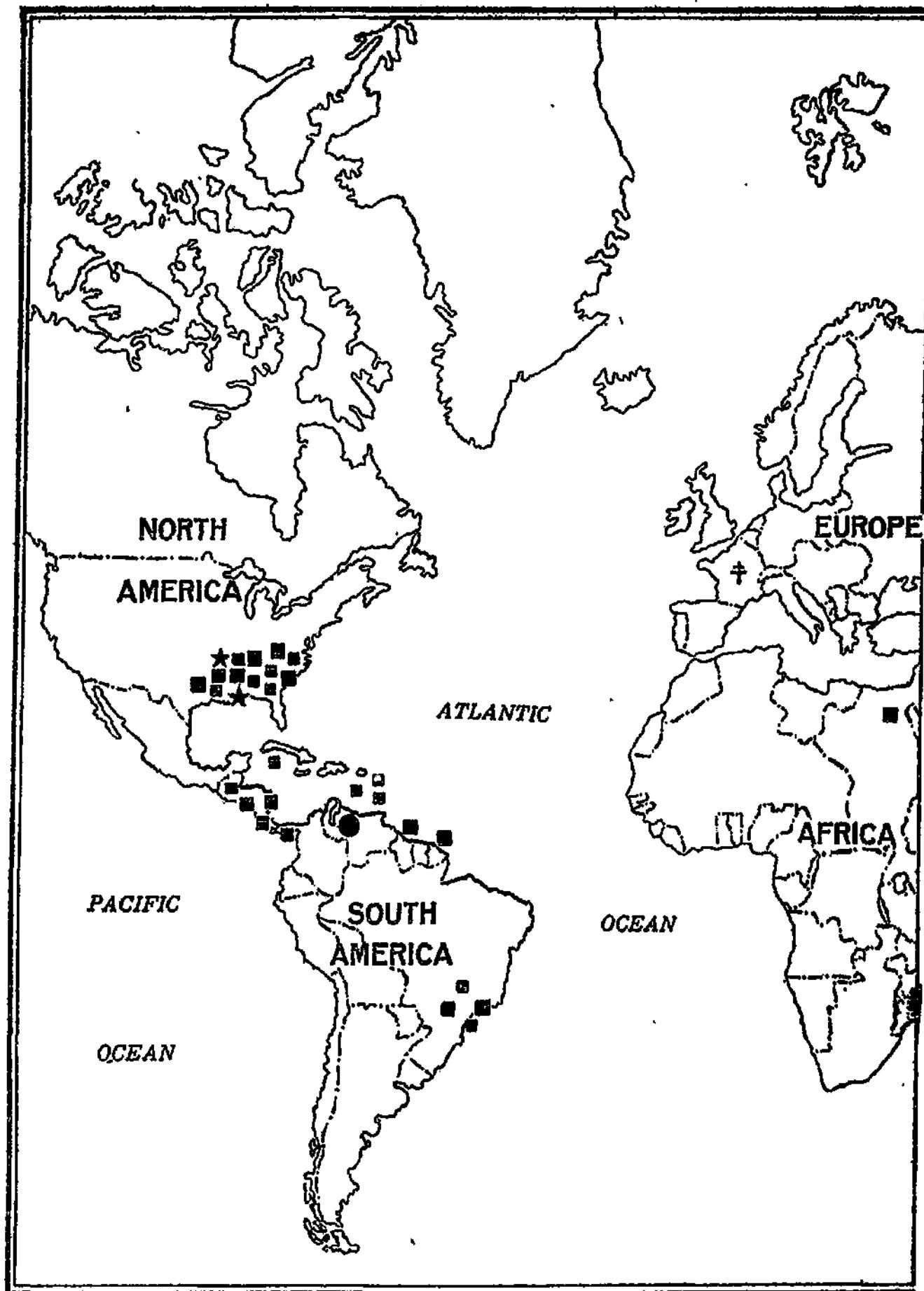
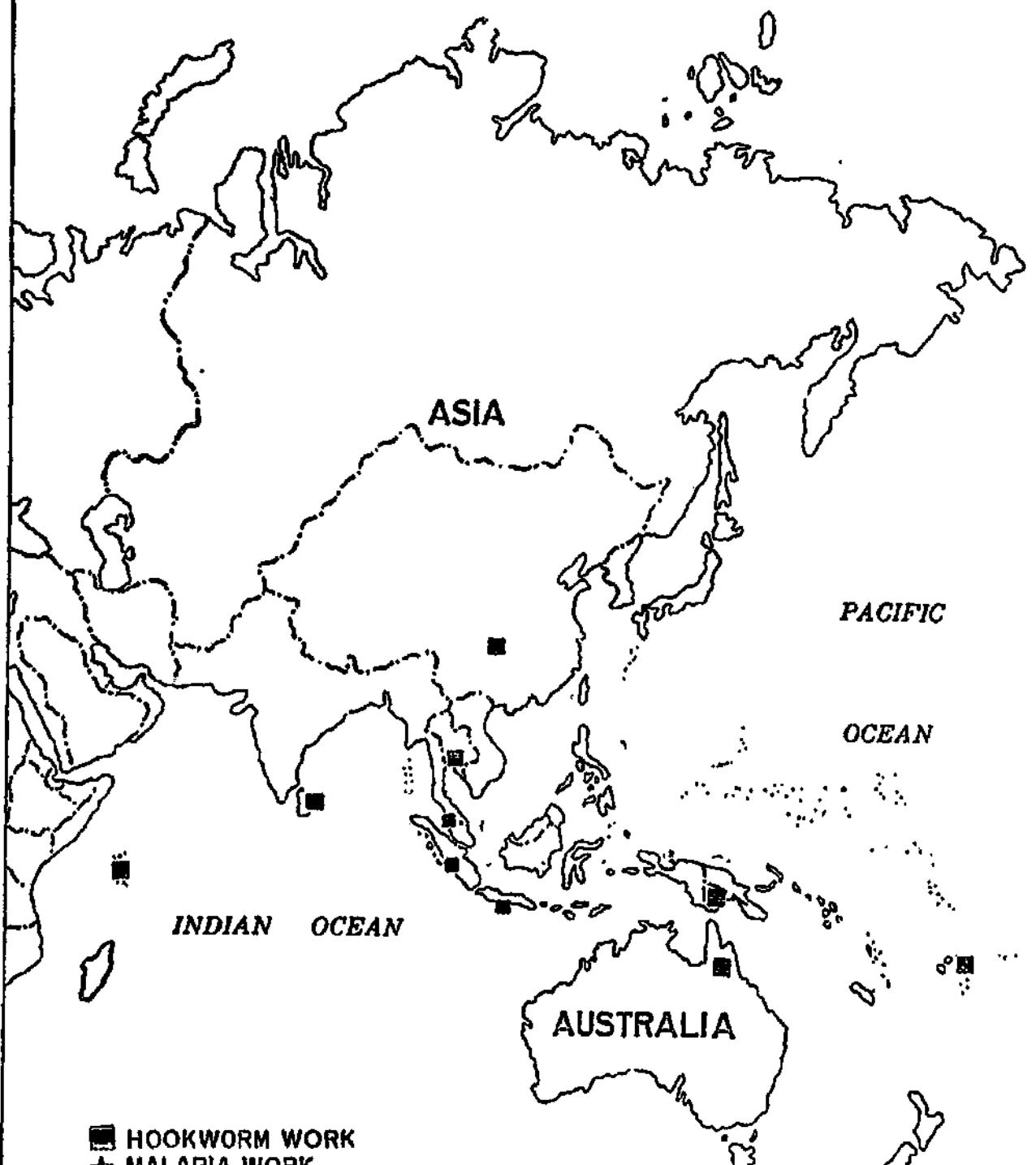


Fig. 2—Activities of International



- HOOKWORM WORK
- ★ MALARIA WORK
- YELLOW FEVER WORK
- ✖ TUBERCULOSIS WORK

# INTERNATIONAL HEALTH BOARD

## *OFFICERS AND MEMBERS*

GEORGE E. VINCENT, *Chairman*  
WICKLIFFE ROSE, *General Director*  
HERMANN M. BIGGS  
WALLACE BUTTRICK  
SIMON FLEXNER  
FREDERICK T. GATES  
WILLIAM C. GORGAS  
STARR J. MURPHY  
WALTER H. PAGE  
JOHN D. ROCKEFELLER, JR.  
WILLIAM H. WELCH

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EDWIN R. EMBREE, *Secretary*

# PERSONNEL OF STAFFS DURING 1917

## *ADMINISTRATIVE STAFF*

WICKLIFFE ROSE, *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*

ERNST C. MEYER, *Director of Surveys and Exhibits*

## *FIELD STAFF*

Alabama: R. B. Hill, *Junior Field Director\**

Arkansas: D. C. Absher, *Junior Field Director\**

D. M. Griswold, *State Director\*\**

H. A. Taylor, *State Director (Malaria Control)*

Brazil: L. W. Hackett, *Associate Regional Director*

J. L. Hydrick, *Associate State Director*

Paez Azevedo, *Senior Field Director*

F. W. Dershimer, *State Director*

W. A. Forsythe, *Senior Field Director\*\**

Ceylon: W. P. Norris, *Associate Regional Director*

W. P. Jacocks, *Senior State Director*

J. E. Snodgrass, *Associate State Director*

S. A. Winsor, *Senior Field Director*

F. W. Eastman, *Junior Field Director\**

China: F. C. Yen, *Junior Field Director*

Costa Rica: L. Schapiro, *Senior State Director*

J. L. Rice, *Junior Field Director*

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\* In Military Service.

\*\* Resigned.

Dutch Guiana:	W. H. Kibler, <i>Associate State Director</i>
Georgia:	M. E. Connor, <i>State Director</i>
Grenada:	H. S. Colwell, <i>State Director**</i>
Guatemala:	A. M. Struse, <i>State Director</i>
Fiji:	G. P. Paul, <i>State Director</i>
Louisiana:	E. W. Schultz, <i>Junior Field Director**</i>
Maryland:	W. G. Smillie, <i>Senior Field Director</i>
	G. K. Strode, <i>Associate State Director*</i>
Mississippi:	C. Cross, <i>Senior Field Director</i>
	F. A. Miller, <i>Junior Field Director</i>
	A. C. Pfeiffer, <i>Senior Field Director*</i>
Nicaragua:	D. M. Molloy, <i>Senior State Director</i>
North Carolina:	B. E. Washburn, <i>Senior State Director</i>
	C. A. Laubach, <i>Junior Field Director**</i>
Panama:	W. T. Burres, <i>State Director</i>
Papua:	J. H. Waite, <i>Associate State Director</i>
St. Vincent:	P. B. Gardner, <i>State Director</i>
Salvador:	C. A. Bailey, <i>State Director</i>
Seychelles Islands:	J. F. Kendrick, <i>Associate State Director</i>
Siam:	M. E. Barnes, <i>State Director</i>
Texas:	P. W. Covington, <i>Senior State Director</i>
	W. C. Becker, <i>Junior Field Director**</i>
Trinidad:	G. C. Payne, <i>State Director</i>

**SPECIAL STAFF****Tuberculosis Work in France**

Livingston Farrand, *Director*  
 James Alexander Miller, *Associate Director*  
 Seliskar M. Gunn, *Associate Director*  
 Homer Folks (Representing the American Red  
 Cross)

**Yellow Fever Commission**

William C. Gorgas, *Chairman*  
 Henry R. Carter, *Clinician*

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\* In Military Service.

\*\* Resigned.

Juan Guiteras, *Clinician and General Adviser*

Theodore C. Lyster, *Clinician*

Eugene R. Whitmore, *Pathologist*

William D. Wrightson, *Sanitary Engineer*

**Uncinariasis Commission to Orient**

Samuel T. Darling, *Chairman*

Marshall A. Barber

Henry P. Hacker

**Hospital Ship for the Philippine Islands**

A. F. Coutant, *Physician in Charge*

Teresa McKimney, *Nurse*

**Adviser in Medical Education**

Richard M. Pearce



## THE YEAR IN BRIEF

The International Health Board is devoted to the work of preventive medicine in the United States and other countries. It cooperates with Government in measures designed to control hookworm disease and other diseases, and assists in the establishment of permanent agencies for the promotion of public sanitation and the spread of the knowledge of scientific medicine.

During the year 1917, notwithstanding war conditions, infection surveys were conducted in Tobago, Cayman Islands, and Papua, and demonstrations in the relief and control of hookworm disease carried on in 12 states in this country and 22 foreign states and countries. As a new departure, the Board took its first step in the direction of aiding in the control of hookworm disease in mines by conducting a preliminary infection survey of Pinghsiang Colliery in the Kiangsi Province of China. In close relations with the American Red Cross, the Board has cooperated with the French Government in measures for the control of tuberculosis in France. It conducted experiments in Arkansas and Mississippi for the purpose of testing measures for the control of malaria. Through its Yellow

Fever Commission it carried on survey work in Martinique and Venezuela, in connection with the eradication of yellow fever. It cooperated with the Philippine Government in placing in commission a hospital ship to bring medical and surgical relief to the inhabitants of the Sulu Archipelago. To provide an opportunity for adequate training in public health, it aided in the establishment of a Department of Hygiene in connection with the Faculty of Medicine at the University of Sao Paulo, Brazil. The Uncinariasis Commission which the Board appointed and sent to the Orient early in 1915, to conduct a scientific investigation with respect to the importance of hookworm disease as a disabling factor in Malaya, returned to America and made its report.

During the year there have been two outstanding developments: improvement in sanitation and increase in local support. Government officials have been very energetic in the matter of enacting and enforcing legislation aimed at the prevention of soil pollution, and public appropriations for the support and extension of the work have been greatly increased.

## **PART ONE**

# **CONTROL OF HOOKWORM DISEASE**



# I

## MENACE OF HOOKWORM DISEASE

Fifteen hundred hookworms were found in the body of one laborer who had died from anemia while working on the St. Gotthard tunnel (Switzerland). This was in February of the year 1880. The post-mortem examination had been made by Colomiatti in the presence of many doctors and professors, including Perroncito. Perroncito was most active in the work of following up this discovery and eventually succeeded in demonstrating the parasitic origin of anemia in tunnels and mines. The tunnel project was begun in 1872 from both sides at once. At the start, 1700 laborers were employed on the North end. When the work was completed in 1882, all but 60 of the workmen originally employed on the project had been replaced. Doubtless a considerable proportion of this defection was due to the prevalence and malignancy of the disease. During the last few years of construction, probably 95 per cent. of the working force that had been at the tunnel for a year were infected. Two score years earlier (1838) Dubini had first discovered hookworms in the body of a peasant woman at the hospital of Milan.

### CHARACTER OF THE DISEASE

Hookworm disease is communicable. It is caused by a small parasitic worm (*Uncinaria*), about as thick as an ordinary pin and about half as long. Thousands of them may live in the intestine of a single person: in one case more than 6,000 hookworms were passed by a patient as a result of treatment. While the female produces immense numbers of eggs, these never mature within the host, but must leave the body with the feces before they can hatch. Under proper conditions of air, heat, and moisture, they hatch within the brief space of from 24 to 40 hours. When once hatched, the larvae, or young hookworms, too small to be seen with the naked eye, may live on and near the surface of the ground for many months, and so long as they stay in the soil they remain microscopic in size. They get back into the body by boring through the skin of the bare feet and hands or other portions of the body which come in contact with soil in which they exist, and thus pass into the circulating blood of the human host. Their entrance through the skin causes an itch which has come to be known as ground itch. After boring through the skin they enter the lymphatics, are carried through the heart, penetrate the lungs, make their way to the throat and are

swallowed, after which they ultimately reach the small intestine. Here they grow to maturity and remain for seven years, or more, if not disturbed by treatment.

#### EFFECTS OF THE DISEASE

These parasites nourish themselves by sucking the blood of the host and perhaps cause changes in the blood which tend to destroy the hemoglobin. Whatever the process, severe infections are followed by severe anemia. Moreover, persons harboring this infection seem to be more susceptible to diseases such as malaria, typhoid fever, pneumonia, and tuberculosis. In the military cantonments it has been clearly shown that the incidence of pneumonia is much higher among Southern than Northern troops, and also that the mortality rate is higher among Southern troops. Specifically, a recent report of the Surgeon General of the United States Army<sup>1</sup> shows that of two regiments recruited from two Gulf States, hookworm infection was found in 54 per cent. of the men examined in one command, and in 32 per cent. of those in the other. An unusually large mortality, due to measles and lung and bronchial troubles, was reported in these regiments after a recent

<sup>1</sup> Report for 1917, page 131.

epidemic. Measles occurred more frequently (ratio, two and one-half to one) in men who had hookworm disease. Measles patients, who suffered also from hookworm disease, were twice as susceptible to pneumonia and kindred diseases as men free from intestinal infection. It therefore appears probable that hookworm infection, by reducing individual resistance, is a very important predisposing factor in the acute infectious diseases prevalent in army camps.

Hookworm disease is never spectacular like yellow fever or pernicious malaria. And for this very reason it is the greater menace. Acute diseases sometimes tend to strengthen the race by killing off the weak; but hookworm disease, working so insidiously as frequently to escape the attention even of its victims, tends rather to debilitate the race by attacking the strong as well as the weak. The cumulative effects of the disease on the race—physical, economic, intellectual, and moral—which are handed down from generation to generation through long periods of time, are even more important than its contribution to the death roll among individuals. This one disease, where the infection is practically universal, may go far towards explaining the retardation of backward peoples.

**EXTENT OF THE DISEASE**

There is no doubt that for centuries before Dubini discovered the cause of the disease, and thus pointed the way to its control, it had been prevalent as a distressing and disabling factor among the inhabitants of tropical and sub-tropical countries in the zone which lies between parallels 36° north and 30° south. More than one-half the population of the earth live in this zone. The degree of infection in the countries where the disease prevails varies considerably. Some idea of its severity may be gathered from the figures of a number of infected regions. In one district in the tea gardens of Assam, in the Ganges River Valley of India, examination of 600 persons showed an infection of 99.9 per cent. The infection among the rural population of the plains of India probably averages 80 per cent. Examination in 1910, of nearly 3,000 persons in the Amazon region of Brazil, showed an infection of approximately 88 per cent. It is conservatively estimated that in the Yangtze Valley region of China, 90 per cent. of the farmers are infected. The average percentage of infection for those areas of Ceylon, Fiji, Seychelles, and Siam in which the Board has carried on operations is 93.1 per cent. For Ceylon alone it is 97 per cent. The work of the Board in

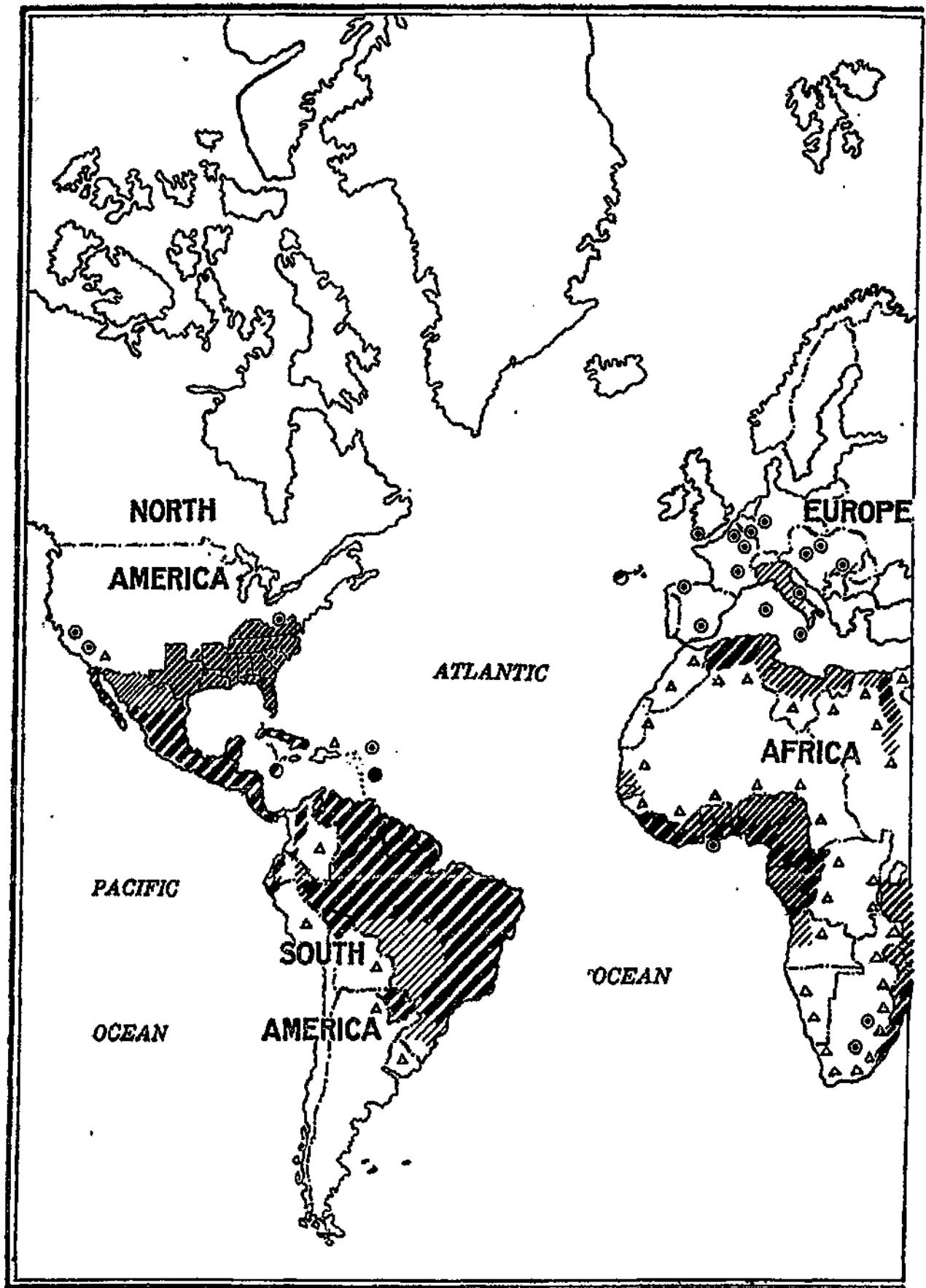
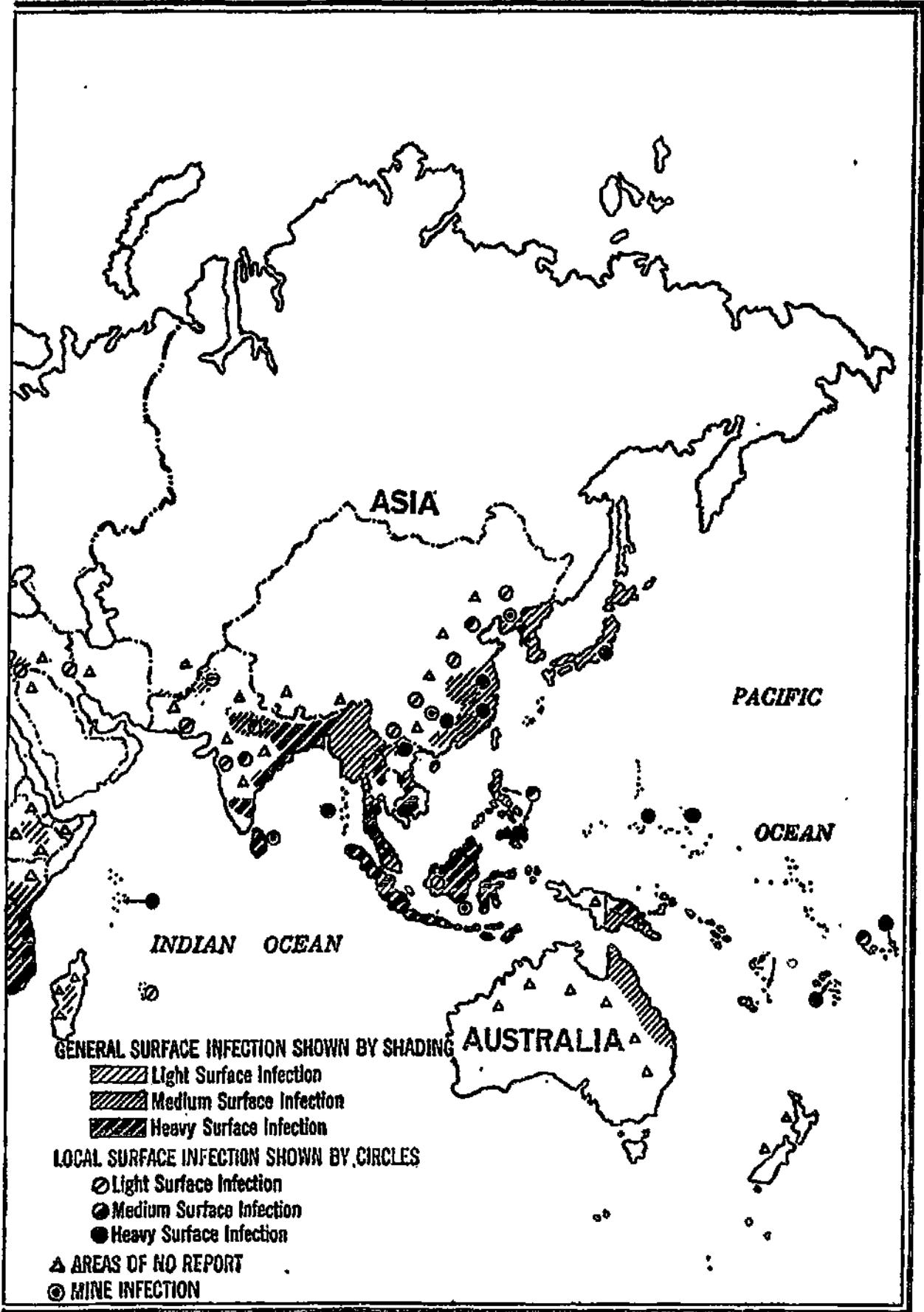


Fig. 3—World-wide Distribution



of Hookworm Infection

Central America indicates an average infection of 63.3 per cent. The average infection in the West Indies is 60.9 per cent.; for Dutch Guiana it is more than 91 per cent.

These facts and figures, indicating the extent and severity of hookworm disease, suggest that the menace is international in character and that the question of its control is, therefore, one of international concern.

## II

### INFECTION SURVEYS

Preliminary infection surveys are conducted in all countries and communities where work for the control of hookworm disease is contemplated. These surveys, by making available information both as to the geographical distribution of the infection and the degree of infection for each infected area, give the basis for the formulation of a working program. Similar surveys, conducted from time to time, help to give a definite measure of progress in the work of control. (See Fig. 4, page 90.) A number of such surveys were carried on or brought to a close during the year. The infection survey of Rio de Janeiro, which led to the initiation of similar undertakings by other states in Brazil, and the infection survey of the Pinghsiang Colliery in the Kiangsi Province of China, are described in other parts of this report.

#### SURVEY OF PAPUA

An infection survey of Papua, under the Government of the Commonwealth of Australia, conducted from June 1 to September 1, 1917,

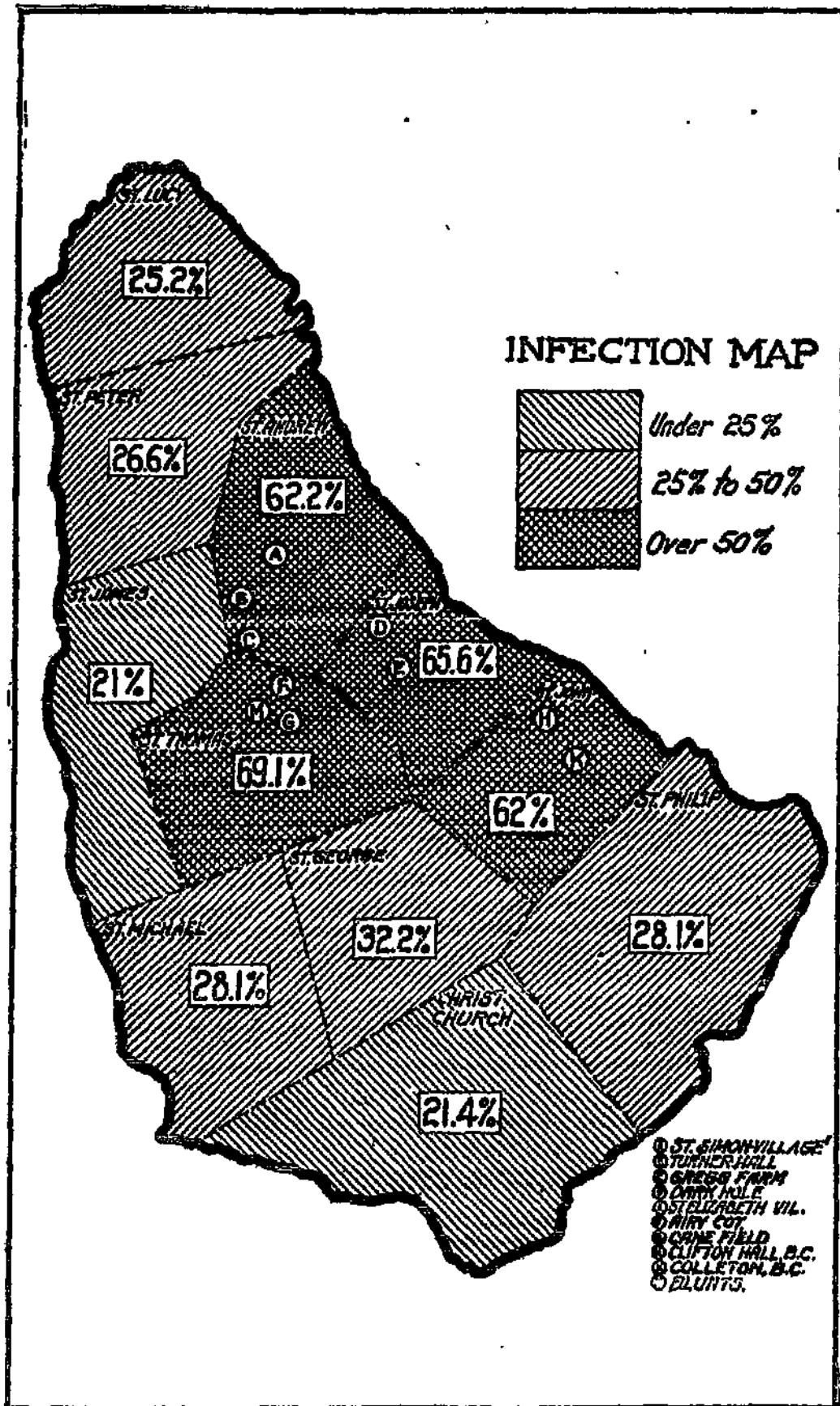


Fig. 4—How Infection Survey Defines the Problem and Locates the Regions of Heaviest Infection. Barbados

shows the influence of commercial development in spreading the disease through native populations. Until the plantations were opened in Papua, gross clinical symptoms of the disease were not reported. The concentration of large numbers of laborers on the plantations, without adequate measures being taken to prevent soil pollution, permitted the infection to spread and to increase in severity. The return each year of 6,000 plantation laborers to the villages, following their periods of indenture on the estates, affords many opportunities for the village natives to acquire the infection.

That this is what actually happens is attested by the fact that in the survey a rate of infection of only 8.5 per cent. was found among village natives none of whom had ever worked on or visited a plantation, as compared with an average rate of 61 per cent. among natives who had. As the length of service on estates increases, the rate of infection rises, as is indicated in Fig. 5, page 92. The climatic conditions and the insanitary habits of the people of Papua, both on the plantations and in the villages, are exceedingly favorable for the spread of the infection.

Following the survey, the Government undertook the organization of a permanent health service for the colony. This service will include an ocean-going boat, with a health officer in

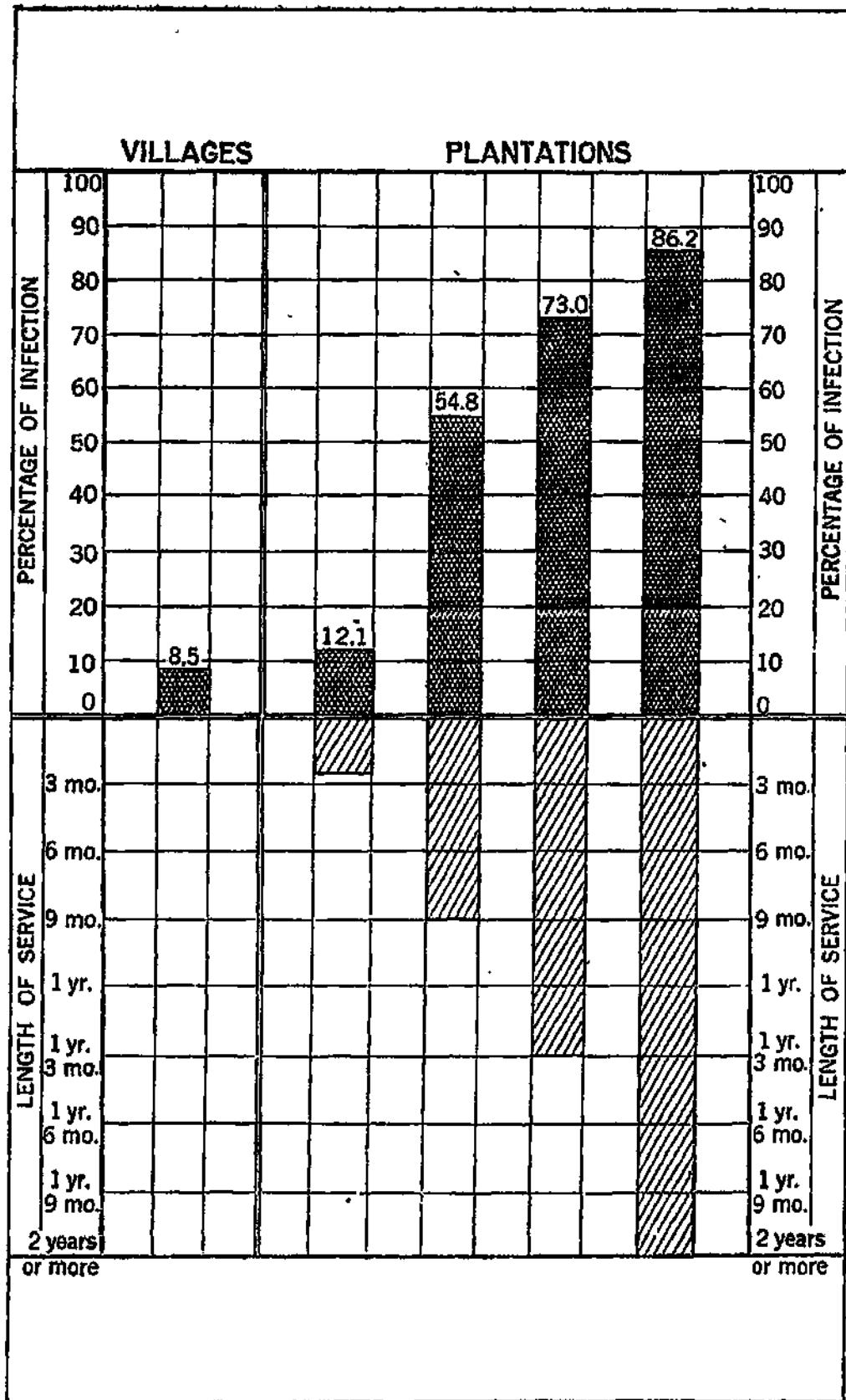


Fig. 5.—Relation Between Length of Plantation Service and Rate of Hookworm Infection. Papua

charge, designed to bring relief to outlying districts inaccessible by land. The service also contemplates, as soon as practicable, the inauguration of active measures for the control of hookworm disease. A preliminary appropriation of approximately \$5,000 has been provided by the Government for this purpose.

As a result of the preliminary work done in Papua, the Government of Australia has invited the Board to cooperate with the health department of Queensland in carrying out a demonstration in the control of hookworm disease in that state. An appropriation of approximately \$7,500 has been made by the Government as its share of the expense of the first year's work.

#### SURVEY OF TOBAGO

An infection survey of Tobago, a dependency of Trinidad, established a fairly uniform rate of infection throughout the different parishes, with little variation due to topography, cultivation, river courses, or soil formation. This even distribution of the infection has probably resulted from the fondness of the natives for traveling on foot from one part of the island to another. In the course of this survey, 2,414 persons were examined among a total population of approximately 22,142, and 63 per cent. of

those examined were found infected. Most of the people examined lived in the vicinity of large towns and villages. The degree of individual infection was found to be fairly heavy.

#### SURVEY OF CAYMAN ISLANDS

An infection survey of the Cayman Islands, British West Indies (a dependency of Jamaica), was conducted during the spring of 1917. The work was undertaken at the request of the Government of Jamaica. The combined population of the three islands composing this group—Grand Cayman, Cayman Brac, and Little Cayman—is 5,250. In the survey 1,340 persons were examined, of whom 228, or 17.0 per cent., were found infected. In Grand Cayman, the average rate of infection was 20 per cent., with a variation ranging from three to 55 per cent. in different parts of the island. In Cayman Brac, it was eight per cent., with a variation from two to 14 per cent. No infected persons were found in Little Cayman. The rate of infection was highest in the towns lying nearest the mangrove swamps of which the eastern parts of both Grand Cayman and Cayman Brac are largely composed. The proximity of these swamps, with their density of shade-growth, bears an important relation to the percentage of infection in the towns.

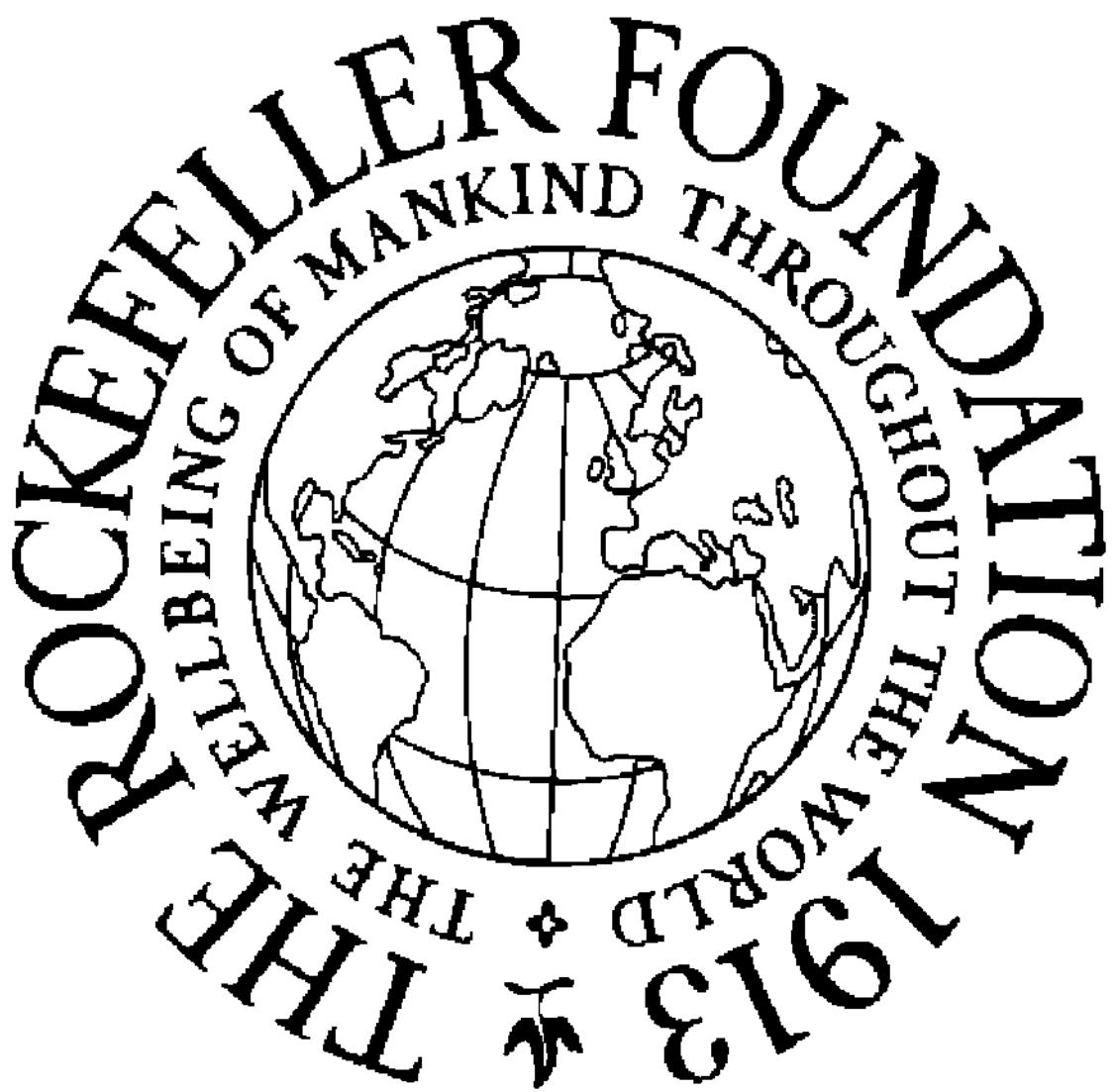


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Fig. 6—Type of Native Houses. Tobago

Elsewhere throughout the islands the infection has not taken a firm foothold. Because of the lack of shade and moisture in those portions of the islands that are formed of coral rock, there is little likelihood of the disease being widely spread. The enforcement of satisfactory regulations governing the disposal of human excrement, and the attention paid in the Government schools to the teaching of hygiene and sanitation, also play their part in preventing the further spread of the infection.

Following the survey of the Cayman Islands, the Government of Jamaica voted an appropriation of approximately \$12,000 for the purpose of initiating a campaign, in cooperation with the Board, against hookworm disease in the Island proper. It was understood and agreed that the Board would make an infection survey. The Board further agreed that, if the survey should reveal conditions calling for systematic measures for relief and control, it would conduct demonstrations in a few selected areas. The Government, for its part, agreed to supply the necessary drugs and printing, and to organize, as soon as might be practicable, a sanitary department under central administration. The Government further agreed that, if relief measures should be undertaken, the areas in which the work would be done would be supplied with latrine accommodations in advance of the examination and treatment of the people.



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Fig. 7—Two Boys of Same Age. One on Left Heavily Infected with Hookworm Disease. Hemoglobin 50; Ulcer on Right Foot for Seven Years. Tobago

### III

## PLANS OF OPERATION

In the progress of the work two plans of operation for control have been developed. One is known as the dispensary plan; the other as the intensive plan. In the first plan, the work of examining, treating, and educating the people centers around the free traveling dispensary, and has the advantage of covering large areas and of reaching large numbers of people in a comparatively short time; in the other plan, the work is limited for a definite time to a restricted area, and has the advantage of greater thoroughness in detail.

### DISPENSARY PLAN

The dispensary plan provides for the organization of mobile dispensaries which visit periodically those towns and villages that are most conveniently located. They offer free examination and free treatment to all who apply. The staff (a physician and a corps of assistants) is equipped with microscopes, specimen containers, hemoglobinometers, the necessary drugs, record forms, camera, lantern and slides, charts, leaflets, and a

supply of exhibit material for conducting effective educational work. The dispensary does not undertake to examine the whole population, but only those people who apply. It dispenses drugs to those who need and desire treatment, but does not administer treatment under direct supervision. It is true that it cannot follow up its first treatments with continued reexamination and re-treatment until cure has been demonstrated, nor does it remain in one place long enough to effect conspicuous results in sanitation which can be measured and recorded as definitely accomplished. Nevertheless, experience has shown that the dispensary is an effective means of bringing speedy relief and definite instruction to large numbers of people distributed over wide areas of territory.

Diagnoses are by microscopic examination of the feces, the presence of infection being determined by the presence of eggs of the parasite in the patient's stool. The field director is given as many microscopists as are needed to do the work. By the dispensary plan of operation practically the whole infected area of 11 Southern States was covered in a period of three years, 750,000 persons were treated, and 20,000,-000 people were educated both as to the importance of the disease and as to efficient measures for its relief and control.

## INTENSIVE PLAN

The purpose of work by the intensive plan is to demonstrate the possibilities of a direct and definite attack upon a prevailing disease. The hope is that such temporary measures as are brought into use for the relief and control of hookworm disease may be in the nature of a first step toward the establishment of permanent agencies which shall in time apply similar or better methods to the control of all diseases. The most effective work, therefore, is that which succeeds in creating so keen a realization of benefit that the public is prepared not only to cooperate in further and more comprehensive undertakings of similar nature, but to insist that permanent agencies be established to continue and enlarge the work.

By the intensive plan, an attempt is made to approximate complete relief and control of hookworm disease within a given area. Trials with this method in Peter's Hall District, British Guiana, and in other selected areas, definitely established it as the prevailing type. Under this plan, a territorial unit of operations may be a county, or it may be any small, well-defined area containing from 1,000 to 15,000 people. For purposes of convenience and efficiency in practical administration, the large unit areas are divided into a number of small districts.



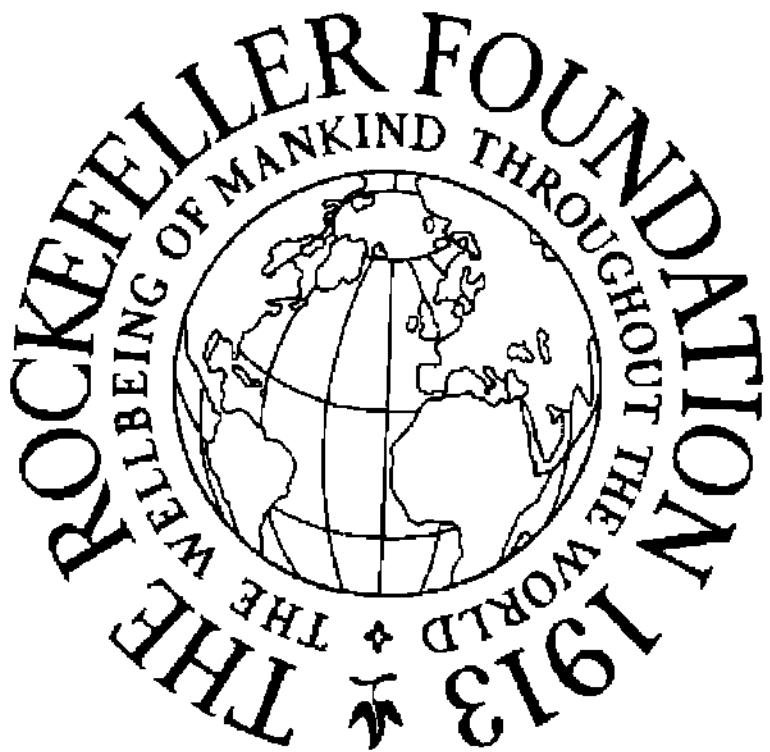
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Fig. 8—Group Assembled for Treatment. Coffee Plantation. Guatemala

**SCHEME OF ORGANIZATION**

The scheme of organization which has proved most satisfactory for conducting operations provides for two staffs. One of these staffs—the one which is in part financed by the Board—devotes itself to the work of examining, treating, and educating the people. This staff usually consists of a doctor in charge, who is called the field director, two clerks, four microscopists, 12 nurses, and one or two caretakers. The other staff—the one which is supported by the Government—devotes itself to the task of introducing and maintaining the necessary sanitary measures designed to put a stop to soil pollution and thus prevent reinfection. The one is essentially a temporary organization; the other is permanent. While both staffs work under the authority of the Government and under the general supervision of the department of health, it has been found desirable to keep the two organizations distinct. The staff that examines and treats the people, and which for that reason works with a minimum of friction, is able at the same time to educate them to an understanding of the sanitary needs, thereby making it possible for the other staff to carry out its work with less necessity for compulsion. Another advantage of this plan of organization is that it provides

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## Photograph Excised Here

Fig. 9—Community Clinic for Treatment of Hookworm Disease. Ceylon

opportunity for Government to build up its permanent sanitary organization gradually, as the work advances from area to area, and as a sustaining public sentiment is developed.

The work to be carried out involves mapping the district (locating roads, streams, and houses), taking a census of the population (numbering the houses in which the people live, recording name, age, sex, race, and post-office address), making microscopic examination of the entire population, administering treatment to all persons found to be infected, and continuing treatment of each patient until cure is effected. While this work is in progress the people are taught the essential facts, both as to the nature of hookworm disease and as to methods of control. This is done by personal instruction in house-to-house visits, by the distribution of pamphlets and leaflets, and by illustrated lectures. In all this work, chief emphasis is placed on the prevention of soil contamination.

#### EFFECTIVENESS OF CURATIVE WORK

Although it is seldom possible to examine every resident of an intensive area, or to treat until cured every person found infected, the cooperation of the people has made it possible to maintain very high average results. In St.

Vincent the entire population of one area (more than 2,500 inhabitants) was examined, while the percentage examined of the total population of this and eight other areas in the same island was 99.6. Only 77 persons out of a total population of 20,390 refused to be examined. For the West Indian colonies as a whole, during the three and one-half years that intensive work has been in progress, a total of 165,099 persons have been enumerated in the census, and of this number only 1,124, or seven-tenths of one per cent., refused to submit specimens for examination.

The number of cures ranges from 75 per cent. to 90 per cent. of the number of persons infected. In no area has it been found practicable to demonstrate, by microscopic examination following treatment, that 100 per cent. of the infected persons had been cured. There is always a small remnant who, for medical reasons or because of refusal to begin or continue treatment, remain uncured in the areas at the close of the work. In Fiji and the Seychelles Islands, in the All Saints district in Antigua, and in the Bogawantalawa area in Ceylon, more than 90 per cent. of the infected persons were cured. Eliminating from consideration the group that, for medical reasons, could not be treated, the percentage cured in these four areas was approxi-

mately 95. There is no way, during the progress of the work, to cure the persons who for medical reasons are not treated, because these include emaciated persons, pregnant women, and sufferers from acute heart or kidney affections or other debilitating causes which would make treatment hazardous.

For all the West Indian colonies combined, only 17 per cent. of those originally infected remained behind as carriers of infection. Persons who, for medical reasons, could not be treated accounted for approximately one-fourth of those uncured, the remaining three-fourths being about equally divided between those who refused to take or to continue treatment, and those who had been treated once or oftener but had not yet been cured when the work was moved to other areas. Statistics show that refusals to be treated until cured, although more frequent than refusals to be examined, are met with, on an average, in six per cent. of the infected cases. In Fiji, among the 3,088 persons so far found to be infected, not one refusal to take or to continue treatment has yet been recorded.

#### EFFECTIVENESS OF SANITARY WORK

The most important of the many results of intensive work is the permanent sanitary im-

provement which it effects. In 66 of the 303 communities in the Southern States in which this type of work was conducted up to December 31, 1917, not a home was left without a latrine. Embraced within the boundaries of these 66 communities were 7,738 homes, of which 5,885, or 76 per cent., had latrines when the work started. When the work was finished the percentage of homes with latrines had been raised from 76 to 100. Many homes credited with having latrines at the beginning of the work had the open-back, open-seat type which does not prevent soil pollution. During the progress of the work almost all of these were changed to latrines either of the pit type or of some other type approved by the health authorities of the respective states. Only 61 per cent. of the 32,468 homes inspected in all of these 303 communities had latrines of any kind when the work began; when the work was concluded 82 per cent. had improved latrines. In the Seychelles Islands, in district No. 2 of the South Mahe area, every one of the 740 homes now has a latrine, although only seven were so equipped when the work began. In district No. 2 of the Central Mahe area, embracing 553 homes, all but six now have latrines, although only 15 had them when the work began. In Guatemala, during the third quarter of the year, 761 new

latrines, each accommodating from 12 to 20 persons, were installed. These latrines were sufficient to supply accommodations for 11,519 persons, or 96 per cent. of all those living within the areas of operation.

#### HOW INTENSIVE WORK IS CARRIED OUT

Although in each state or country the intensive work is limited to one small area at a time—in order to permit the staff to concentrate its energies on these small areas until they are completed—the work is nevertheless projected in such manner that eventually the whole area of the country, or the whole of its heavily infected territory, will be covered. The map of Costa Rica (See Fig. 10, page 109) illustrates how this is done. In interpreting this map it should be borne in mind that the extent of territory covered during any one year depends on the density of the population and the facilities for travel and communication within the areas. The large amount of territory marked to be covered during the year 1920 does not mean that the work during that year will necessarily be on a larger scale than during former years, but that the staff will be working in regions which have fewer inhabitants. Nor should it be inferred from this map that it is customary to cover

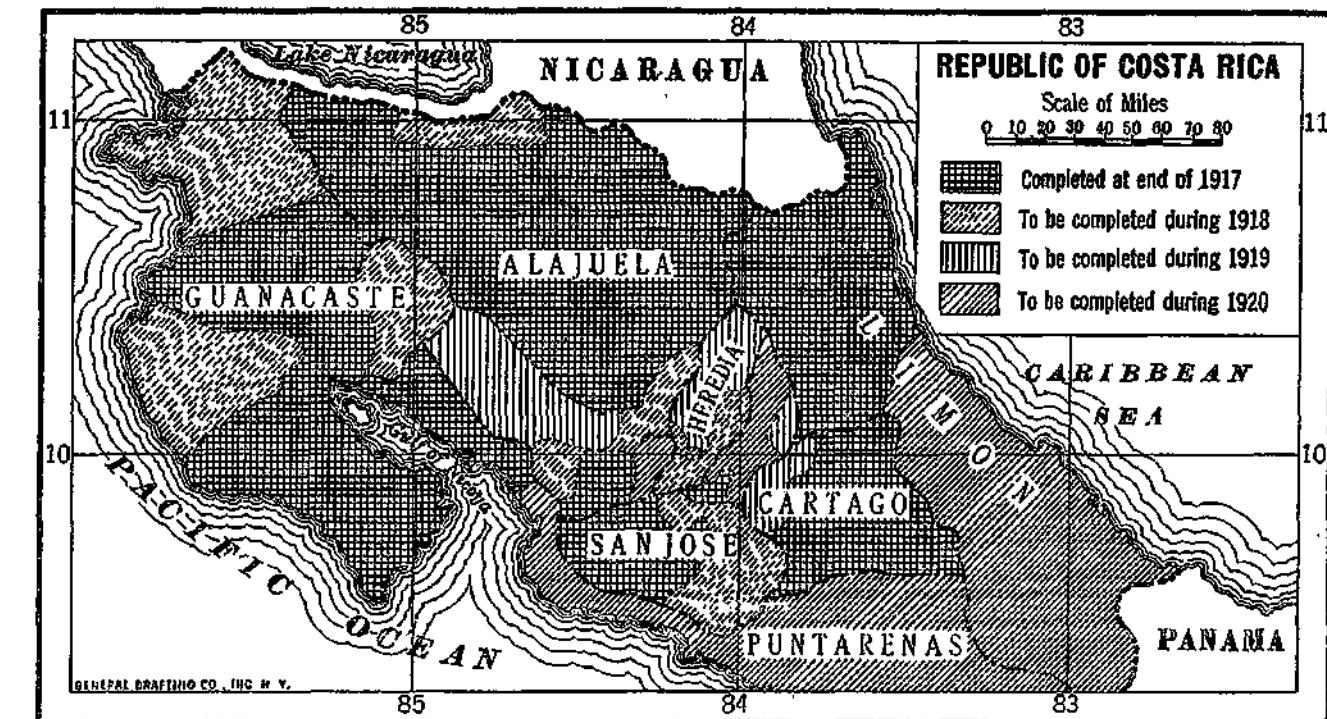


Fig. 10—How Hookworm Activities are Planned and Carried Out. Costa Rica.

the whole territory of every country in which work is conducted. Where the infection is not so widespread as in Costa Rica, the work may be planned to omit the regions of lightest infection.

#### DEVELOPMENT FROM DISPENSARY TO INTENSIVE PLAN OF WORK

The best results are obtained from the intensive plan when the people understand something of the nature of the disease and have some realization of its importance. Experience in the Southern States has demonstrated that favorable public sentiment is a necessary prerequisite to successful intensive work. The dispensary—by means of lectures, demonstrations, and striking examples of the improvement in health which results from treatment—provides a convenient vehicle for carrying this knowledge into remote regions of infected countries, and goes far towards creating this favorable public sentiment. For this reason it is often an advantage in new countries to have the work conducted, at least for a limited time at its beginning, according to the dispensary plan.

The history of the recent work in Siam, as in the Southern States, Trinidad, Grenada, Costa Rica, and Nicaragua, affords an instance of activities originally beginning by the dispensary

plan of work and gradually developing into the intensive method of control. The work was started in Siam early in 1917 by the installation of an exhibit at the provincial exposition held at Bangkok. This exhibit served to awaken a lively interest in the subject of hookworm disease and its treatment, and in the possibility of controlling other diseases suggested by the measures employed against hookworm disease. It is estimated that at least 5,000 persons, including members of the royal family and many public officials, saw the exhibit during the six days of the Fair.

At the close of the exposition a dispensary was established in Chiengmai, a city in the northern part of Siam. Here soldiers, school children, prisoners, and inmates of leper colonies, as well as the residents of Chiengmai and surrounding villages, were examined and treated. The influence of this initial work, soon spreading into towns and villages far removed from the center of operations, led to requests that staff members be sent to examine and treat the inhabitants. In this way large numbers of people became acquainted with the nature of the disease and many of these expressed themselves as anxious to cooperate in conducting campaigns for its control. Meanwhile, at intervals during the year, ten areas in Chiengmai were opened on

the intensive plan, and by the close of the year the major part of all the work was becoming intensive in character.

The distinguishing characteristic of the intensive plan of operations is that it is a practical demonstration, in a limited area, of the possibility of controlling hookworm disease in all infected areas. At the same time it serves to point the way towards the ultimate control of other preventable diseases by similar methods of direct attack. Its employment usually results in the enactment of legislation for the prevention of soil pollution<sup>1</sup> and involves the appointment of a number of sanitary inspectors whose duty it is to see that the regulations are enforced. These inspectors furnish the nucleus of a permanent sanitary staff whose efforts, although in the beginning directed primarily against hookworm disease, may in course of time be extended to include the application of measures designed for the control of other diseases as well.

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<sup>1</sup> During 1917, laws for the prevention of soil contamination were enacted by Dutch Guiana, Nicaragua, Guatemala, Fiji, the Seychelles Islands, the Federal District and the States of Rio de Janeiro and Sao Paulo in Brazil, and by certain towns and counties in the Republic of Salvador and in the States of North and South Carolina.

## IV

### TREATMENT FOR HOOKWORM DISEASE

The war against hookworm disease may be described as a series of offensive campaigns, or drives, in which the immediate objective of treatment is the relief of the patient and the ultimate objective such sanitary reform as will bring permanent control. It has not been found practical to begin by enacting measures of regulation. The people must first be convinced of the necessity of such legislation, and experience has shown that actual treatment offers the line of least resistance in the education of the people.

#### DRUGS USED IN TREATMENT

In recent years many remedies have been given a trial in the treatment of hookworm disease. Thymol and chenopodium stand out as being much more efficacious than any of the others. There is considerable difference of opinion among men of large experience as to whether thymol or chenopodium is the better drug to use.

During the year much information relating to the use of oil of chenopodium in the treatment of hookworm disease has become available.

The directors of the work in Fiji and in the Seychelles Islands have used this drug exclusively in treating more than 13,000 cases, and in their experience have met with scarcely an untoward symptom. Seventy-three per cent. of the persons treated in the Fiji Islands were cured by two treatments. On reexamination, six months after the original treatments were given, only 10 per cent. of these patients were found to be infected. The Board's Uncinariasis Commission to the Orient showed, under experimental conditions with a comparatively small number of cases, that one treatment of chenopodium had an efficiency, based on the proportion of worms removed to worms harbored, of 96 per cent., as compared with an efficiency of 89 per cent. for thymol, of 47 per cent. for eucalyptus, and of 27 per cent. for Beta-naphthol.

#### SMALLER DOSAGE OF CHENOPODIUM RECOMMENDED

In Ceylon, Panama, Dutch Guiana, Brazil, and a number of other countries, alarming symptoms, or death, have sometimes followed the administration of chenopodium. Apparently the dosage heretofore recommended in the literature is too high. The Uncinariasis Commission found that the efficiency of 99 per cent. obtained by a single treatment of cheno-

podium, consisting of three mils of the oil, divided into three doses and administered at hourly intervals, was reduced to only 95 per cent. when the dose was cut in half; while two of the half-dose treatments, administered with at least ten days intervening, produced an efficiency, in 39 cases, of 99 per cent. When the smaller dose was used untoward after-effects were rare. This experience led the Commission to recommend 1.5 mils of chenopodium, divided into three doses of 0.5 mil each, as the standard treatment for hookworm disease. In routine practice a light meal was given on the evening before treatment. This was followed by a purgative dose of magnesium sulphate. A very light breakfast, consisting of milk, or konje, was given on the morning of treatment. The regular dosage was a half mil, or 8 minims, of chenopodium at 7:00 A. M., followed by similar doses at 8:00 A. M. and at 9:00 A. M. At 11:00 o'clock a purgative dose of magnesium sulphate was again administered. It is declared, in some quarters, that when castor oil is used as a purgative the number of cases of poisoning is reduced. The experience of the Commission, however, shows that magnesium sulphate is a safer and more efficient purgative than castor oil.

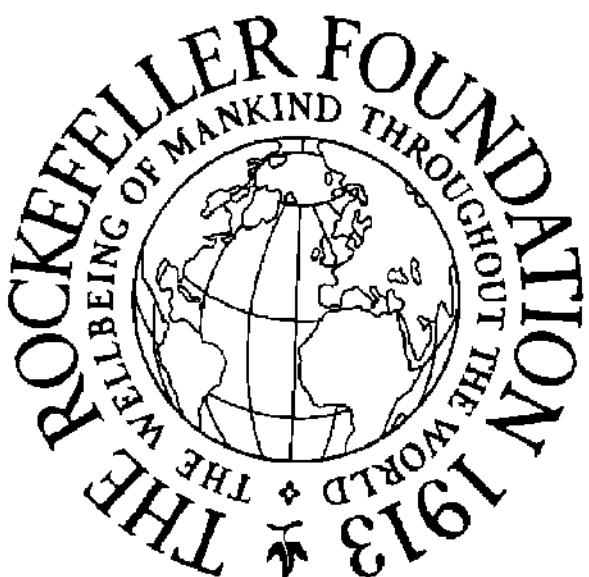
During the latter months of the year the

smaller doses of chenopodium were used in many countries, with a decided decrease in the number of cases of poisoning. An analysis of the cases of poisoning, following treatment, which have been brought to the attention of the Board, shows that only one-fourth were among persons more than 12 years of age, while of the three-fourths occurring in children under this age more than one-half were among children less than seven years old. This suggests that the proportionate reduction in children's doses, as arrived at by Young's rule, may not be sufficiently great, and that the advisability of smaller proportionate doses should be seriously considered.

Experience would therefore seem to warrant the conclusion that the maximum doses of chenopodium recommended in the literature are unsafe. However, oil of chenopodium has such great anthelmintic value, not only for hookworm but for ascaris and other parasites, that the desirability of discovering methods for its safe employment justifies additional effort.

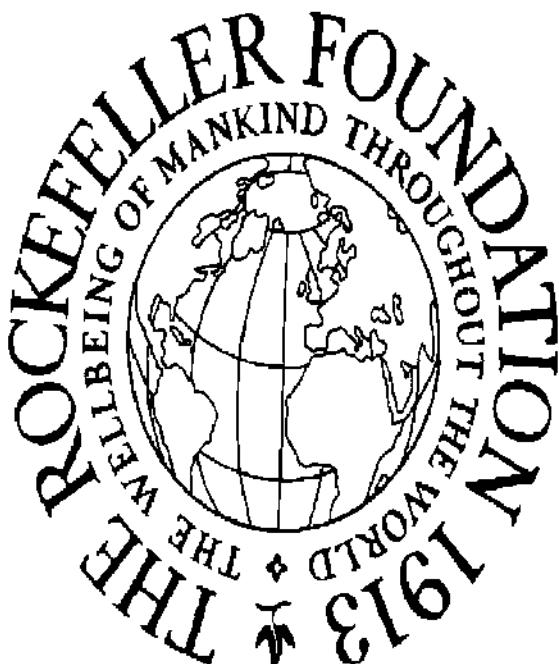
#### POST-CAMPAIGN MEASURES AND FEWER TREATMENTS

Arrangements have been made with the Government and planters of Ceylon for carrying out post-campaign measures on all estates on which the work of treatment has been completed.



Photograph Excised Here

Fig. 11—Coolie Girl Before Treatment for Hookworm Disease. Dilated Abdomen. Ceylon



Photograph Excised Here

Fig. 12—Same Girl After Treatment. Abdomen Much Reduced. Facial Expression Brighter

These measures will continue for a period of 18 months following the close of the initial demonstration on each estate, and will be under the supervision of a Government medical officer, assisted by microscopist-dispensers, trained in regular campaign work. At the end of the 18 months' period of organized post-campaign measures, the estate dispensers will be expected to handle the situation, which will consist mainly of the treatment of small groups of new laborers coming to the estates from time to time.

In an attempt to relieve the laborers from the ill effects of continued purgation and treatment in obstinate cases, the plan of administering not more than four treatments to any patient, and of depending upon post-campaign measures to complete the cure of those remaining infected, was carried out on two estates in the Matale area which had not been provided with latrines. On one of these estates, 86 per cent. of the infected persons were cured by four or fewer treatments; on the other, all those medically fit for treatment were cured. The method of administering a small number of treatments and of depending upon post-campaign measures to complete the cure of cases which remain infected, is of course more economical than the plan of treating each patient until he is cured. The plan will be given further trial during 1918.



Photograph Excised Here

Fig. 13—Coolie Woman Before Treatment  
for Hookworm Disease. Age, 30; Weight, 68  
Pounds; Small in Stature; No Appetite; Un-  
able to Work; Hemoglobin 25. Ceylon



Photograph Excised Here

Fig. 14—Same Woman After Treatment  
(interval four months). Weight, 78 Pounds;  
Appetite Much Improved; Able to work  
Without Exhaustion; Hemoglobin 65

**TREATMENT OF EMIGRANTS OVER-SEAS**

It has become evident that hookworm infection is being extensively carried into Ceylon, Malaya, Fiji, the West Indies, and other parts of the globe by emigrant laborers from Southern India. With the idea of preventing, if possible, the spread of the disease in this manner, the Trinidad Government, late in 1915, undertook to see that laborers coming to Trinidad from India were, upon arrival, free of hookworm infection. To this end, the expedient was tried of treating on shipboard, during the voyage from Calcutta to Trinidad, all laborers suspected of being infected. The report of the first voyage on which this plan was carried out is interesting as showing what can be accomplished by this means toward checking the spread of infection into particular countries.

Once each week for four successive weeks, without preliminary microscopic examination, 594 of the 660 laborers on board were treated. The only ones not treated were infants and pregnant women who were unable to take treatment. All but six of these 594 patients were examined after they had taken four treatments, and 508 were found negative. The voyage terminated before the other 80 patients (13 per cent. of the total treated) could be freed of

the infection. As indicating the rate of infection that might have been expected among these laborers but for the measures of relief, 17 pregnant women who could not be treated were microscopically examined on arrival and all but one were found infected.

#### ECONOMIC RESULTS OF TREATMENT

Maximum efficiency, both of machines and of men, is necessary as a war measure; hence every belligerent country is putting forth every effort to eliminate waste and to increase production. After the war, during the period of reconstruction, there will be even greater need for economizing the resources both of wealth and of health. The economic significance of uncinariasis as a disabling disease is therefore highly important. Some indication of this economic significance is suggested by the following examples of increase in hemoglobin index following treatment, for there is, of course, a close relation between working efficiency and the degree of anemia.

In Porto Rico, by treating the people who came voluntarily to the dispensaries, the general average of the hemoglobin index, as estimated for the total population over a large area where the test

was made, was raised from 43 in 1904 to 72 in 1914.<sup>1</sup>

In Dutch Guiana, hemoglobin tests were made of a group of 711 infected persons before they had been treated, and again six months or more after they had been treated. These tests showed that the average percentage of hemoglobin in the group was 71 before treatment and 90 after treatment. (See Fig. 15, page 123.)

In Costa Rica, hemoglobin tests of 18,172 infected persons before treatment showed an index of 62. After treatment for hookworm disease, the index of 6,451 of these persons was 75. The index for a group of 8,815 persons found uninfected on first examination was 73. (See Fig. 16, page 124.)

The laboring incapacity of the prisoners in the Sapele prison, Nigeria, was reduced within a period of nine months from 37 per cent. to five per cent. by the examination of the 150 inmates, by the treatment of those found infected, and by strict enforcement of sanitary measures.<sup>2</sup>

Lieut.-Col. Clayton Lane, of the Indian Medical Service, has estimated that although the treatment and cure of hookworm disease in the laboring population of India should increase its

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<sup>1</sup> Preliminary Report, Institute of Tropical Medicine and Hygiene of Porto Rico, 1914. Page 12.

<sup>2</sup> Manuscript Report *Ankylostomiasis in Nigeria*, Thomas Blane Adam, M.D. Page 15.

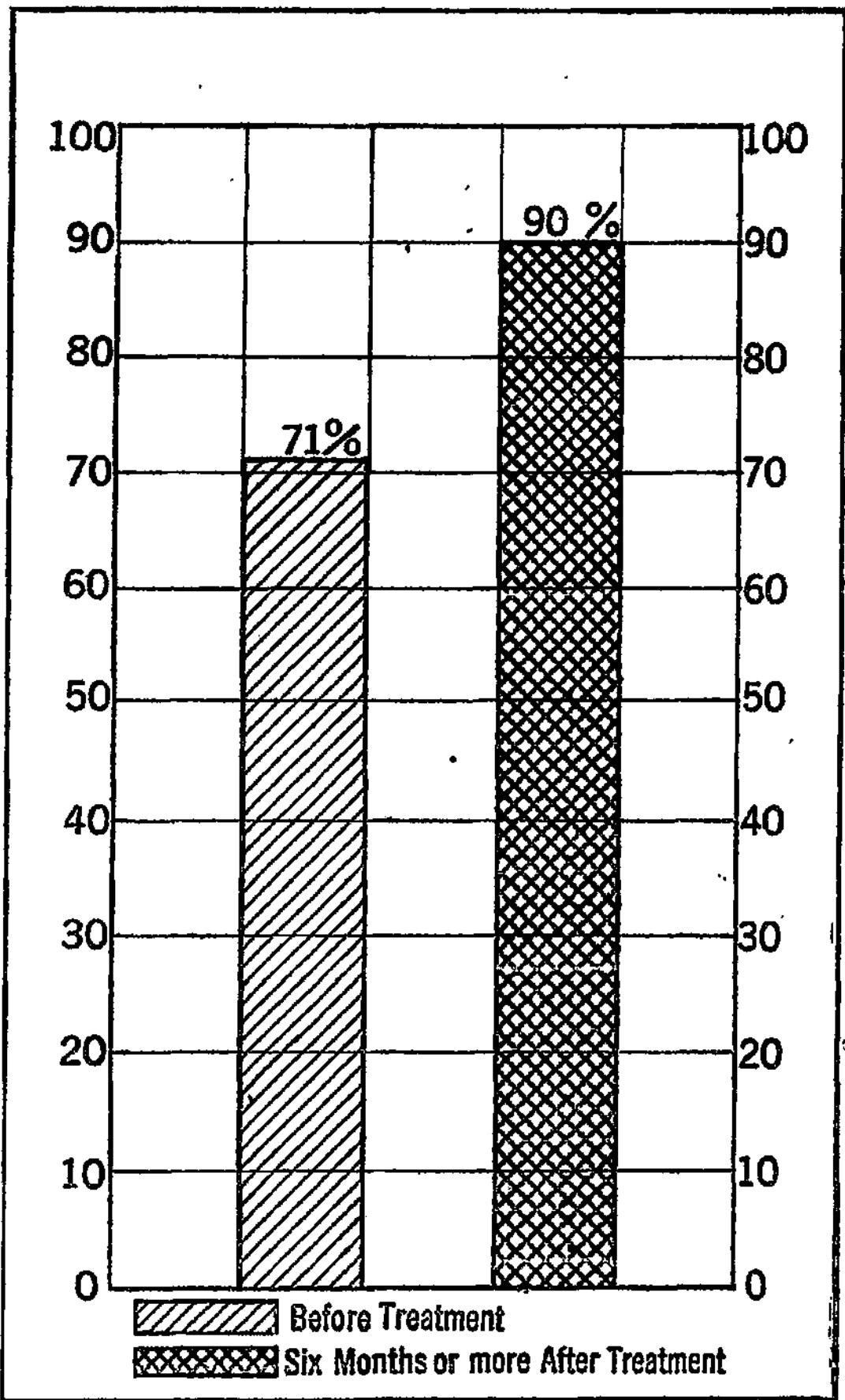


Fig. 15—Increase in Hemoglobin of 711 Persons Treated for Hook-worm Disease. Dutch Guiana

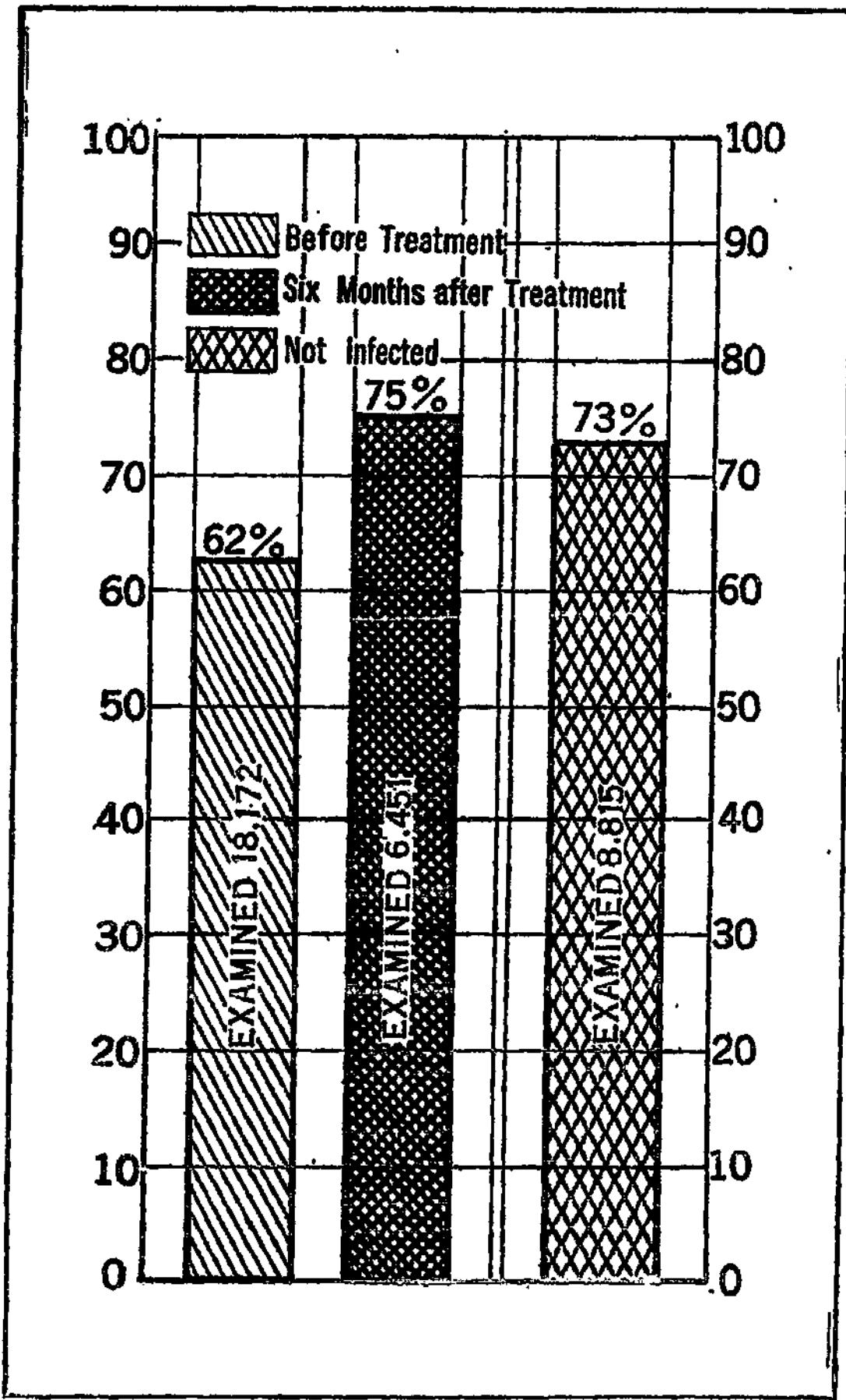


Fig. 16—Hemoglobin Index of Infected Persons Before and After Treatment Compared with Index of Persons Not Originally Infected with Hookworm Disease. Costa Rica

working capacity by only ten per cent., a gain of more than 30 millions sterling would result in India each year.

#### TREATMENT AS A MEANS OF EDUCATION

Worthy as would be the endeavor to relieve the physical suffering and increase the personal efficiency of those who are afflicted with hookworm disease, it cannot be said too plainly, nor repeated too often, that the most important objective is to educate the people of an infected community or country, both as to the cause of the disease and as to the means of preventing it, so that they themselves, with the aid of Government, will initiate and maintain those primary reforms in sanitation that will ensure permanent control. There is no more effective means of popular education on this subject than systematic treatment. When properly conducted, the work of treatment teaches the people by demonstration what the disease is, and what it means to them as a menace to their health and working efficiency. Moreover, it teaches them how they get it and how they can prevent it. Thus it enlists their interest in carrying into effect the necessary sanitary measures that will guarantee prevention.

It may therefore be said that the work of

treatment is essentially educational. The field directors, in the course of their routine labors, tell the story of hookworm disease to the people in simple terms and in varied graphic forms. Pulpit and press are both enlisted and large use is made of pamphlets, leaflets, and circular letters. Among the natives in many of the tropical countries the story must be presented in the most direct and concrete terms. Among these primitive people the field directors rely largely upon telling the story by word of mouth, and as they tell it they illustrate its details by means of lantern slides and photographs. Typical cases are used as object-lessons and gross clinical symptoms pointed out. Specimens of the patients' stools are shown, and the eggs of the parasite exhibited under the microscope. The parasites actually expelled by treatment are also shown, as are the living, squirming embryos that live by teeming thousands in the soil that has been befouled by an infected person. The recovery that follows treatment and cure tells its own story, both to the patient and to his friends and neighbors. The disease thus lends itself so readily to simple demonstration that even the ignorant natives of tropical countries easily understand its whole story.

Moreover, the relief and control of hookworm disease is an object-lesson in the relief and control

of disease in general. Having seen this one disease brought under control and having had the worth of the effort brought home, people are prepared to give heed when spoken to about diseases that are not so easily controlled. This is the principal reason why the funds and labors of the International Health Board have been, for four years, devoted so largely to efforts looking toward the control of hookworm disease.

#### TREATMENT AS A MEANS OF CONTROLLING HOOKWORM DISEASE

That systematic treatment for hookworm disease is efficacious in reducing the degree of infection has been repeatedly demonstrated. Pending the completion of studies now in progress, no definite statement as to the amount of reduction in infection following treatment in the Southern States is warranted. Figure 17, page 128, compares, for the 48 counties in those States in which both dispensary and intensive work have been conducted, the rate of hookworm infection found among all persons examined at the beginning of dispensary work prior to December 31, 1914, with that found among all persons examined in the same counties at the beginning of intensive work and subsequent to January 1, 1915.

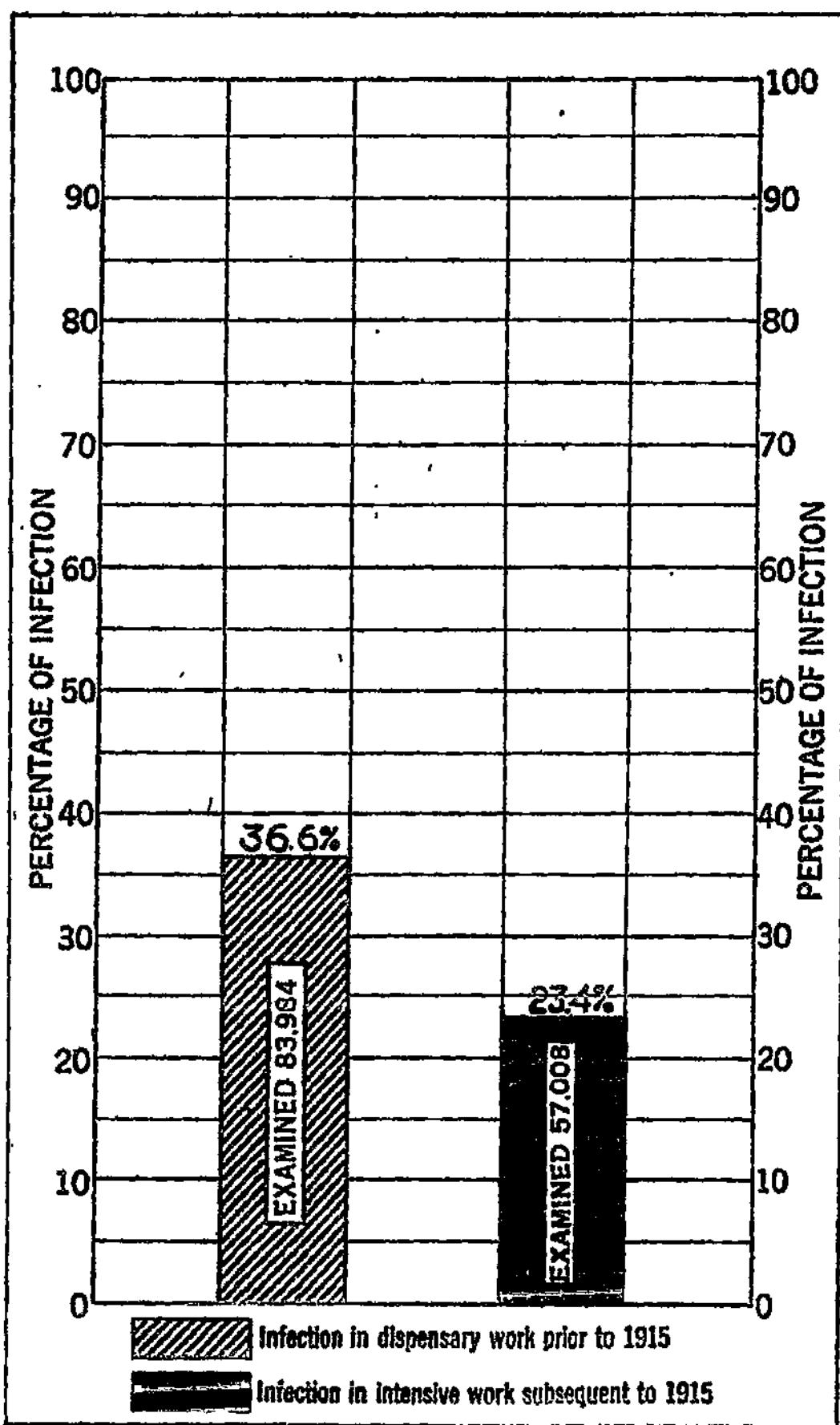


Fig. 17—Reduction of Hookworm Infection in 48 Counties of the Southern States

It is probable that in the dispensary work a larger proportion of infected than of non-infected persons responded to the invitation to be examined. Nevertheless, these figures indicate that for all the counties in which both types of work have been conducted, the average infection has been reduced from the rate of 37 per cent., established by the examination of 83,984 persons in the earlier dispensary work, to the rate of 23 per cent., found by the examination of 57,008 persons in the later intensive work. This exhibit suggests that of every three persons who formerly had the disease, one is no longer infected.

#### TREATMENT FOR HOOKWORM DISEASE AS A MEANS OF REDUCING GENERAL SICKNESS CALLS

Figures showing a remarkable reduction in sickness calls, for all diseases, following treatment of estate laborers for hookworm disease, are furnished by the superintendent of seven estates in Ceylon. On these seven estates the work of treatment was carried out during the early months of 1917, although in certain instances it was not completed until November and December. This has prevented a complete record being obtained of the full benefits resulting from treatment.

These figures show a decrease of 1,132 calls,

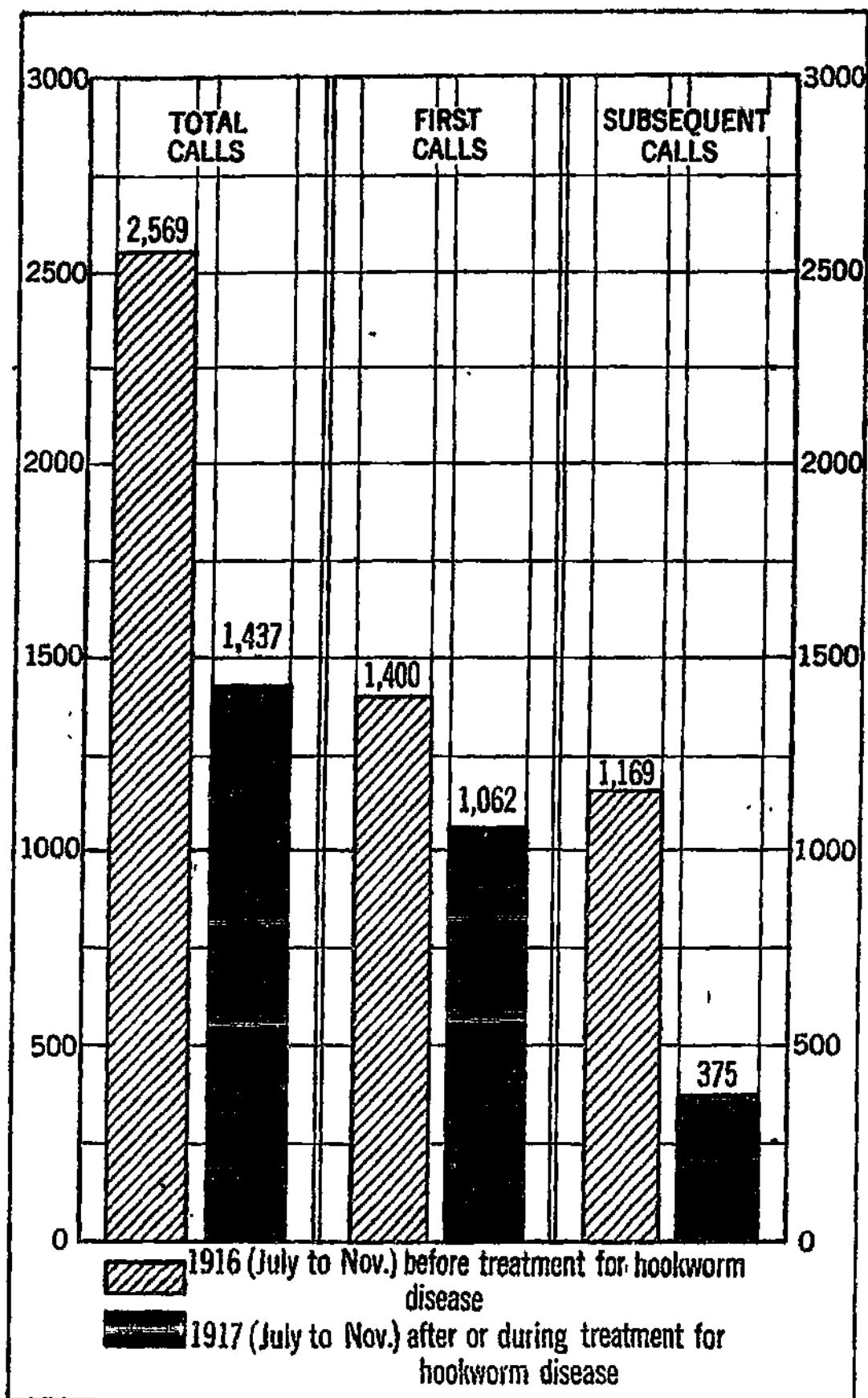


Fig. 13—Reduction in Sickness Calls from All Diseases. Seven Estates Treated for Hookworm Disease. Ceylon

or 44 per cent., during the months of July, August, September, October, and November, 1917, as compared with the same months of 1916. The largest reduction, 68 per cent., occurred in the calls for second and third treatments. This would seem to indicate that the improvement in health effected by treatment for hookworm disease resulted in the patients being more readily cured of this and other diseases. (See Fig. 18, page 130.) There was a marked decrease in bowel complaints and in malarial fevers among the coolies on these estates.

# V

## SOIL SANITATION AS A MEANS OF CONTROL

It has been suggested in the previous chapter that hookworm disease may be controlled by the treatment and cure of infected persons; but curing individuals of hookworm infection is of comparatively little value unless at the same time steps are taken to prevent reinfection. Since every embryo in the soil was hatched from an egg which came from the intestine of an infected person, it follows that if all carriers were cured, and kept cured, the soil would tend to become sterile and the parasite would become extinct. It is also true that, inasmuch as the disease is spread through the deposit of feces in places where the eggs can thrive and the larvae get into the body, its permanent prevention is above all else a matter of soil sanitation. And soil sanitation is here used to indicate the prevention of soil pollution by the voiding of excrement and urine into proper latrines, instead of indiscriminately upon the ground. If that is done the larvae cannot reach the human host.

**PROBLEM OF SEWAGE DISPOSAL**

The seriousness of the problem of sewage disposal is indicated by the following figures. A survey was made (in 1912-15) in 770 counties in 11 states of the United States with a view to ascertaining the conditions responsible for the prevalence of hookworm infection. At only six-tenths of one per cent. of the 287,606 farm houses examined were the provisions for the prevention of soil contamination reported by the state authorities as being satisfactory. At 142,230 of the homes there were no latrines of any kind.

Efforts to induce the people to provide and to use some form of latrine that will prevent contamination of the soil have met with a considerable degree of success. But this very success has created a new problem which cannot well be ignored. Simply stated, the problem is this: How shall we find a satisfactory method for the disposal of sewage at the farm home,—one which the people in rural communities can be brought to adopt and to carry out, and one which will prove to be safe in actual experience under the conditions which prevail in these communities? It is believed that out of the growing volume and variety of experience which is being gained there will finally emerge some

form of adjustment that will prove satisfactory. Enough has already been done to afford a satisfactory basis for a critical study of the relative efficiency of the various methods employed.

This work of experimentation will need to be extended over a considerable period of time, and should cover a considerable area of field work, in order to test experience under a variety of conditions. As the work progresses from year to year it becomes increasingly apparent that the control of soil pollution in rural districts, both in this country and in foreign countries, would have a far-reaching effect in lowering death rates and in furthering public health. There is little doubt that typhoid, dysentery, diarrhoeal diseases—especially those of infants in summer time—and similar enteric infections, are to a very considerable extent due to the widespread custom of polluting the soil.

The Rockefeller Institute for Medical Research began, in January, 1916, a series of investigations (in a number of communities in the Southern States) to ascertain the relative efficiency of various types of latrines in soil formations of different kinds. The United States Hygienic Laboratory, the London School of Tropical Medicine, the Indian Research Fund Association, and the College of Agriculture and Forestry at Nanking, China, have especially

interested themselves in the particular problem of making feces available as a fertilizer by making it biologically safe. Extensive field and laboratory investigations along these lines have recently been made by the United States Hygienic Laboratory. The investigations of the London School of Tropical Medicine have established the fact that a substance known as "nitroline" does make the feces safe. It has not yet, however, been determined what effect this substance has upon their fertilizing value.

#### SOIL SANITATION IN MANY COUNTRIES

The demand for commercial appliances for the safe disposal of excrement evidenced by the remarkable increase in the number of firms engaged in their manufacture, is one index of the public interest in soil sanitation. These devices range from simple sanitary cans without seats, selling for less than five dollars, to elaborate septic tanks made of cement, with seats for several persons, and selling for \$100 or more. The Board has been in correspondence with 24 manufacturing concerns that sell toilets to the rural population of the Southern States, excluding those companies selling attachments which can be used only in towns and cities having sewerage systems. Of the 24, none has been in business

longer than five years and practically all have been organized since 1915. Three sell simple cans and pails without seats, six market chemical toilets, and five (principally large cement manufacturing concerns) install septic tanks. The reports received indicate that since these companies entered this field they have sold in this part of the country more than 7,000 sanitary cans, about 3,500 chemical toilets, and nearly 19,000 septic tanks, or a total of about 30,000 sanitary appliances of these three main types, representing a value of approximately \$700,000. This is, relatively speaking, a large sum of money, for it must be remembered that it represents only a part of the voluntary expense assumed by the people of the South, over a short period of time, in the effort to protect themselves from the dangers of soil-pollution diseases.

Kiln Community, Hancock County, Mississippi, furnishes an excellent example of such sanitary reform. When intensive work was begun in this community, the preliminary survey showed that of a total of 305 homes only four had latrine accommodations that could be classed as satisfactory to the State Board of Health. These four had sewerage facilities. The widespread pollution of the soil was, undoubtedly, a contributing cause of the average

daily absence of 20 per cent. of the enrolled school children, and was responsible for the periodic recurrence of dysentery and typhoid epidemics. This conclusion is confirmed by the record of diseases. At the time of the first survey there were 407 cases of hookworm infection among the 1,002 residents who were microscopically examined—a percentage of 41. In addition, during recent years, there have been 12 cases of tuberculosis, 47 of typhoid fever, 184 of malaria, and 384 of dysentery. In all, 238 of the 305 families have had one or more cases of diseases which are due to pollution of the soil.

The efforts of the staff to secure latrine accommodations at each home were successful in every instance but two. Modern, fly-proof latrines were built at 299 homes and 56 additional latrines, of the same sort, were erected at the churches, at the school, at public gathering-places, and at homes where more than one latrine was necessary. The maps on page 138 exhibit the improvement accomplished during the year.

In the summer of 1916 there were 47 cases of dysentery in the logging communities; in the summer of 1917 only one adult and seven children were sick with dysentery. In the interval, in addition to the installation of latrines, homes had been screened, water had been piped to

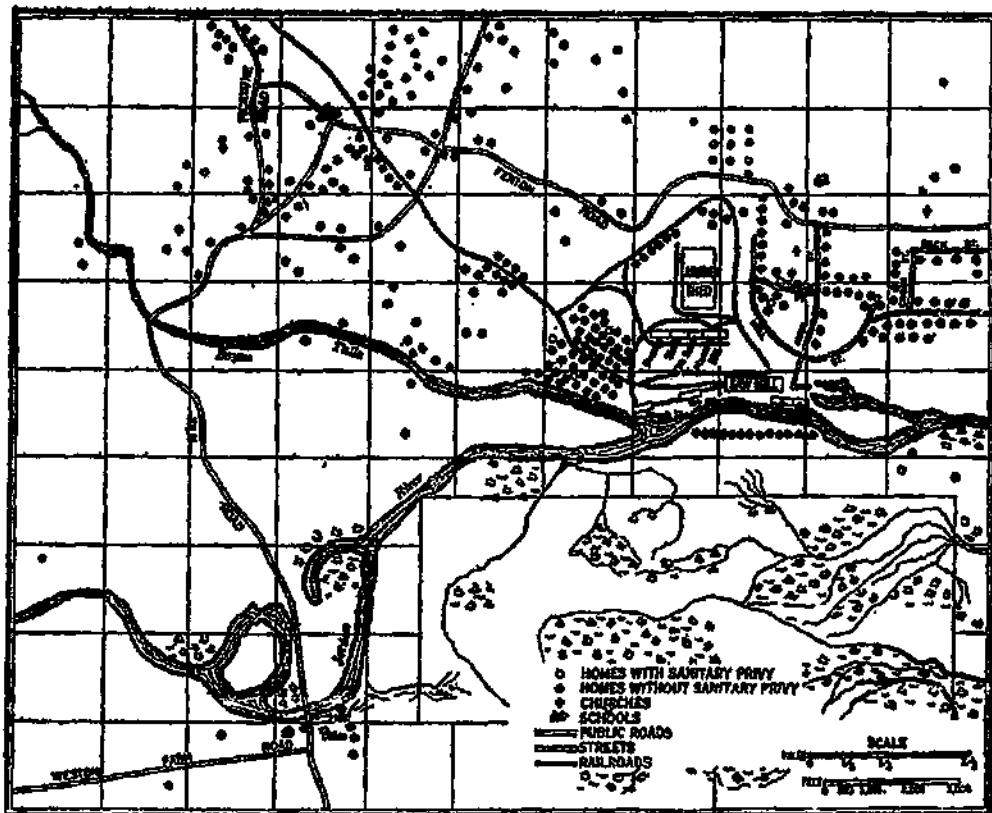


Fig. 19—Sanitary Survey of Kiln Community, Hancock County, Mississippi. Before Intensive Work

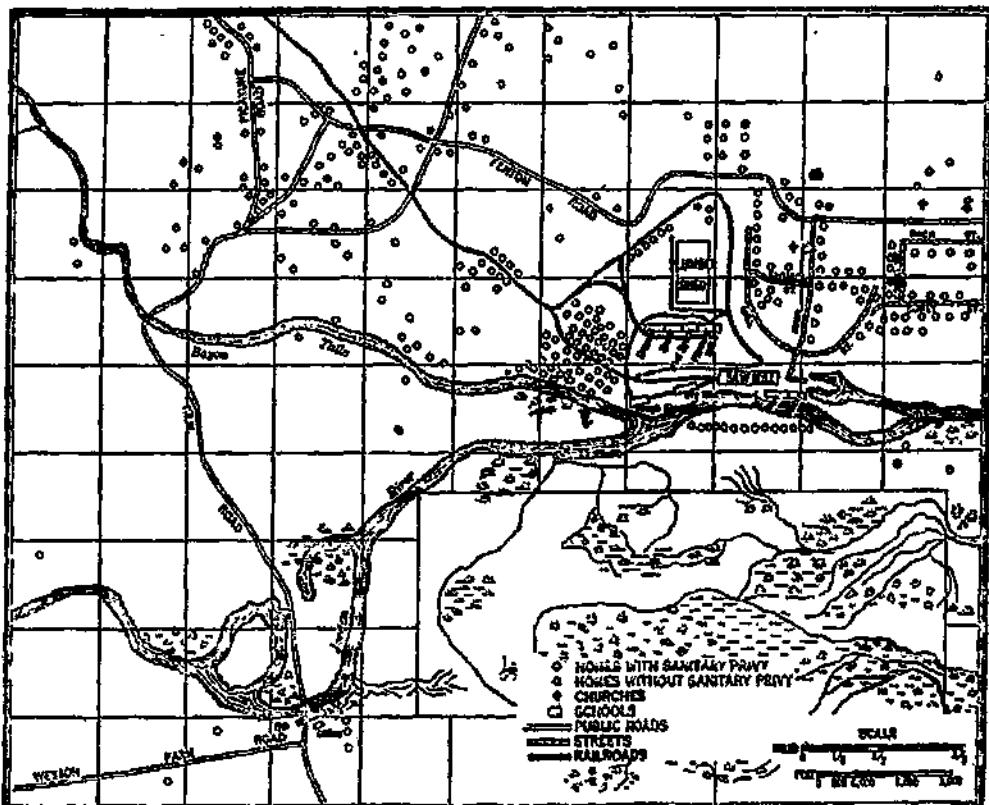


Fig. 20—Sanitary Survey of Kiln Community, Hancock County, Mississippi. After Intensive Work

each house from a newly bored artesian well, garbage cans had been introduced, and the community cleaned up generally. Only one case of typhoid developed in the community during 1917. At the close of the work there were but two danger spots from which soil-pollution diseases were likely to spread. (See Fig. 20, page 138, shaded circles.) During 1917, work similar to that conducted in the Kiln Community, though not in all cases equally thorough, was done in 99 other communities in the Southern States.

In Virginia, the records of the State Department of Health show that the morbidity from typhoid fever has been reduced from 14,400 cases in 1909 to 5,038 in 1917—a reduction of 65 per cent. Taking the reduction year by year, this represents a total saving in cases of typhoid estimated at between 40,000 and 50,000. The State Commissioner of Health, and others familiar with the conditions, attribute much of this striking decrease to the work that has been done in the prevention of soil pollution. There has, probably, been a similar reduction in morbidity from transmissible diseases in other Southern States where systematic health work has been conducted.

In British Guiana, during 1917, the Government, through its corps of sanitary inspectors, supervised the erection of 1,911 new latrines and the repairing of 2,658 old ones. These inspectors, who are required to pass rigid examinations based on a course of instruction in sanitation, are paid by the villages in which they work, but are under the authority of the Local Government Board, a central executive body of the Colonial Government. This plan of control removes the possibility of interference by the village authorities, some of whom are natives quite ignorant of sanitation. The inspectors are located in districts of about 5,000 inhabitants. They usually remain permanently in one district, and it is their duty to see that good conditions are not merely established but maintained. Each year, as the finances of Government permit, additional sanitary inspectors are appointed for other districts, thus gradually extending the territory covered.

Sanitary inspectors have authority not only to compel the building and use of latrines, but also to require the people to cut down under-brush in interlot drains, correct faults in drainage systems and thus prevent mosquito breeding in accumulations of stagnant water, screen all vats in which water for drinking and culinary purposes is stored, and make whatever other



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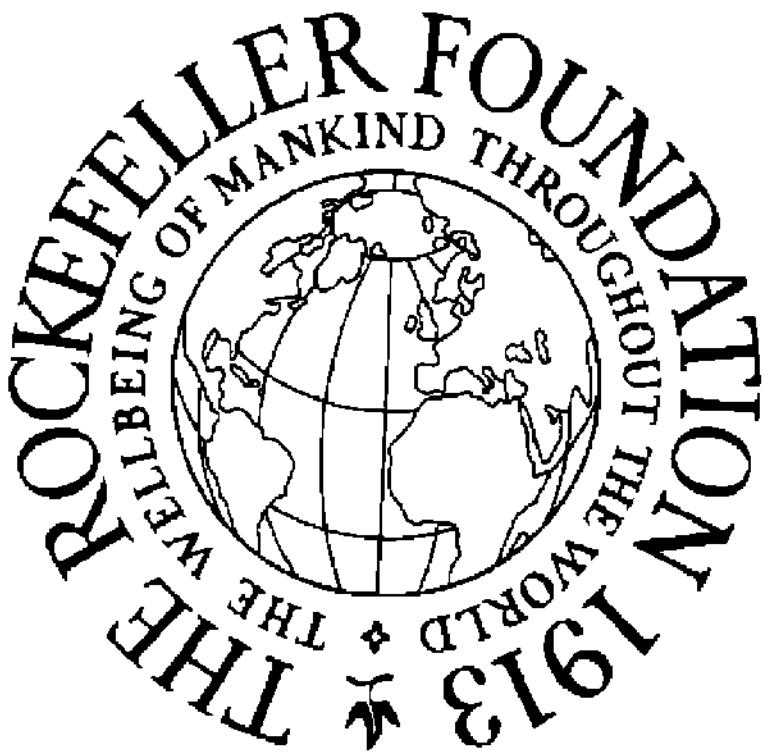
- 18 - ~~about~~ these Indian villages. Houses Close Together. No Provision for Disposal of Excreta. St. Lucia.

improvements in sanitation are deemed necessary in order to ensure the health of the community. It is usually possible to secure these changes by means of education and persuasion; but when these means prove ineffective, legal notice is served that the particular reform must be completed within a specified time. Failure to comply within that time is punishable by fine or imprisonment.

In Dutch Guiana, shortly after the Colonial Ankylostomiasis Commission began its work for the relief and control of hookworm disease, the Government issued police regulations which defined all estates, plantations, and plots of ground as public lands, and then declared pollution of the soil thereon, or failure to keep the ground clean and clear of undergrowth, to be a nuisance punishable by fine or imprisonment. Longer terms of imprisonment and heavier fines are stipulated for defiling any water supply, water course, or reservoir of water customarily used for drinking or washing purposes.

In the course of the past year an act known as the Ankylostome Regulation, designed to support and further the work against hookworm disease, was drawn up. This act makes compulsory the construction of latrines of approved type at all habitable houses and at all public

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## Photograph Excised Here

Fig. 22—Pit Latrine. Concrete Superstructure. To be Made Fly-Proof. Coffee Plantation. Guatemala

## Second Intentional Exposure

buildings such as schools and churches. Landlords and proprietors (not tenants) are held responsible for the installation of latrines on their property, and provision is made for the appointment of one or more inspectors to see that the regulations are enforced. This act, which has been approved by the Netherlands Government, and which is to be made fully effective against hookworm disease through special decrees of the Colonial Governor, will greatly aid in bringing the disease under eventual control.

In Nicaragua, during 1917, the National Congress enacted a law providing for house to house inspection, once a month, for the purpose of observing sanitary conditions. Local authorities are vested with the power to compel the remedying of deficiencies in old latrines or, where necessary, the construction of new latrines which conform to models approved by the Superior Board of Health. If a laboratory of the Department of Uncinariasis is operating in a town, the law provides that visits be made in company with the technical assistants connected with the laboratory, who thus become invested with the character of sanitary inspectors. The Governor of each department is charged with the enforcement of the decree.

In Guatemala, a presidential decree was issued during the year which makes obligatory the installation and proper maintenance of latrines. As a result many villages and plantations have introduced such sanitary measures as removing rain barrels and tin cans containing stagnant water, filling in or draining backyards and swampy areas, making filth and rubbish inaccessible to fowls and animals, and either correcting defects in old latrines or constructing new ones. The crowding of thousands of people in the public parks, without toilet conveniences, following the earthquake of December 25, not only offered unlimited opportunities for the spread of disease but at the same time brought to the attention of Government and people as never before the pressing importance of latrines.

#### SANITATION OF THE SOIL IN ADVANCE OF TREATMENT IN CEYLON

More and more it is becoming possible to limit the curative work against hookworm disease to areas in which measures for the prevention of soil pollution have been carried out in advance. The reason for this is the increase in laws requiring the construction of latrines. It is strikingly true in Ceylon, where a widespread movement for the prevention of soil

pollution is under way. In November, 1916, regulations requiring the installation of sufficient latrines on all estates within the period of one year were enacted. Thus, on the three areas in which work was inaugurated during the past year (Dickoya, Bogawantalawa, and Norwood), sufficient latrine accommodations had been provided and were in use before the work of examination and treatment began; while in the Matale area, where the work had been in progress since January, 1916, all but two of the 24 estates had been so provided. It was in the Matale area, during 1916, that on one estate the reexamination of coolies who had been cured of hookworm disease showed such a high rate of reinfection as to convince both the Government authorities and the planters of the necessity for carrying out thorough-going measures for the safe disposal of excreta. This experience led to the passage of laws for the control of soil pollution. In Kalutara district, located in the Western Province, the villages are being sanitized and remodeled, and on a recent visit it was found that more than 20,000 latrines had been installed during the year.

## VI

### HOOKWORM DISEASE IN MINES

An investigation of the literature of the subject of hookworm disease in mines was made by the Board during the year. The following paragraphs suggest the conditions existing in a number of European countries.

#### INFECTION IN EUROPEAN COUNTRIES

*In Italy*, the disease has probably prevailed for centuries. In 1908 an infection rate of 38.2 per cent. was found among 429 miners in two mines. In 1913 an infection rate of 57 per cent. was found among 23,063 workers in the sulphur mines of Sicily.

*In France*, investigations were begun by the Government in 1904 which covered 82 per cent. of the 144,133 underground miners. The average percentage of infection was found to be 4.6 per cent. It will be recognized that this comparatively low percentage is for a very large proportion of the total population of the country, and not for a single selected area. Legislation has been enacted which requires mine owners to meet hospital expenses for treatment,

*In England*, the problem is limited to tin mines, of which there are about 50. In the course of a limited investigation 127<sup>1</sup> men were examined; these disclosed an infection rate of 66 per cent.

*In Belgium*, the intensity of infection ranged from five per cent. to 92 per cent. Out of a total of 27,153 underground miners in the Liege district, 3,590 were examined and of this number 818, or 22.79 per cent., were found infected. Of the 72 pits in the district, 49 were infected.

*In the Netherlands*, a survey of six mines made in 1904 showed 373 cases, or 25.05 per cent., among 1,489 miners. The degree of infection ranged from 15 per cent. to 67 per cent. Between the years 1904 and 1914, 36,047 applicants for work in mines were examined and of this number 755 were found to be carriers.

*In Germany*, 32,576, or 16.8 per cent., were found infected out of a total working force of 194,127. The average rate of infection among 12,600 men in six of the worse mines was 54.1 per cent.; in one mine it was 84 per cent. Of the 234 mines subjected to examination, 113 showed evidence of the presence of the disease.

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<sup>1</sup> Unless otherwise stated the figures quoted are for the year 1903.

*In Hungary*, only a small percentage of the total mining population has been investigated. Of the 61,092 underground miners employed, 8,400 were examined, and the percentage of infection was found to be from 85 to 100.

*In Austria*, the conditions are unfavorable to the spread of the disease. Up to September, 1906, only 44 cases had been discovered, based on the examination of 7,517 miners working in 519 mines. These 44 were located in 19 different mines.

*In Spain*, the disease is probably more acute than in any other European country. The infection ranges from 50 per cent. to 95 per cent., and is heaviest in the lead mines of Linares.

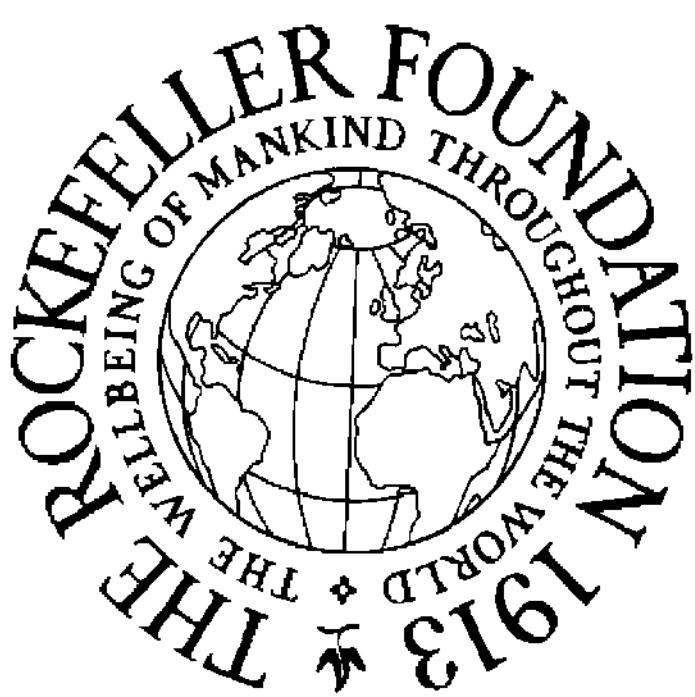
#### INFECTION IN THE UNITED STATES

It is not Europe alone, however, that is interested in the problem of hookworm disease in mines. The whole world is concerned, for, without a passport or by-your-leave, the infection crosses all frontiers. It is, for example, being carried from Europe to the mines of the United States. A survey of the mines of California in 1916 revealed widespread hookworm infection and led to the first systematic

campaign for the control of the disease in mines ever undertaken in this country. Although up to the present time no general survey has been made to determine the precise extent and distribution of the infection, a number of cases of infected miners have been found in the mines of Nevada, North Carolina, Kentucky, Tennessee, and West Virginia. In all probability careful investigations would disclose the presence of cases in the mines of other states.

#### CENTERS OF INFECTION

In practically every country where the disease has secured a firm footing, some one mine, in which the prevailing conditions are particularly favorable, has usually become the center of extraordinarily heavy infection and has served as a relay station from which the disease has been passed forward into new areas. For instance, the seat of infection in Sicily was the mines of San Giovannello and San Giovannello Lo Bue in Lercara, where the degree of infection was 100 per cent. and 96 per cent., respectively; in Hungary it was the Brennberg mine, with an infection of 100 per cent.; in Germany the Graf Schwerin, infection 96 per cent.; in England the Dolcoath mine, infection 94 per cent.; in Belgium the Corbeau aux Berleur, infection 92 per cent.;



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Fig. 23—Group of Miners. All Infected with Hookworm Disease. China

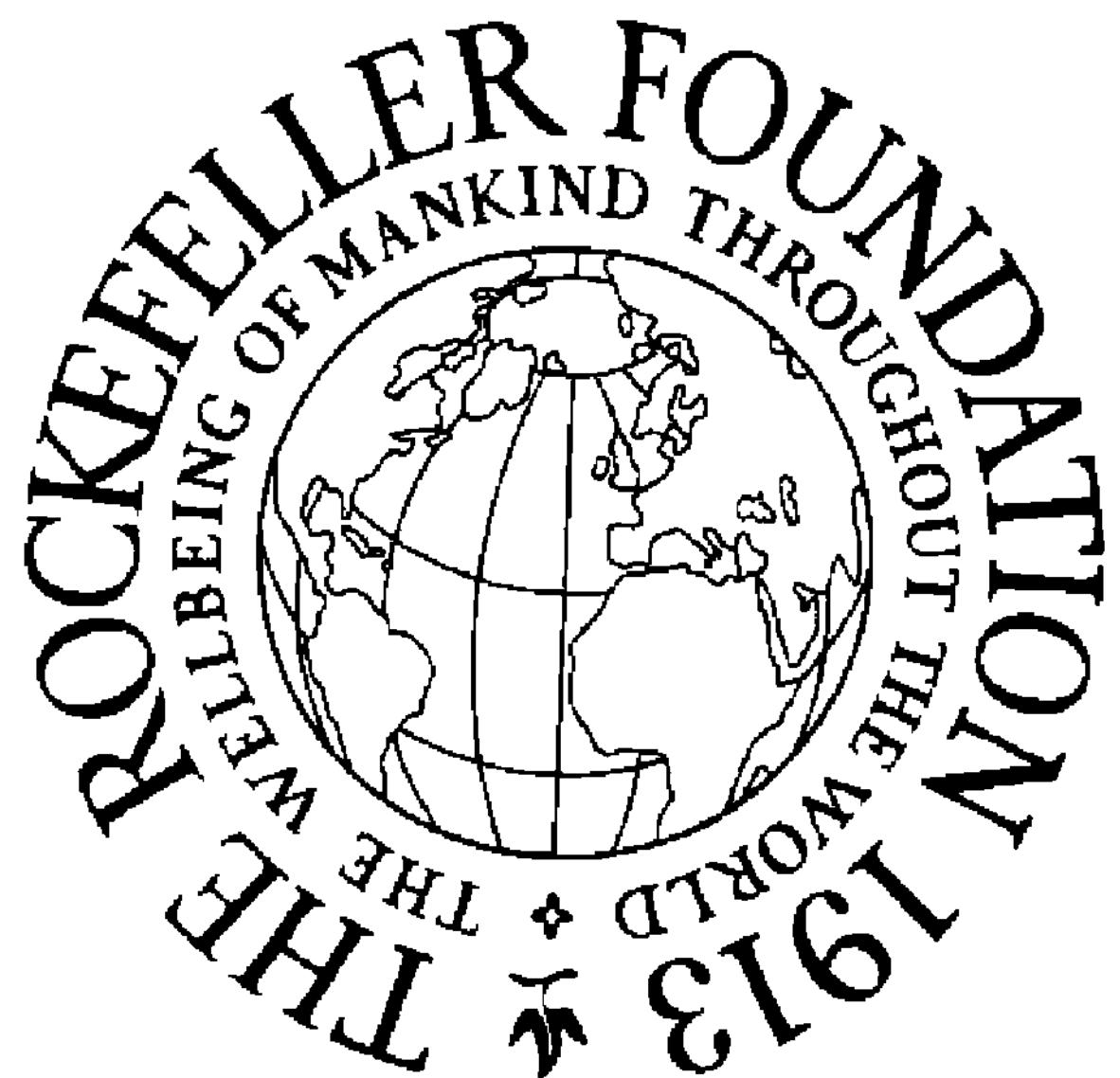
in Spain the Linares mines, infection 75 per cent.; in France the Beraudiere mine (St. Etienne basin), infection 73 per cent.; and in Holland the Neuprick, infection 67 per cent.

#### MEASURES OF CONTROL

The measures of control which have proved most effective are: (1) provision of underground latrines and stringent enforcement of their use; (2) location of infected miners by means of thorough microscopic examination of stools; (3) treatment of those found infected and dismissal of those who, after treatment, remain uncured; (4) refusal of employment to applicants unless, after careful microscopic examination, they are found to be free from infection; (5) periodical reexaminations of miners who are most likely to become exposed to reinfection, in order that new cases may be promptly located.

#### RESULTS OF CONTROL MEASURES

The employment of these several measures has resulted in a marked reduction in infection. Among the 194,127 miners examined in Germany in 1903, before the introduction of measures of control, 32,527 were found infected. In 1912, after these control measures had been in operation for nearly a decade, only 497 carriers were found among 277,627 miners examined; a reduc-



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Fig. 24—Chinese Mine. Naked Bodies Offer Ready Access to Hookworms

tion from 16.8 per cent. to .18 per cent. In the Netherlands, the reduction of infection during the decade from 1903 to 1913 was from 25 per cent. to .32 per cent. In the Liege district of Belgium, the reduction of infection was from 22.79 per cent. in 1902 to 1.2 per cent. in 1913. Germany, Holland, Belgium, and England are the only countries which have made any considerable effort to control hookworm infection in mines.

#### PRELIMINARY WORK IN CHINA

Realizing the importance of this phase of the work of hookworm control, the International Health Board has undertaken a demonstration in the control of the disease in the Pinghsiang Colliery, in the Kiangsi Province of China. The Board is working in cooperation with Government and mining interests. In this mine, the largest in the country, probably about 11,916 miners are employed; 7,345, or 62 per cent., of whom are underground workers. The preliminary survey indicated a rate of infection of 85 percent. among these underground workers. The rate among workers on the surface was found to be 32 per cent. (See Fig. 25, page 155.)

There are many opportunities for acquiring the infection. Not only are the miners' feet bare, but their bodies are often naked, and in the low

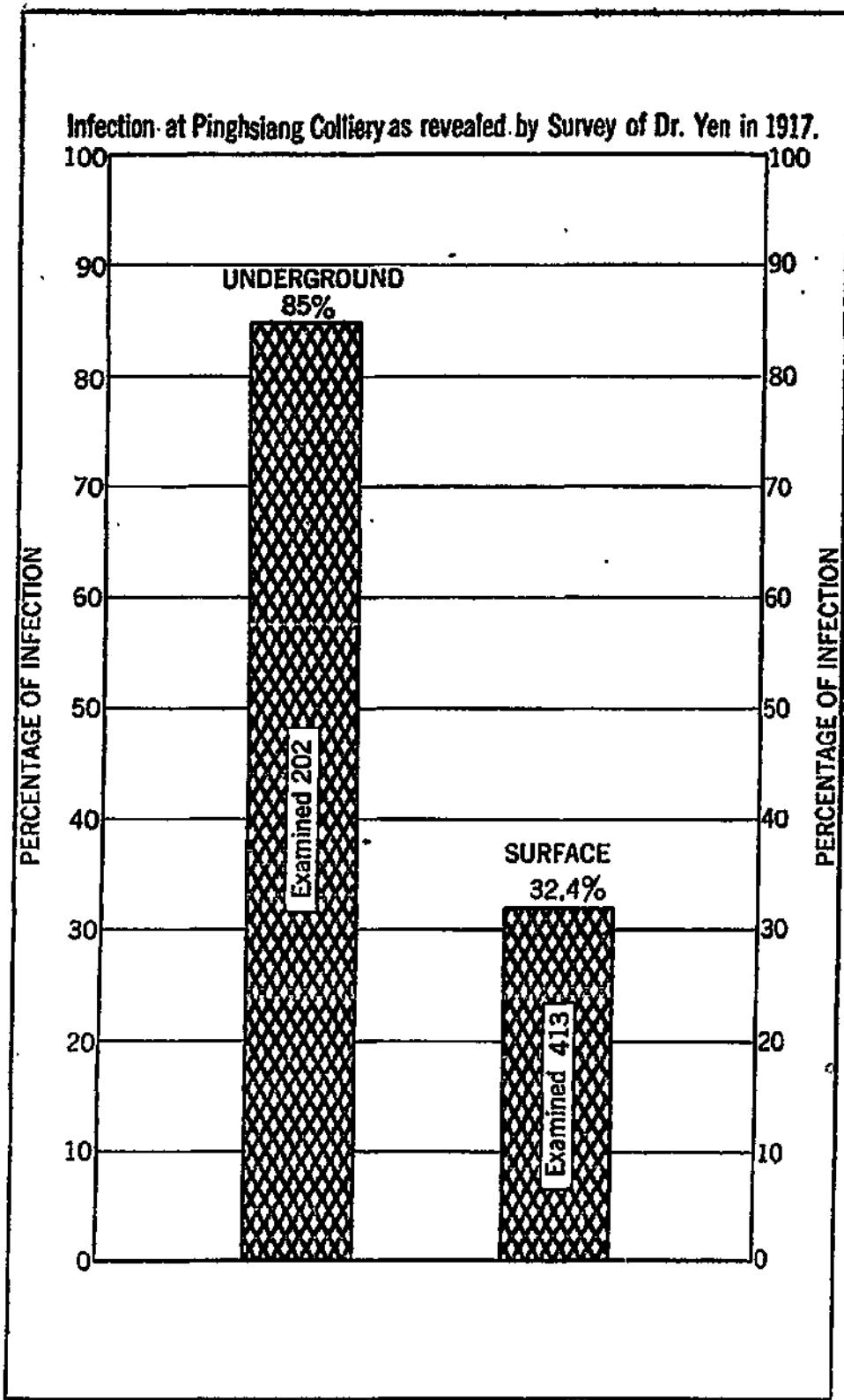


Fig. 25—Hookworm Infection at Pinghsiang Colliery. China

places it is not uncommon for their entire uncovered bodies to come into contact with highly infected mud. (See Fig. 24, page 152.) The lack of latrine accommodations underground means that the excrement is deposited everywhere throughout the mines. The high temperature and extreme humidity make for the propagation of hookworm larvae. Water trickling from the roofs and through the walls of the galleries keeps the interior moist. Sitting on the wet ground but once is said to result in symptoms of ground itch. Still other opportunities for acquiring the infection are afforded by the fact that water in the drains is often used for drinking and for washing. However, the custom among the Chinese of boiling their water and making it into tea before drinking it, reduces somewhat the danger of infection.

In carrying out measures of relief and control, the Board is undertaking to conduct the initial examination and treatment of the miners and to offer suggestions as to needed sanitary improvements. The mining authorities have contributed 20,000 Mexican dollars to the work of control and are cooperating in the introduction of necessary sanitary measures. There is every probability that a permanent sanitary department will be established after the Board has withdrawn its staff.

## VII

### LOCAL SUPPORT OF THE WORK

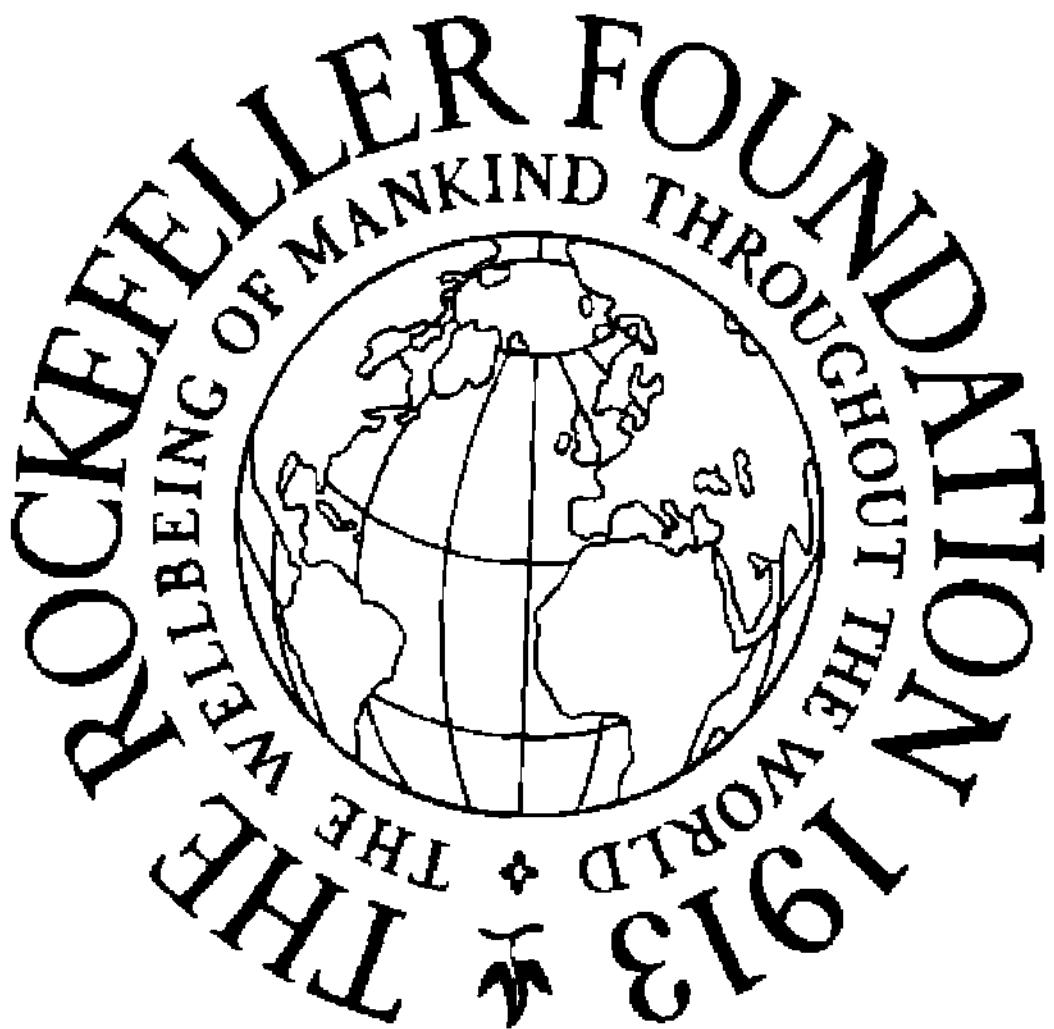
During the past four years, the Board has co-operated in the control of hookworm disease in a dozen states of the Union and in more than a score of foreign countries. Probably the outstanding, and certainly the most gratifying, feature of the work during the past year has been the degree of financial responsibility assumed by these several communities and countries. Year by year, as the work has progressed, an increasingly large proportion of the total expense involved has been borne by the Government, thus gradually preparing the way for the ultimate withdrawal of the Board. A few illustrations of this increasing measure of local support are here cited.

#### THE WORK IN BRAZIL

Brazil furnishes an excellent example. Less than two years ago, on invitation by the Government of the State of Rio de Janeiro, the Board sent a representative to begin operations in that country, in cooperation with Government. First, an infection survey was made of the entire State of Rio de Janeiro. This survey, which was

finished in the month of March, showed the geographical distribution and degree of infection, and the sanitary conditions which were responsible for its presence and spread. The finding of an average infection of nearly 90 per cent. among the inhabitants of the unsewered localities and country districts of the State, and of approximately 80 per cent. among the entire population of the State, provoked serious interest in the problem. The survey was followed by a demonstration, in a selected area, of work for the relief and control of the disease.

When this first unit began operations on May 1, 1917, the occasion was marked by appropriate ceremonies in Rio Bonita. Cordial felicitations were received from the National Academy of Medicine, from the President of the Oswaldo Cruz Institute, and from the President of the State. The previous day, April 30, the President had signed a decree which established a Service for the prevention of hookworm disease as a part of the Department of Hygiene and Public Health. The Board's Director in Brazil was appointed Chief of that Service. The Legislative Assembly, by unanimous vote, has enacted a sanitary ordinance requiring the installation of latrines and has begun the organization of a permanent sanitary staff. Funds for this first demonstration were supplied by the Board. Before the demon-



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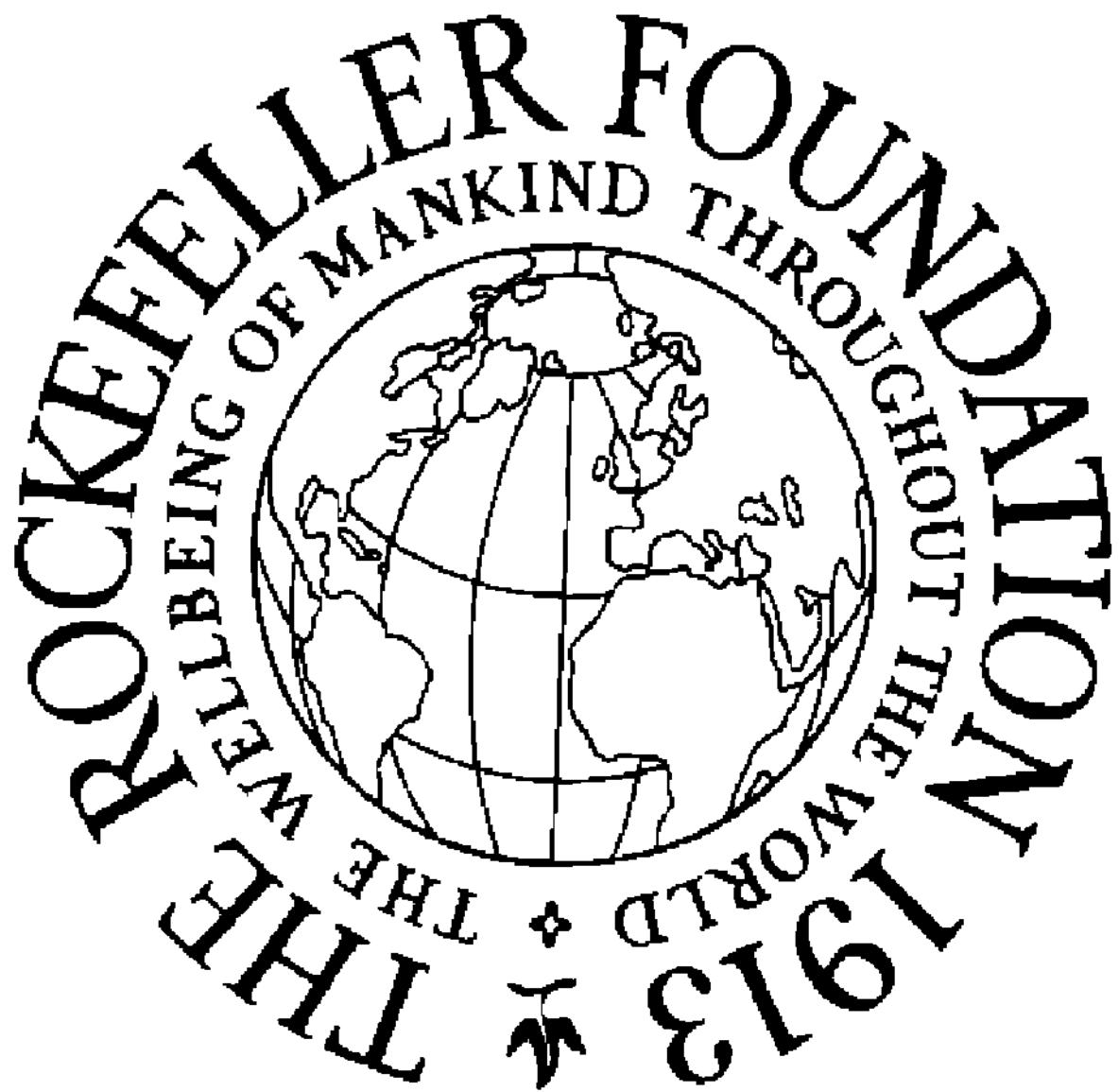
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Fig. 26—Nurse Making House to House Calls. Fisherman's Family Receiving Treatment. Intensive Work Against Hookworm Disease. Ilha do Governador, Brazil

stration had been completed, work in another area was requested on the basis that the funds be supplied one-fourth by the state, one-fourth by the local government, one-fourth by the estate owners (sugar planters), and one-fourth by the Board. This proposition was accepted.

The Federal authorities, having already ascertained the prevalence of infection in the Federal District, asked that a demonstration be undertaken in a selected area within the District, and proposed to supply in funds and personnel one-half the cost. The area selected is the Ilha do Governador, an island in the Bay of Rio de Janeiro. It was selected because it is economically important, because its well-defined natural boundaries and its fixed population afford excellent opportunity for an effective demonstration to be made, and because its proximity to the national capital (45 minutes by ferry) makes it extremely easy for interested Federal and State officials to watch the progress of the work. Up to the close of the year, 3,762 persons had been examined, of whom 2,537, or 67.4 per cent., were found infected.

The Federal Health Service supplied a physician to assist the Director for Brazil in carrying out this demonstration, with a view to his becoming well-trained in the work. The Government is also furnishing a staff of 11 nurses, is



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Fig. 27—Severe Case of Hookworm Disease Taking Medicine under Direct Observation of Nurse. Brazil

printing the necessary forms, and is providing a house for the laboratory, sleeping quarters for the staff, and free transportation for the material used in the work. The Board is called upon to provide only the medicines and the staff of three microscopists needed to examine specimens. Before the work in this area had been completed, Government provided funds for the simultaneous operation of five additional units under its own direction. The staff which is being organized and trained in the work is a part of the permanent Government sanitary organization designed for the control of hookworm disease and other diseases throughout the Federal District.

Following the demonstration in Rio de Janeiro, the State of Sao Paulo also invited cooperation in carrying out an infection survey and demonstration, Government offering to pay one-half of the expense from the beginning. Active operations were begun in the month of November in the town of Iguape, the county seat of a municipio situated on the sea coast, in which conditions are very favorable for the spread of hookworm disease. Up to the end of the year, 400 persons had been examined, of which number 394, or 98.5 per cent., were found infected. Towards the close of the year, the Director of the Public Health Service arranged with the Board to organize another unit for this State, agreeing



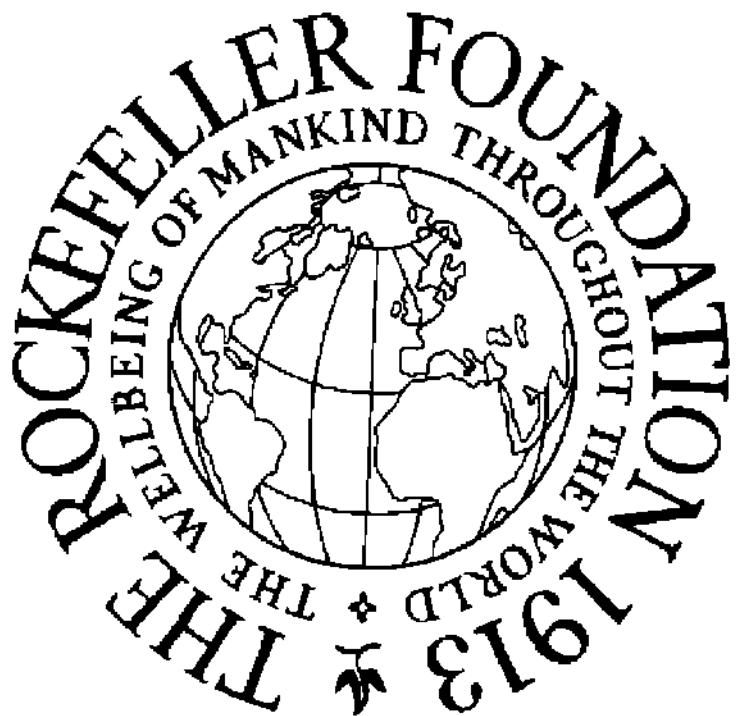
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Fig. 28—Headquarters for Work Against Hookworm Disease. Matale, Ceylon

to pay two-thirds of the necessary expenses. In addition to this, the State has undertaken to build up a permanent sanitary organization and to sanitize all areas in advance of examination and treatment. Figure 30, page 166, indicates graphically the increased proportion of the expense being borne by local agencies in the State of Sao Paulo (Brazil), in Ceylon, and in North Carolina.

#### COOPERATION IN CEYLON

One-half the necessary funds for carrying on the work in Ceylon are supplied by the Government. It has, moreover, undertaken the task of organizing, training, and maintaining a permanent sanitary staff charged with the duty of providing measures against soil pollution, in all areas, in advance of the examination and treatment of the people. It is providing also for the training of medical officers, who will be prepared to carry the work forward after the Board withdraws. The people are instructed as to the seriousness of hookworm disease and as to the gains to be derived from primary sanitation. Villages in which lectures, or lantern demonstrations, on hookworm disease are held often elect a health committee at the close of the meeting and entrust this committee with the task of persuading the people to provide themselves with latrines



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Fig. 29—Group of Hookworm Patients Gathered for Treatment at Assembly Ground. Ceylon

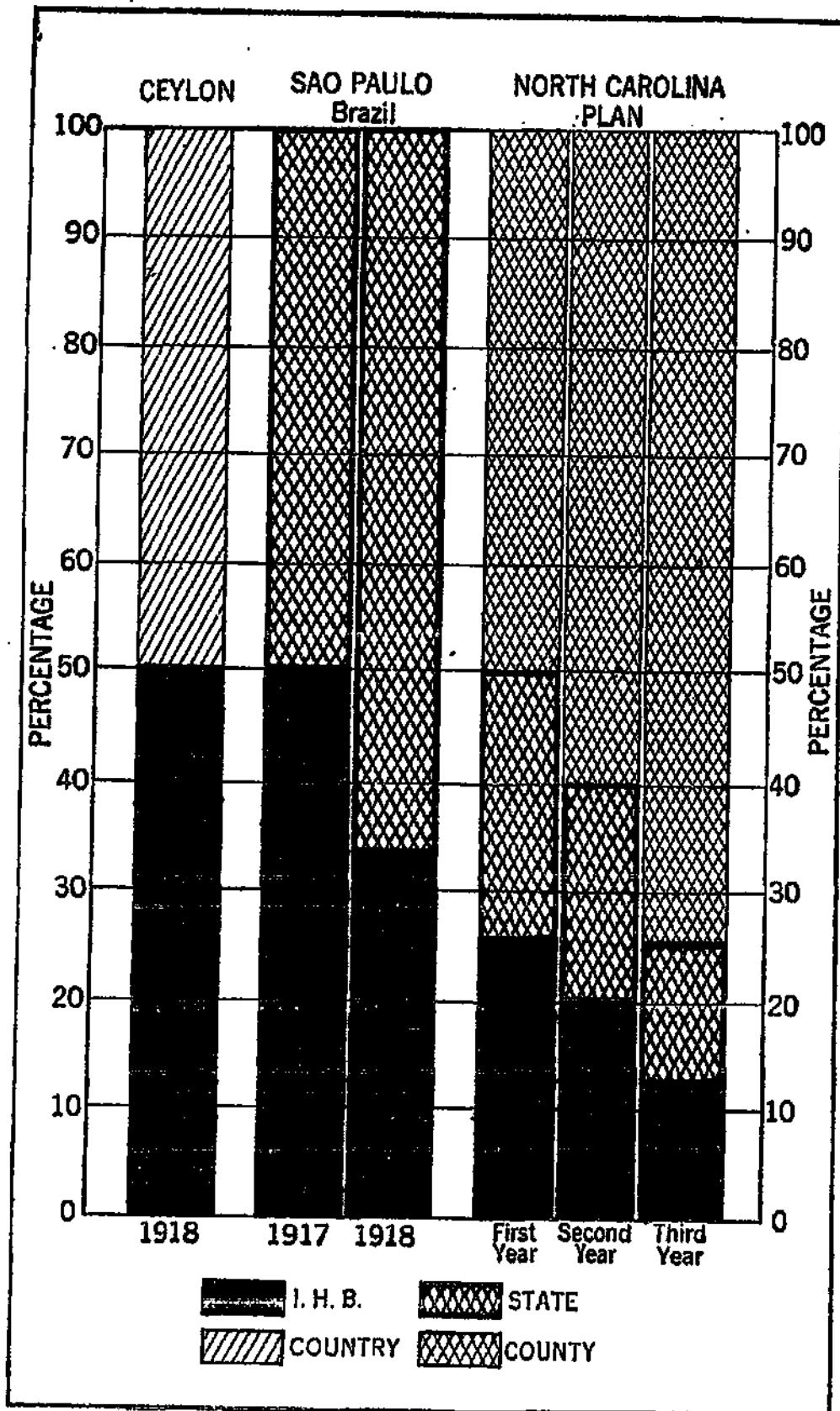


Fig. 30—Proportion of Expense for Work Against Hookworm Disease Being Borne by Ceylon, State of São Paulo (Brazil) and North Carolina, and Proportion Borne by International Health Board

and, in other ways, to improve health conditions. For example, in the district of Panadura, one of the influential Singhalese has joined the local committee and is assisting in the work among the poor: among other things he is planning to open a dispensary for the treatment of hookworm disease. Such results as these are particularly gratifying when it is remembered that the villages of Ceylon, with their mixed population, class distinctions, and religious prejudices, have long constituted one of the most perplexing problems in connection with the work.

The realization by estate owners of the benefits to be derived from the treatment of their laborers, has facilitated the work of control on these estates. Planters agree in advance to give active support to the undertakings. They provide, at reasonable cost, an adequate place as quarters, with an office for the director, accommodations for the laboratory and office staff, and board and lodging on each estate for one or two dispensers. They also assist in taking the census and in assembling the laboring force for treatment on specified days. In nearly all cases the planters also provide help for the dispensers, an assembly ground protected from rain and sun where the laborers can be kept during treatment, and an allowance of rice to be used in preparing "konje" for distribution before and after treatment.

**SUPPORT IN SOUTHERN STATES**

When the work was originally begun in the South, under the direction of the Rockefeller Sanitary Commission, the total expense was borne by the Commission. As the work has progressed, the states, counties, and local communities have assumed an increasing share of the necessary cost. This change is indicated by the fact that 20 counties have each appropriated a total of from \$3,000 to \$4,000, and 32 counties from ten to 25 cents per capita, for one year's work against soil-pollution diseases. It is even more clearly indicated by the fact that, for the work outlined for the Southern States during 1918, the states and counties are to pay at least two-thirds of the total expense and the Board not more than one-third. Under the three-year program outlined for North Carolina, the Board is to provide not more than 25 per cent. of the necessary funds for the first year's work, 20 per cent. for the second year's work, and twelve and one-half per cent. for the third year's work.

**INCREASE IN STATE HEALTH FUNDS**

There is no better barometer of the interest in public health work than appropriations. That public opinion, in the Southern States, is today

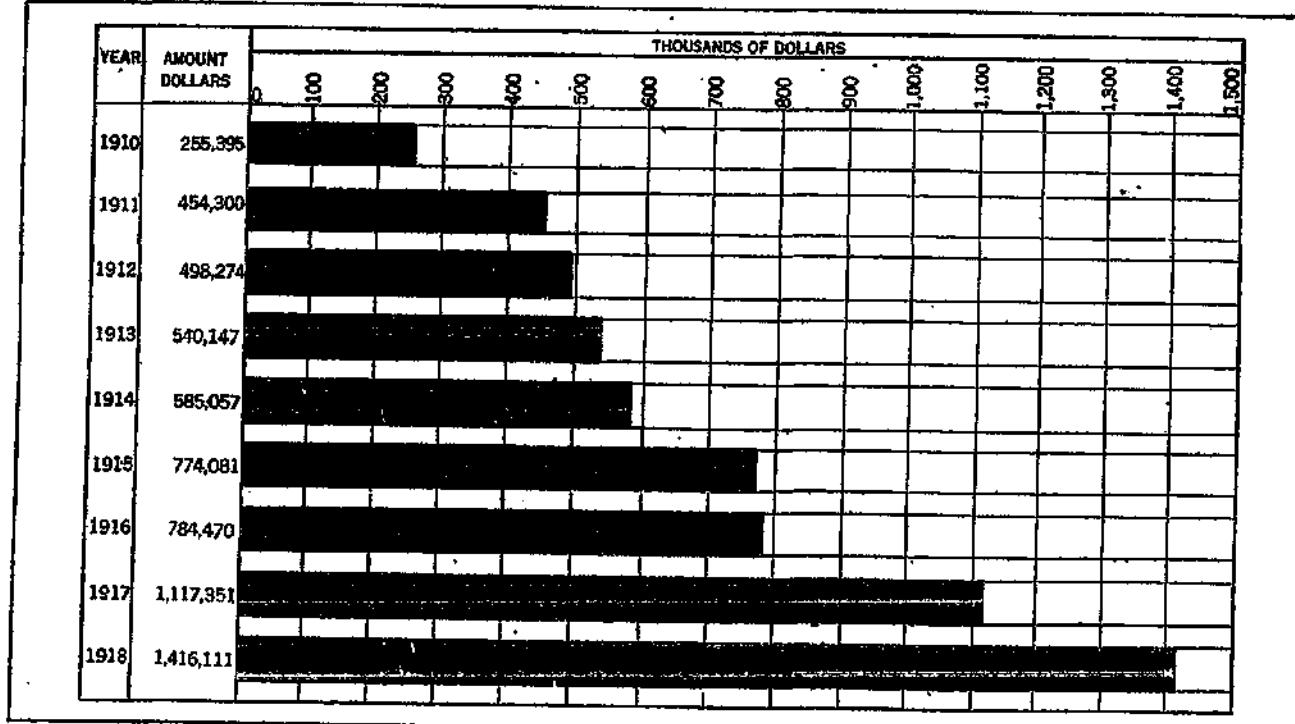


Fig. 31.—Increase in Appropriations of Legislatures to State Boards of Health in Southern States, 1910 to 1918.  
Funds for Antituberculosis Work Included

favorable to public health work is graphically illustrated in Fig. 31 on page 169,<sup>1</sup> which shows the increase in funds placed at the disposal of health departments by the legislatures of 11 states<sup>2</sup> during the period from 1910 to 1918, inclusive. The increased appropriations have enabled health departments to enlarge their personnel and multiply their activities. The amount available for health work in North Carolina in 1910 was \$18,200, while in 1918 it will be \$144,000. The amount available in South Carolina in 1910 was \$31,000 as against \$102,000 in 1918. Reference to the chart will show that the total resources available for the health boards of these 11 States in 1910 were only \$255,395 as compared with \$1,416,111 in 1918—an increase of 454 per cent. in less than ten years.

<sup>1</sup> The percentage of expense borne by the International Health Board, as indicated by the graph, does not include administration expenses.

<sup>2</sup> Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

## **PART TWO**

### **OTHER ACTIVITIES OF THE BOARD**

1

## VIII

### TUBERCULOSIS IN FRANCE

One of the unfortunate results of war conditions has been a marked increase in tuberculosis in a number of the belligerent countries. There are many indications that this has occurred, particularly in Belgium, Hungary, Italy, and France. Early in 1917 the Rockefeller Foundation, acting in response to a recommendation by its War Relief Commission and on assurance from the French Government that the undertaking would be welcomed, engaged Dr. Hermann M. Biggs, Commissioner of Health for the State of New York, to go to France and make a study of the situation in that country. On being advised by Dr. Biggs that the situation was menacing and that the French authorities, who were already taking steps to combat the disease, would welcome American aid, the Foundation, acting through the International Health Board, offered its cooperation to the French Government. On receiving assurances that assistance would be acceptable, the Board appointed a Commission for the Prevention of Tuberculosis in France with Dr. Livingston Farrand, President of the University of Colorado and formerly Secretary

of the American Association for the Study and Prevention of Tuberculosis, as its Director. The Commission arrived in Paris in July, made a survey of the field, established working relations with Government and existing agencies, and began active operations in September.

The policy of the Commission was clearly expressed by the Director when, in response to President Poincaré's warm words of welcome he said, "We are not here to give you instruction, but to fight with you against a common enemy." It is recognized that tuberculosis in France can be brought under control only by French agencies rooted in the life and traditions of the people and working over long periods of time. The Commission, therefore, while taking over a few American workers for temporary service, has sought from the beginning to work with existing agencies in organizing plans of operation and to enlist the services of French physicians and French visiting nurses in the work. These efforts are meeting with cordial response.

As part of a comprehensive plan of operation designed to cover the country, the Commission is centering its efforts on conducting a statistical survey with a view to defining the problem tentatively and laying the basis for a central registry for future guidance in the work; on establishing systems of tuberculosis dispensaries; on

training visiting nurses for service in these dispensaries; and on carrying out a campaign of popular education.

#### TUBERCULOSIS DISPENSARY SERVICE

The antituberculosis dispensary, with all its adjuncts, is the essential feature of an equipment for fighting tuberculosis and for this reason the Commission has made this the starting point in its work. After inspecting a number of admirable French dispensaries already in operation, and conferring with the authorities, it was agreed that in order to have the necessary freedom in testing the application of American methods to French conditions, the Commission should have a number of dispensaries under its own administration. To this end, it selected the 19th Arrondissement of Paris and the Department of Eure et Loire, as representing urban and provincial conditions, the purpose being to operate in each of these, as a demonstration center, a complete system of dispensaries with modern equipment and trained personnel. The work in these centers, while under American supervision, is being conducted in intimate association with local government and volunteer agencies. In the Department of Eure et Loire, for example, dispensaries are in operation at Chartres, Dreux,

Chateaudun, and arrangements have been made to open a fourth at Nogent-le-Rotrou, all under French auspices, but supplemented in equipment and personnel by the Commission.

From these four centers it is planned, by supplementing local effort in similar manner, to reach out as rapidly as conditions permit into the surrounding rural districts. While developing these two centers—designed as testing laboratories in their earlier stages, and as demonstrations and training grounds when more fully developed—the Commission is making a detailed survey of France with a view to simultaneous cooperation with local authorities in other parts of the country. At the end of the year, cooperative relations had been definitely effected or planned in Blois, Tours, Augers, Le Mans, Saint Nazaire, Quimper, Chalons-sur-Marne, Troyes, Lyons, Saint Etienne, Macon, and Bordeaux.

This effort to aid France in establishing a system of antituberculosis dispensaries cannot be understood without taking into consideration the complete cooperation of the American Red Cross. The control of tuberculosis is inseparable from other aspects of public health work and is related with peculiar intimacy to child welfare. The Children's Bureau of the American Red Cross has undertaken a campaign for the



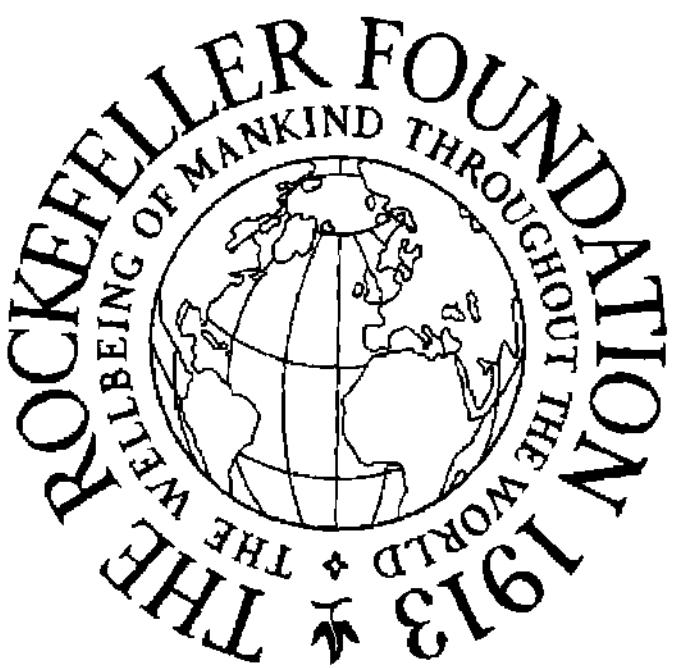
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Fig. 32—Crowd Awaiting Arrival of American Tuberculosis Commission at Rennes. France

promotion of child hygiene and is conducting all its work in cooperation with the Commission for the Prevention of Tuberculosis; children's dispensaries and tuberculosis dispensaries are being housed in the same buildings and are supplementing each other in equipment, in personnel, and in work. The Red Cross is providing funds for the children's work, is supplementing the efforts of local relief agencies, and is aiding in establishing sanatoria to which the dispensaries may send patients needing such care.

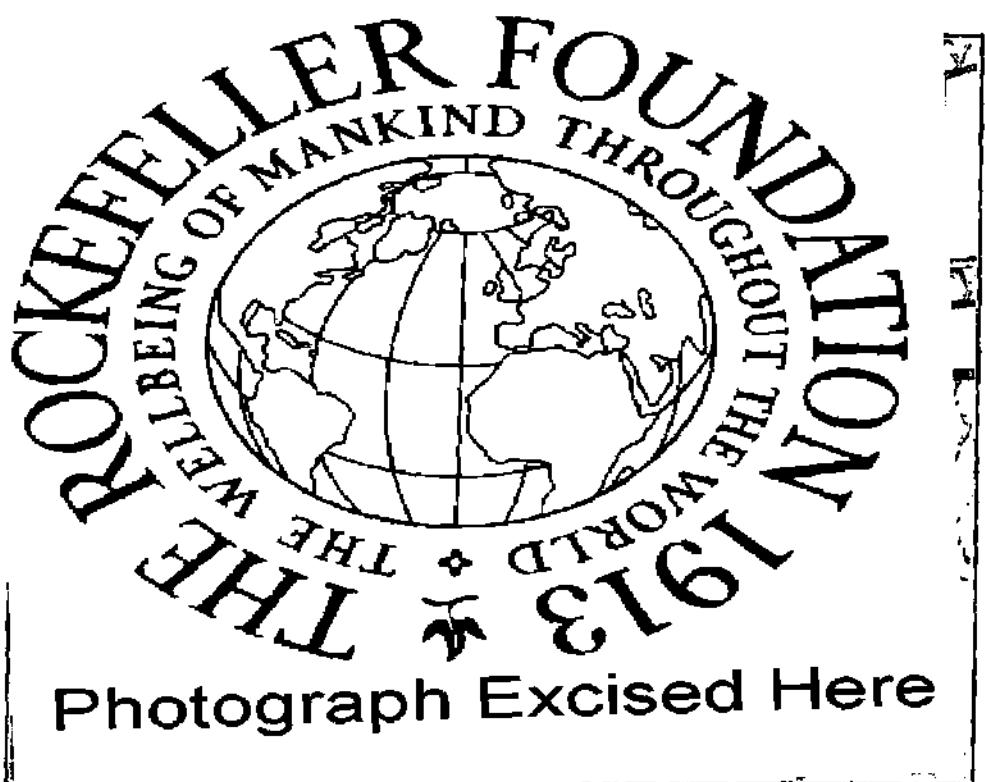
#### VISITING NURSING

If the fight against tuberculosis centers in an efficient dispensary service, the dispensary centers in the work of the visiting nurse, or, to borrow the Commission's better phrase, the *visiteuse d'hygiène*. It is taken for granted that the dispensary will be equipped for diagnostic and medical care of patients, but it is mainly through its staff of *visiteuses d'hygiène* that it will reach the homes, discover the incipient cases, and in time effect such reform in individual hygiene and in family and community conditions of living as to limit or prevent the spread of the infection. It was clear that the opening of dispensaries would rapidly multiply the demand for trained French women, of the right type, to do this work.



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Fig. 33—Mobile Tuberculosis Exhibit. Used in Connection with Educational Campaign. France



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Fig. 34—School Children Listening to Lecture on Tuberculosis. France

To meet this situation, a working arrangement was entered into with the three leading centers for the training of visiting nurses in Paris, a standard course of training was agreed upon, stipends were provided for student-nurses of approved qualifications, and opportunity was provided in connection with the dispensary service in the 19th Arrondissement for practical experience under competent supervision in the daily rounds of the service. Also in connection with this dispensary service, graduates who have had the regular course for hospital nursing are being trained in the visiting and social service sides of the work. The Director of this division speaks with enthusiasm of the type of French women who are entering this service and of the way in which they are measuring up to its requirements. At the close of the year there were 60 undergraduate, and ten graduate nurses taking the course, with the demand for trained workers outrunning the supply.

#### CAMPAIGN OF EDUCATION

An effective program for the prevention of disease must be fundamentally educational. The dispensaries, with their visiting nurses, are, as a matter of fact, educational agencies, each doing permanent and intensive work in its own com-



Fig. 35—Poster Used by Commission for Prevention of Tuberculosis in France

# COMBATTEZ LA TUBERCULOSE

## COMMENT ELLE SE PROPAGE



Coughing or sneezing



Breathing rapidly or coughing



Coughing or sneezing into a handkerchief

### LES ALLIÉS DE LA TUBERCULOSE



Tabagisme



Nourriture



Nourriture



Nourriture

### LES RAVAGES DE LA TUBERCULOSE COMPARÉS À CEUX DES AUTRES MALADIES

VOUS POUVEZ & DEVEZ  
EVITER LA TUBERCULOSE

### LES ENNEMIS DE LA TUBERCULOSE



Le Médecin



Le repos et le travail



Le repos et le travail



Le repos et le travail

### LES ALLIÉS DE LA TUBERCULOSE

La tuberculose est un mal incurable

La tuberculose est une maladie mortelle

La tuberculose protège contre rien

La tuberculose protège contre rien

La tuberculose protège contre rien

### PRÉCAUTIONS QU'UN TUBERCULEUX DOIT PRENDRE



Repos et repos



Hygiène et hygiène



Alimentation et nutrition



Hygiène et nutrition

# COMBATTEZ LA TUBERCULOSE

Fig. 36—Poster Used in Campaign Against Tuberculosis. France

munity. This educational work of the dispensaries is, however, being supplemented by a campaign of popular instruction designed to cover the whole country and to educate the people *en masse*. Its central feature is the traveling exhibit mounted on motor trucks. Each car carries a motor-generator to produce the current for the moving pictures; a moving picture machine with films, slides, and screens; a complete exhibit of 42 panels, and a full supply of printed matter. Each carries a mechanic-driver and a demonstrator, and is preceded by a courier who makes the necessary local arrangements for demonstrations, lectures, and publicity.

By the end of the year the Commission had one traveling exhibit in operation, with a second car ready and two others in preparation; and had developed an extremely effective body of literature for schools, for the press, and for general distribution. The Children's Bureau of the American Red Cross is also represented in these traveling exhibits. The reception accorded these exhibits, by public officials and by the people, has been stirring in its patriotic fervor; the response to the spirit in which American cooperation is offered has been both generous and enthusiastic.

## IX

### MALARIA CONTROL

Malaria, like hookworm disease, is prevalent over a large portion of the globe. These two infections constitute what is probably the most serious obstacle to the development of civilization in the regions where they prevail. For the past few years the International Health Board has cooperated with Government in the carrying out of measures for the control of intestinal parasites in the infected states of our own country and in a number of foreign countries. Recently, with a view to stimulating more energetic measures against malaria, it has interested itself in the problem of malaria control. It has not attempted to put into operation a finished anti-malaria program, but rather to test working methods and to evaluate, separately, a number of control measures.

#### CONTROL BY STERILIZATION OF CARRIERS

Specifically, three control measures have each been given one trial at three different places and a fourth measure in two separate communities. In cooperation with the Mississippi State De-

partment of Health, and under the scientific direction of Dr. C. C. Bass of Tulane Medical School, an experiment was undertaken in 1916 to test the feasibility of controlling malaria in a community by sterilizing the human carriers. The experiment has been carried out in a rural delta community, in Bolivar County, Mississippi, where the extermination of mosquitoes under present conditions is not regarded as practicable. Something more than 25,000 people have been handled in the test. Similar work is being done on a smaller scale, in Sunflower County, as a check, while the results of the test in Bolivar County are being analyzed. In the meantime, no conclusions are attempted beyond the general indication, which seems apparent enough, that the malaria rate in a given community can be reduced by direct attack on the malaria plasmodia in the blood of the human host.

#### CONTROL BY SCREENING

The remaining tests were conducted in the State of Arkansas in cooperation with the United States Public Health Service and the Arkansas State Department of Health. In a rural community near Lake Village, effort was made to test the control of malaria by screening. Every occupied house in the community was screened

with galvanized wire cloth, 16 mesh, and the people were taught not only the importance of keeping the screens in good condition but also the danger of exposure to mosquitoes on the outside after dark. Each home was inspected at regular intervals throughout the season. No other measure was employed. A parasite index, taken in May, 1916, when the work began, showed an infection of 11.97 per cent.; a second parasite index, taken in December of the same year, showed an infection of 3.52 per cent., a reduction of 70.6 per cent. The third index, which it was designed to have taken in May, 1917, and which would have offered a more instructive comparison, was omitted for lack of time. In the autumn of the year, the screens in all the homes were found to be in good repair, and the people—mainly typical plantation negroes—were thoroughly convinced of their value. The average cost of screening in this community was \$14.59 per house. Estimating the life of the screen at two years, the average annual cost of screening would be \$7.29. The per capita cost on this basis was \$1.75.

#### CONTROL BY PROPHYLACTIC QUININE

In another rural community near Lake Village, prophylactic quinine was tried as the sole meas-



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Fig. 37—Mosquito Breeding-Place. Crossett, Arkansas. Before Antimalaria Operations



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Fig. 38—Street Ditch. Crossett, Arkansas. Dug to Prevent Mosquito Breeding

ure of control. Under the direct supervision of the physician in charge, it was administered to all persons in the community in doses of five grains, morning and evening, making ten grains a day for two successive days each week. For children under 15 years of age, the dosage was reckoned at one grain for each three years and administered in the same way. A parasite index, taken in May, 1916, when the work began, and again in December of the same year, showed a reduction of 64.45 per cent. Again one must regret the omission of the index for May, 1917. The per capita cost of the work, omitting the overhead, was 57 cents.

#### CONTROL BY ANTIMOSQUITO MEASURES

At Crossett, Arkansas, a lumber town of 2,029 inhabitants, an attempt has been made to test the feasibility of controlling malaria in a small community by resort to such antimosquito measures as would be within the limits of expenditure which such a community might well afford. The work was begun in April, 1916. Effort was directed toward the elimination or control of the breeding-places of mosquitoes, and that without major drainage. Borrow pits and shallow ponds were filled or drained; streams were cleared of undergrowth when this was nec-



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Fig. 39—Typical Breeding-Place of Mosquitoes. Crossett, Arkansas.  
Before Ditching



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Fig. 40—Same Place After Ditching

essary to let the sunlight in; accumulations of *débris* were removed from the beds; and they were so regraded as to provide an unobstructed off-flow through a narrow channel. The one large pond which could not be drained was treated by removing vegetation and other obstructions from the edges so as to give the fish free access to all possible breeding-places. Artificial containers were removed or treated. All remaining breeding-places were sprayed once a week with road oil by means of either artificial drips or knapsack sprayers. No other measures were employed.

The results are graphically exhibited by Fig. 41, page 191. The reduction in malaria, as shown by a parasite index taken in May, 1916, and again in December of the same year, was 72.33 per cent. The reduction in physicians' calls for malaria (Company's records) in 1916, as compared with the number of calls for the previous year, was 70.36 per cent. Or, if the comparison be limited to the period June to December, when the work had become effective, the reduction in physicians' calls for malaria was 81.6 per cent.

At the end of the year the community took over the work and assumed its expense as well as its direction. The chart indicates the net result of community effort for 1917. The Company record shows that most of the malaria calls

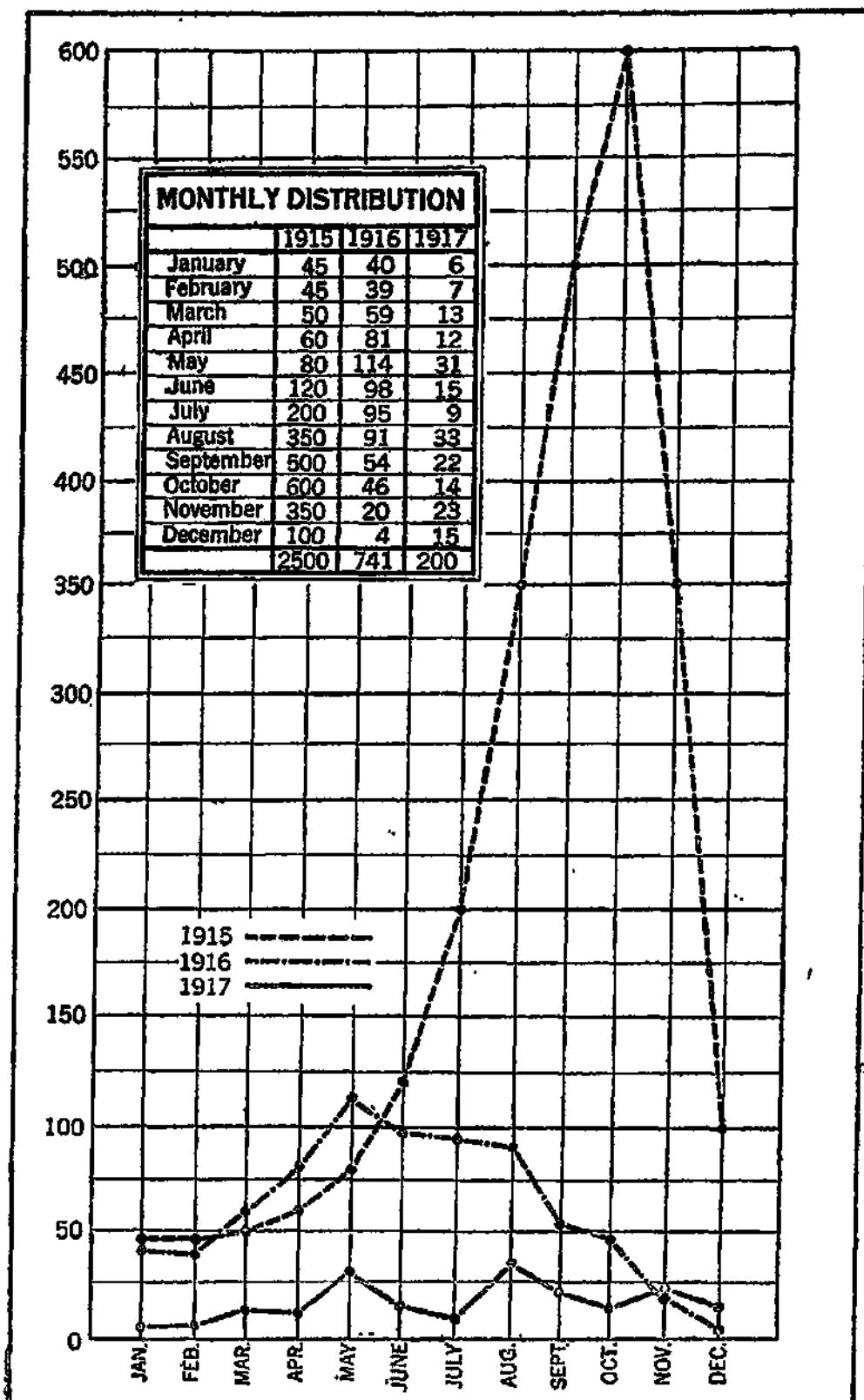


Fig. 41—Calls for Malaria, 1915 (estimated), 1916, and 1917.  
Crossett, Arkansas. Population, 2,029

for the year were among laborers newly recruited from the outside. With these importations there were only 200 physicians' calls for malaria in 1917 as compared with 2,500 calls for 1915, the year before the work began,—a reduction for the two-year period of approximately 92 per cent.

The per capita cost of the work for 1916, omitting overhead, was \$1.24; for 1917, still omitting the overhead, which has been negligible, it was \$.63. At \$2.00 per physician's call this community has been paying, annually, almost four times as much in doctors' bills alone for the privilege of having malaria as it has expended during the current year to be practically free from malaria and from the mosquito as a pest.

At Hamburg, Arkansas, the county seat of Ashley County, similar measures were undertaken after the work at Crossett was taken over by the community. A preliminary survey made at the height of the previous malaria season, had revealed a high malaria rate, with *Anopheles* breeding profusely in ponds and streams throughout the municipal area. Figure 42, page 193, shows the large number and wide distribution of breeding-places. The measures which had been carried out at Crossett the previous year were repeated here and with similar results. A malaria index, taken in May and again at the end

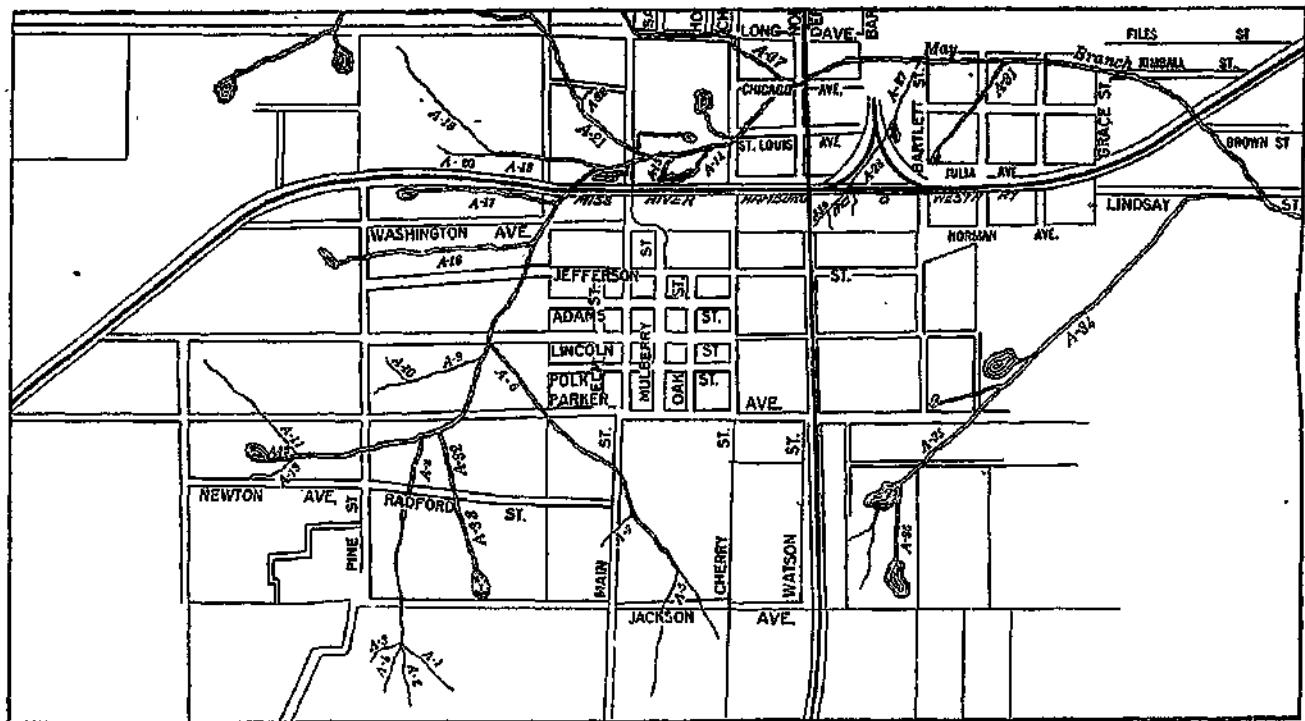


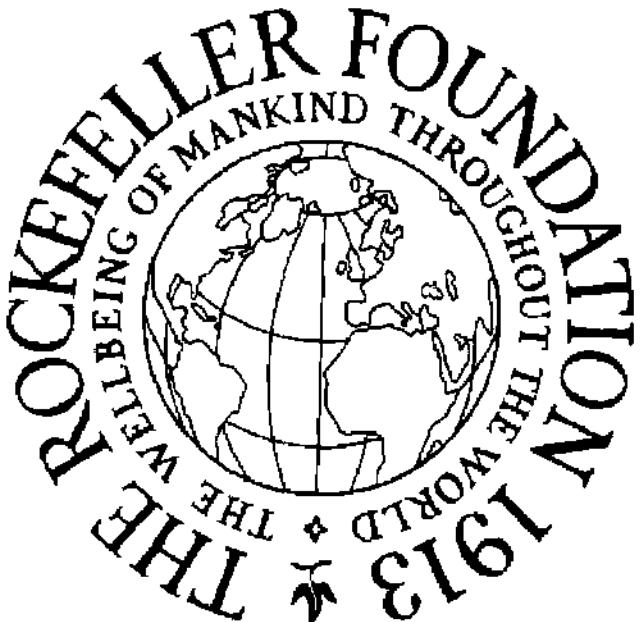
Fig. 42—Main Stream and Branches, with Location of Ponds. Antimalaria Operations. Hamburg, Arkansas

of the year, showed a reduction of 69.02 per cent. Physicians' calls for malaria reported monthly for 1917, as compared with the number of calls estimated from physicians' records for the previous year, showed a reduction of 88.75 per cent. The community bore about one-third the cost of the work and at the end of the year took it over, assuming entire responsibility for its continuance. The results and cost of the work may be conveniently summarized as follows:

**Physicians' Calls for Malaria, Hamburg, Arkansas**

	1916	1917
January	13	15
February	25	35
March	36	40
April	58	57
May	60	50
June	125	19
July	160	11
August	385	5
September	425	7
October	500	12
November	400	5
December	125	3
Total calls, 1916.....	2,312	
Total calls, 1917.....		259
Percentage of reduction.....		88.75
Per capita cost.....		\$1.45

The one aim of all this work is the development of a synthetic program of malaria control



Photograph Excised Here

Fig. 43—Ideal Breeding-Place for Mosquitoes. Hamburg, Arkansas.  
Before Being Drained



Photograph Excised Here

Fig. 44—Shallow Pond and Marshy Area. Hamburg, Arkansas.  
Before Drainage Operations

in which each of these several measures will be given its proper place. A plan of operation to be practicable must fall within limits of cost which the average community can afford. Under conditions where, for example, the cost of mosquito extermination is prohibitive, resort must be had to less expensive measures. With definite understanding of the possibilities and costs of the several lines of procedure, the director of the work will be in position to adapt means to ends with complete freedom and with a view to greatest efficiency and economy.



Photograph Excised Here

Fig. 45—Borrow Pit. Hamburg, Arkansas. Before Being Drained



Photograph Excised Here

Fig. 46—The Same Borrow Pit. After Being Drained.

# X

## ERADICATION OF YELLOW FEVER

Since Reed's discovery that yellow fever is conveyed by the Stegomyia mosquito, now known as Aedes Calopus, the complete eradication of the disease has become largely a matter of local sanitation. Sanitarians are agreed that to accomplish this result it is necessary only to control the breeding-places of mosquitoes in the endemic centers of the infection. In order to locate these endemic foci, and to ascertain the practicability of undertaking measures for the eradication of the infection, the Board, in 1916, appointed a Yellow Fever Commission, with General Gorgas as its head. The Commission visited the regions of South America in which yellow fever has been reported or suspected in recent years and submitted a report of its findings. Owing to war conditions, it became necessary to suspend the operations which had been outlined and authorized for the year 1917.

During the past year outbreaks of yellow fever along the coast of the Caribbean Sea were reported. Dr. Juan Guiteras, a member of the Commission, investigated these reports. He visited the French Colony, Martinique, and

Maracaibo and Caracas in Venezuela, but found no authentic cases of the disease at these places. During the latter part of July, he found eight authentic cases at Coró, the capital of the State of Falcon. These cases were reported to the Venezuelan Government, with the result that steps were at once taken to eradicate the infection not only from Coro but from the entire State of Falcon.

## XI

### PUBLIC HEALTH TRAINING IN BRAZIL

Following the report of a special commission sent to Brazil in 1916 to study medical conditions, the Board entered into an arrangement with the *Faculdade de Medicina e Cirurgia* at Sao Paulo for the establishment of a Department of Hygiene in that institution. The new Department—the first of its kind in Brazil—is to be maintained jointly by the Medical School and the Board for a period of five years, with the understanding that if at the end of that time it has justified itself, Government will assume its support. Dr. S. T. Darling, who served with General Gorgas on the Canal Zone, and Dr. W. G. Smillie, of the Harvard School of Public Health and the Rockefeller Institute, have been appointed Director and Assistant Director, respectively, to have charge of the work during its initial stages.

Meantime, the Board is providing for the training of two Brazilian physicians in the Hopkins School of Hygiene and Public Health. It is expected that upon completion of their studies they will return to Brazil and serve in the De-



Photograph Excised Here

Fig. 47—Building Used by New Department of Hygiene. Faculdade de Medicina e Cirurgia. Sao Paulo, Brazil. Front View



Photograph Excised Here

Fig. 48—Another View of the Same Building

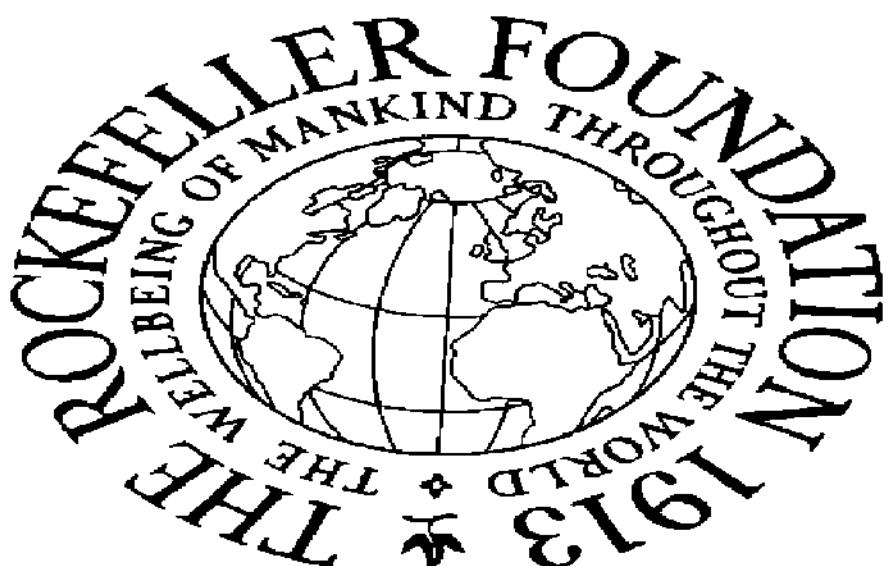
partment of Hygiene at Sao Paulo. The Medical School has provided adequate quarters for the new Department (See Figs. 47 and 48, page 201) and has arranged to inaugurate the work in March, 1918. It is expected that the Department will, from the beginning, undertake, in a modest way, both the cultivation of hygiene as a science and the training of men for the application of its principles in the control of disease.



Photograph Excised Here

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Fig. 49—Hospital Ship "Busuanga." Philippine Islands



Photograph Excised Here

Fig. 50—Ward of Hospital Ship "Busuanga"

## XII

### HOSPITAL SHIP IN THE SULU ARCHIPELAGO

The medical work carried on through hospitals and dispensaries on the island of Mindanao (the Philippines), proved to be so successful that the extension of similar benefits to the outlying islands of the Sulu Sea appeared highly desirable. The International Health Board, therefore, entered into an agreement with the Government of the Philippine Islands to equip a hospital ship for the purpose of demonstrating the value of a mobile dispensary service operating from a base hospital. It was further agreed that the Board would contribute towards the expense of its maintenance for a period of five years.

The ship, which went into commission November 12, 1917, is of about 300 tons and is provided with an internal combustion engine, which reduces costs for a vessel making frequent stops. It is equipped with a modern operating room, ward for ten beds, pharmacy, and quarters suitable for life on the tropic seas (See Figs. 50 and 51, page 144). It carries, besides the crew, a medical personnel consisting of the doctor in charge, an assistant, a chief nurse,

and four other nurses. The plan is for the ship to make port at night and cruise during the day among the islands of the Sulu Archipelago, establishing relations with its inhabitants. Dispensary work will be done largely on shore. Lesser operations will be performed on the ship, and more serious cases will be taken to one of the base hospitals, either at Jolo or Zamboanga.



## **TABULAR SUMMARY**

TABLE 4: *All Countries—Persons Enumerated in Census, Microscopically Examined, Found Infected, Given First Treatment, and Cured of Hookworm Disease in Areas Completed During 1917, By Geographical Regions. Figures Excluded for Areas in Which Work Was Still in Progress.*

GEOGRAPHICAL REGION	CENSUS	MICRO-SCOPICALLY EXAMINED		FOUND INFECTED		GIVEN FIRST TREATMENT		CURED	
	Number	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Total.....	..	304,400	..	191,233	62.8	173,432	90.7	107,603	62.0
Southern States <sup>1</sup> .....	73,872	37,299	50.5	7,834	21.0	7,596	97.0	2,486	32.7
West Indies.....	80,417	75,294	93.6	45,688	60.7	42,411	92.8	36,124	85.2
Central America <sup>2</sup> .....	..	126,916	..	77,482	61.0	71,725	92.6	26,806	37.4
The East.....	..	64,891	..	60,229	92.8	51,700	85.8	42,187	89.0 <sup>3</sup>

<sup>1</sup> During 1917, in the Southern States, the main emphasis was placed on the building and improving of latrines.

<sup>2</sup> In Central America the bulk of the work is by the dispensary plan. This does not afford opportunity for frequent reexaminations to determine cure. Consequently the percentage of persons known to be cured is low in comparison with other regions.

<sup>3</sup>This figure omits dispensary work in Siam.

**TABLE 5: Southern States—Persons Enumerated in Census, Microscopically Examined, Found Infected, Given First Treatment, and Cured of Hookworm Disease in Areas Completed During 1917, By States. Figures Excluded for Areas in Which Work was Still in Progress<sup>1</sup>**

STATE	CENSUS	MICRO-SCOPICALLY EXAMINED		FOUND INFECTED		GIVEN FIRST TREATMENT		CURED		
		Number	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	
Total.....	73,872	37,299	50.5		7,834	21.0	7,596	97.0	2,486	32.7
Alabama.....	2,907	504	18.8		47	8.3	47	100.0	6	12.8
Mississippi.....	17,982	14,874	82.7		4,348	29.2	4,223	97.1	536	12.7
North Carolina.....	19,322	9,048	46.8		2,057	22.7	1,984	96.5	1,149	57.9
Tennessee.....	9,333	856	9.2		129	15.1	126	97.7	18	14.3
Texas.....	10,223	7,084	69.3		1,058	14.9	1,021	96.5	631	61.8
Virginia.....	14,015	4,873	34.8		195	4.0	195	100.0	146	74.9

<sup>1</sup> During 1917, in the Southern States, the main emphasis was placed on the building and improving of latrines.

**TABLE 6: West Indies—Persons Enumerated in Census, Microscopically Examined, Found Infected, Given First Treatment, and Cured of Hookworm Disease in Areas Completed During 1917, By Countries. Figures Excluded for Areas in Which Work Was Still in Progress**

COUNTRY	CENSUS	MICRO-SCOPICALLY EXAMINED			FOUND INFECTED		GIVEN FIRST TREATMENT		CURED	
	Number	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Per Cent.
Total.....	80,417	75,294	93.6	45,688	60.7	42,411	92.8	36,124	85.2	
Antigua.....	15,140	11,122	73.5	690	6.2	580	84.1	535	92.2	
British Guiana.....	16,882	16,044	97.9	9,508	59.3	8,906	93.7	7,505	84.3	
Dutch Guiana.....	13,256	13,159	99.3	12,045	91.5	11,183	92.4	10,102	90.7	
Grenada.....	7,974	7,810	97.9	5,242	67.1	4,902	93.5	3,894	79.4	
Saint Lucia.....	4,617	4,601	99.7	3,060	66.5	2,962	96.8	2,653	89.6	
Saint Vincent.....	9,024	8,997	99.7	5,702	63.4	5,355	93.9	4,849	80.6	
Trinidad.....	14,024	13,561	96.7	9,441	69.6	8,573	90.8	6,586	76.8	

TABLE 7: Central America—Persons Enumerated in Census, Microscopically Examined, Found Infected, Given First Treatment, and Cured of Hookworm Disease in Areas Completed During 1917, By Countries. Figures Excluded for Areas in Which Work Was Still in Progress<sup>1</sup>

COUNTRY	CENSUS	MICRO-SCOPICALLY EXAMINED		FOUND INFECTED		GIVEN FIRST TREATMENT		CURED	
	Number	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Total.....	..	126,916	..	77,482	61.0	71,725	92.6	26,806 <sup>2</sup>	37.4
Costa Rica.....	..	48,483	..	29,940	61.7	28,909	96.6	12,971	44.9
Guatemala.....	13,993	12,934	92.4	7,095	54.9	6,693	94.3	5,997 <sup>2</sup>	89.6
Nicaragua.....	..	33,781	..	18,422	54.5	16,950	92.0	1,280	7.6
Panama.....	18,359	16,876	90.8	14,088	84.5	13,262	94.1	3,617	27.3
Salvador.....	16,980	15,037	88.6	7,937	52.8	5,911	74.5	2,941	49.8

<sup>1</sup>In Central America the bulk of the work is by the dispensary plan. This does not afford opportunity for frequent reexaminations to determine cure. Consequently the percentage of persons known to be cured is low in comparison with other regions.

<sup>2</sup>In Guatemala the staff does not remain in an area long enough after treatment to make the number of persons negative on reexamination a reliable index of the number of persons cured.

TABLE 8: *The East—Persons Enumerated in Census, Microscopically Examined, Found Infected, Given First Treatment, and Cured of Hookworm Disease in Areas Completed During 1917, By Countries. Figures Excluded for Areas in Which Work Was Still in Progress*

COUNTRY	CENSUS Number	MICRO- SCOPICALLY EXAMINED			FOUND INFECTED		GIVEN FIRST TREATMENT		CURED	
		Number	Per Cent.	Number	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Total.....	..	64,891	..	60,229	92.8	51,700	85.8	42,187	89.0 <sup>1</sup>	
Ceylon.....	48,176	42,828	88.9	41,613	97.2	35,675	85.7	31,382	88.0	
Fiji.....	3,505	3,434	98.0	3,068	89.9	3,010	97.5	2,794	92.8	
Seychelles.....	8,183	8,111	99.7	7,778	95.9	7,600	97.7	7,011	92.3	
Siam (dispensary plan)...	..	10,518	..	7,750	73.7	5,415	69.0	1,000	18.5	

<sup>1</sup>This figure omits dispensary work in Siam.

## **FINANCIAL STATEMENT**

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## **FINANCIAL STATEMENT**

The statement on the following pages shows that in the work of the International Health Board during the year 1917, a total of \$588,-158.19 was expended. This statement is based on expenditures actually made during the calendar year, 1917, regardless of when financial reports were received at the New York office. It will be seen that the figures differ from those given in the Treasurer's statement on pages 281 to 344. The Treasurer's Report includes amounts paid in the field during the first three quarters of 1917, to which in many instances have been added amounts paid during the fourth quarter of 1916, but not recorded until early in 1917. This discrepancy between the two reports is caused by the necessity of closing the Treasurer's books shortly after the first of the calendar year, before detailed financial reports can be received from the foreign countries in which a large part of the work of the Board is conducted.

**TABLE 9: Expenditures of International Health Board  
During the Year 1917**

FIELDS OF ACTIVITY	Amount Expended
<b>Grand Total.....</b>	<b>\$588,158.19</b>
RELIEF AND CONTROL OF HOOKWORM DISEASE	360,862.75
MALARIA CONTROL.....	39,978.58
YELLOW FEVER CONTROL.....	9,344.03
UNCINARIASIS COMMISSION TO ORIENT.....	16,572.64
TUBERCULOSIS IN FRANCE.....	52,269.33
MEDICAL AND PUBLIC HEALTH EDUCATION.....	12,416.63
INVESTIGATION OF SEWAGE DISPOSAL AT RURAL HOMES.....	5,359.11
FIELD STAFF SALARIES, EXPENSES, AND AUTO- MOBILES, NOT PRO-RATED TO SPECIFIC BUDGETS	7,188.81
MISCELLANEOUS.....	8,454.08
ADMINISTRATION.....	75,712.23
RELIEF AND CONTROL OF HOOKWORM DISEASE:	
Southern States.....	53,679.07
West Indies.....	86,529.25
Central America.....	99,621.74
South America.....	43,309.16
The East.....	77,723.53
Southern States:	
Alabama.....	1,235.97
Arkansas.....	2,462.60
Georgia.....	2,436.95
Kentucky.....	2,200.00
Louisiana.....	1,278.66
Maryland.....	182.95
Mississippi.....	9,223.36
North Carolina.....	8,548.71
South Carolina.....	7,967.22
Tennessee.....	6,635.02
Texas.....	5,170.48
Virginia.....	6,337.15
West Indies:	
Administration.....	6,811.29
Antigua.....	4,758.87
British Guiana <sup>a</sup> .....	17,996.36
Cayman Islands (Survey).....	1,795.16
Dutch Guiana <sup>a</sup> .....	19,168.40
Grenada.....	7,778.80
St. Lucia.....	6,865.60

\* For administrative reasons, British and Dutch Guiana, although on the mainland of South America, are considered West Indian Colonies.

**TABLE 9: Expenditures of International Health Board  
During the Year 1917—Continued**

FIELDS OF ACTIVITY	Amount Expended
<b>RELIEF AND CONTROL OF HOOKWORM DISEASE</b>	
—Continued	
St. Vincent.....	\$9,384.18
Tobago (Survey).....	1,072.22
Trinidad.....	10,898.37
Central America:	
Costa Rica.....	21,752.31
Guatemala.....	13,346.70
Nicaragua.....	19,418.74
Panama.....	22,881.75
Salvador.....	22,222.24
South America:	
Brazil.....	43,309.16
The East:	
Administration.....	10,298.21
Ceylon.....	39,723.72
China.....	3,981.58
Fiji Islands.....	5,776.92
Papua and Queensland (Survey).....	4,074.84
Seychelles Islands.....	7,409.69
Siam.....	6,458.57
<b>MALARIA CONTROL:</b>	
Arkansas.....	4,276.23
Mississippi.....	35,702.35
<b>MISCELLANEOUS:</b>	
Traveling Expenses, Families of Field Staff..	2,000.00
Drugs for Conserving Health of Field Staff...	43.49
Field Equipment and Supplies.....	2,464.68
Pamphlets and Charts.....	1,335.66
Conference of Health Officers of Southern States.....	2,073.40
Express, Freight, and Exchange.....	536.85
<b>ADMINISTRATION:</b>	
Home Office.....	61,857.66
Survey and Exhibit.....	13,854.57

**CHINA MEDICAL BOARD**  
**Report of the General Director**

o



*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 January 1, 1917, to December 31, 1917.

*Respectfully yours,*

WALLACE BUTTRICK,

*General Director.*

◦

# CHINA MEDICAL BOARD

## OFFICERS

*Chairman*

GEORGE E. VINCENT

*General Director*

WALLACE BUTTRICK

*Resident Director in China*

ROGER S. GREENE

*Secretary*

EDWIN R. EMBREE

## MEMBERS

*Wallace Buttrick	John R. Mott
*Simon Flexner	*Starr J. Murphy
Frederick L. Gates	Francis W. Peabody
Frank J. Goodnow	John D. Rockefeller, Jr.
Roger S. Greene	*Wickliffe Rose
Harry Pratt Judson	*George E. Vincent
	William H. Welch

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\*Member of Executive Committee.

# TRUSTEES OF THE PEKING UNION MEDICAL COLLEGE

## OFFICERS

### *Chairman*

JOHN R. MOTT

### *Vice-Chairman*

JAMES L. BARTON

### *Secretary*

WALLACE BUTTRICK

### *Executive Committee*

George E. Vincent, *Chairman*

Arthur J. Brown  
Wallace Buttrick

Simon Flexner  
Frank Mason North

## MEMBERS

### *To Serve Until the Annual Meeting of 1920*

Arthur J. Brown  
Wallace Buttrick

James Christie Reid  
George E. Vincent

### *To Serve Until the Annual Meeting of 1919*

F. H. Hawkins  
Frank Mason North

Wickliffe Rose  
William H. Welch

### *To Serve Until the Annual Meeting of 1918*

J. Auriol Armitage  
James L. Barton

Simon Flexner  
John R. Mott

John D. Rockefeller, Jr.

These members have been elected as follows:

### *By the Rockefeller Foundation*

Wallace Buttrick  
Simon Flexner  
John R. Mott

John D. Rockefeller, Jr.  
Wickliffe Rose  
George E. Vincent

William H. Welch

### *By the London Missionary Society*

F. H. Hawkins

### *By the Medical Missionary Association of London*

James Christie Reid

### *By the American Board of Commissioners for Foreign Missions*

James L. Barton

### *By the Society for the Propagation of the Gospel in Foreign Parts*

J. Auriol Armitage

### *By the Board of Foreign Missions of the Methodist Episcopal Church*

Frank Mason North

### *By the Board of Foreign Missions of the Presbyterian Church in the*

*United States of America*

Arthur J. Brown

TRUSTEES OF  
THE SHANGHAI MEDICAL SCHOOL  
OF THE  
ROCKEFELLER FOUNDATION

OFFICERS

*Chairman*

GEORGE E. VINCENT

*Vice-Chairman*

JOHN W. WOOD

*Secretary*

WALLACE BUTTRICK

*Executive Committee*

George E. Vincent, Chairman

Wallace Buttrick

Starr J. Murphy

Simon Flexner

Robert E. Speer

MEMBERS

*To Serve Until the Annual Meeting of 1921*

Robert E. Speer

William H. Welch

George E. Vincent

John W. Wood

*To Serve Until the Annual Meeting of 1920*

Simon Flexner

Starr J. Murphy

Frederick L. Gates

Francis W. Peabody

*To Serve Until the Annual Meeting of 1919*

Fletcher S. Brockman

Wallace Buttrick

Walter B. Cannon

## WORK OF THE YEAR

The China Medical Board has continued during the year 1917 to carry out its program of assistance in the development of a comprehensive and adequate system of medicine in China. Substantial progress has been made in organizing the faculty and in constructing the buildings of the Peking Union Medical College, one of the two centers of modern medical education which it is planned to establish in China. At the same time the Board has continued its assistance to existing medical schools and hospitals in that country and has continued to make possible, by fellowships and scholarships, advanced medical study in America by medical missionaries and Chinese physicians and nurses.

## I. THE PEKING UNION MEDICAL COLLEGE

The outstanding feature of the year has been the progress in the creation of the medical center in Peking. On September 24, 1917, the cornerstone of the new buildings was laid. The ceremony was performed by the Chinese Minister of Education, Mr. Fan Yuan-lien, and addresses were made by Lieut.-Col. Frank Billings, M.D., of Chicago, by His Excellency Dr. Paul S. Reinsch, the American Minister to China, and by Dr. Franklin C. McLean, the Director of the school. (See Figure 52, page 226.) The construction of this large group of laboratories, lecture and demonstration rooms, hospital wards, service buildings and staff residences is progressing rapidly. While the buildings will embody all the approved features of a modern medical center, the external forms have been planned in harmony with the best tradition of Chinese architecture. They thus symbolize the purpose to make the College not something foreign to China's best ideals and aspirations, but an organism which will become a part of a developing Chinese civilization.

The group will include separate buildings for pathology and bacteriology, pharmacology and

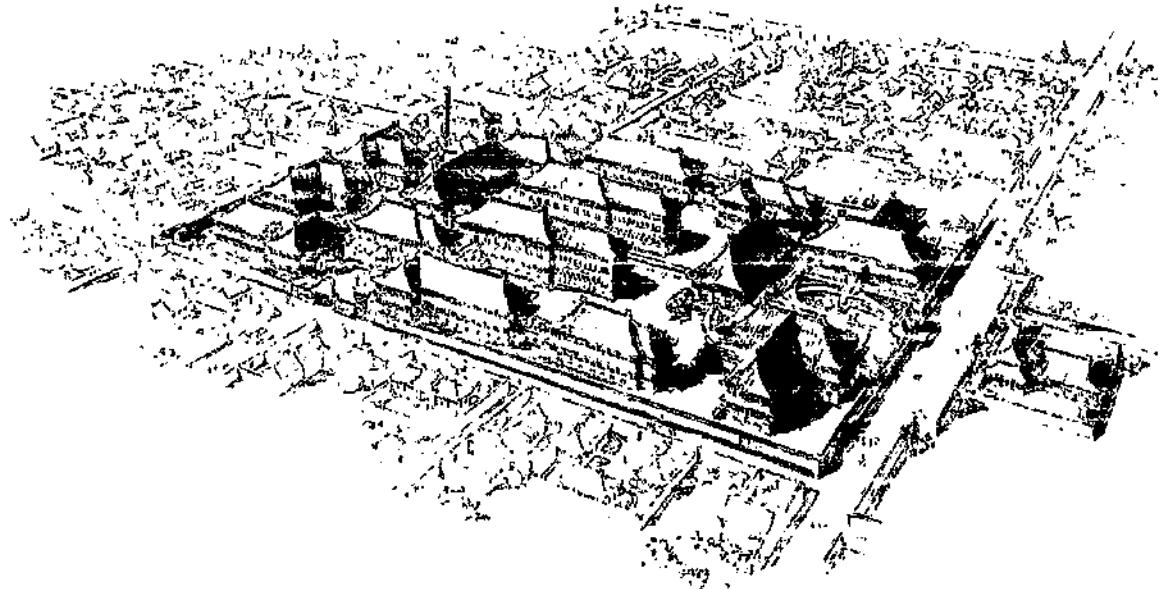


Fig. 51—Peking Union Medical College. Now in Course of Construction

physiological chemistry, a hospital with medical and surgical departments and a nurses' training school, an outpatient department, an administration building, a building for religious and social meetings and recreation, and dormitories for students. On land near but not adjoining the campus, two groups of houses will be built for the use of the members of the teaching staff.

The building up of the faculty for the school has been proceeding throughout the year. Dr. Franklin C. McLean, who in 1916 was appointed Director, has selected and recommended to the Board a number of well qualified men who form the nucleus of a strong teaching staff. An announcement of the purposes and plans of the Peking Medical School has been authorized and will appear in the near future.

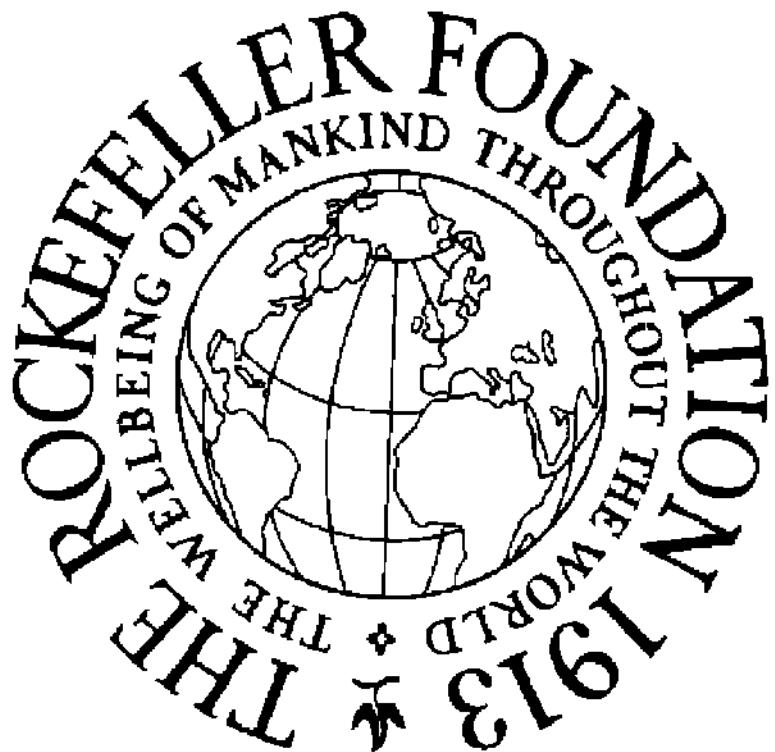
#### FACULTY OF PEKING UNION MEDICAL COLLEGE

The members of the faculty<sup>1</sup> of the Peking Union Medical College, appointed during the year are as follows:

*Franklin C. McLean, Ph.D., M.D.* Director, professor, and head of the department of medi-

<sup>1</sup> From January 1, 1918, to the date at which this goes to press the following further appointments have been made to the faculty of the Medical College and the Pre-Medical School:

Henry S. Houghton, Ph.B., M.D. Acting Resident Director.  
Adrian S. Taylor, M.D. Professor and head of the department of surgery.



## Photograph Excised Here

Fig. 52—Laying Corner-Stone of Peking Union Medical College

cine (appointed 1916). Age 30. Unmarried, Presbyterian. University of Chicago, B.S., 1907, M.S., 1912, Ph.D., 1915. Rush Medical College, M.D., 1910. Assistant Resident Physician, Hospital of the Rockefeller Institute, 1914-16.

*E. V. Cowdry, Ph.D.* Professor and head of the department of anatomy. Age 30. Married. Church of England. University of Toronto, B.A., 1909. University of Chicago, Ph.D., 1912. Associate in anatomy, Johns Hopkins University, 1913-1917.

*Bernard E. Read, Ph.C., M.S.* Associate professor of physiological chemistry. Age 30. Single. Congregationalist. Yale, M.S., 1918. Con-

---

Harvey J. Howard, B.A., M.D., D.Oph. Professor and head of the department of ophthalmology.

Ralph G. Mills, B.A., M.D. Professor and head of the department of pathology.

Ernest Grey, M.D. Professor of surgery.

Davidson Black, B.A., M.B. Professor of embryology and neurology.

A. M. Dunlap, B.A., M.D. Associate professor of otology, rhinology and laryngology.

E. T. H. Tsen, M.D. Associate in bacteriology.

William G. Lennox, B.A., M.D. Associate in medicine.

Frederick E. Dilley, M.D. Associate in surgery.

Ernest M. Johnstone, B.S., M.D. Associate in surgery.

T. M. Li, M.D. Associate in ophthalmology.

S. Y. Wong, B.S., M.S. Assistant in physiological chemistry.

Odd Eckfelt, B.A., M.D. Assistant in medicine.

Way Sung New, B.A., M.D. Assistant in surgery.

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Donald E. Baxter, M.D. Business manager.

A. J. D. Britland, M.P.S. Pharmacist.

Philip A. Swartz, B.A., B.D. Director of religious work.

Miss Emily Gilfillan, B.A. Librarian.

#### THE PRE-MEDICAL SCHOOL

A. E. Zucker, B.A. Instructor in English and German.

Ms Kiam, Hsiu-ts'ai. Instructor in Chinese.

Miss Alice M. Boring, Ph.D. Assistant in biology.

Y. T. Tong, B.S. Assistant in physics.

nected with the Union Medical College under former management, 1909-1916.

*Charles W. Young, B.S., M.D.* Associate in medicine. Age 43. Married. Congregationalist. University of Illinois, B.S., 1897. Johns Hopkins Medical School, M.D., 1903. Connected with the Union Medical College under former management, 1906-1916. Dean of Union Medical College for several years.

*H. Jocelyn Smyly, M.A., M.D., F.R.C.S.I.* Associate in medicine. Age 35. Single. Church of Ireland. Trinity College of Dublin University, undergraduate and medical work. Appointed to Union Medical College faculty under former management in 1913.

*John H. Korns, B.A., M.D.* Associate in medicine. Age 34. Married. Methodist. Ohio Wesleyan University, B.A., 1904. Rush Medical College, M.D., 1909. Taianfu Men's Hospital, Taianfu, Shantung, 1911-15. Appointed to Union Medical College faculty under former management, 1915.

*Frederick H. Dieterich, B.S., M.D.* Assistant in Surgery. Age 30. Single. Presbyterian. Columbia College, B.S., College of Physicians and Surgeons of Columbia University, M.D.

Dr. McLean, the Director of the Peking Union Medical College, has been requisitioned by the

United States Government as a physician, and has been serving during the latter part of the year in connection with the office of the Surgeon General of the Army in Washington, and in various field assignments.

#### PRE-MEDICAL SCHOOL AT PEKING

In September, 1917, the Pre-Medical School was opened, housed in the remodeled buildings of the former Union Medical College. These buildings, which have been altered and thoroughly equipped for their present use, are situated near the new Medical School group.

The purpose of the school is to prepare for the courses in the Medical College. Students are admitted on examination after graduation from a middle school. As all instruction in the Pre-Medical School, with the exception of that in Chinese composition and literature, is in English, only those students who can read, write, and speak English are admitted. A three-year course in English, Chinese, German, mathematics, physics, chemistry, and biology is offered. On the successful completion of this course, students will receive certificates which entitle them to admission to the Peking Union Medical College without further examination. The courses offered in the Pre-Medical School are of college

grade. Students who have completed, elsewhere, one or more years of college work after graduation from a middle school, may be admitted to advanced standing in the Pre-Medical School, and the course of study required for admission to the Medical College will be correspondingly shortened. Eight students were enrolled at the opening of the Pre-Medical School. By the time they are prepared for entrance, the Medical College will have opened its doors.

#### FACULTY OF THE PRE-MEDICAL SCHOOL

The following are the present members of the faculty of the Pre-Medical School at Peking:

*William W. Stifler, Ph.D.* Dean and Instructor in physics. Age 35. Married. Baptist. Shurtleff College, B.A., 1902. University of Illinois, M.A., 1908, Ph.D., 1911. From 1911 to 1916 instructor in physics at Columbia University.

*Stanley D. Wilson, Ph.D.* Instructor in chemistry. Age 36. Unmarried. Methodist. Wesleyan University, B.A., 1909, M.A., 1910. University of Chicago, Ph.D. (Chemistry), 1916. Instructor in chemistry, University of Chicago, 1914-16. Instructor in organic chemistry, Rice Institute, Houston, Texas, 1916-17.

*Charles W. Packard, Ph.D.* Instructor in bi-

ology. Age 33. Married. Congregationalist. Syracuse University, B.S., 1907, M.S., 1908. Columbia University, Ph.D., 1914. Instructor in biology in Columbia since 1914.

*Luther Carrington Goodrich, B.A.* Instructor in English. Age 23. Appointed instructor in English for one year. Williams College, B.A., 1917.

*C. T. Feng.* Assistant in chemistry. Former assistant in chemistry under Mr. B. E. Read at the Union Medical College, 1915-16. Post-graduate course in chemistry at Weihsien, 1916-17, with Dr. W. H. Adolph.

## II. THE SHANGHAI MEDICAL SCHOOL

Progress has also been made during the year in plans for the organization of the second medical center, that at Shanghai. On April 12, 1917, the Trustees of this School were incorporated under a provisional charter granted by the University of the State of New York under the corporate name "Shanghai Medical School of the Rockefeller Foundation." The following persons are the incorporating trustees: Fletcher S. Brockman, Wallace Buttrick, Walter B. Cannon, M.D., Simon Flexner, M.D., Frederick L. Gates, M.D., Starr J. Murphy, Francis W. Peabody, M.D., Robert E. Speer, George E. Vincent, William H. Welch, M.D., and John W. Wood.

A meeting of the Trustees was held on May 18, when the charter was accepted and by-laws adopted. George E. Vincent was elected Chairman, John W. Wood, Vice-Chairman, and Wallace Buttrick, Secretary. Dr. Henry S. Houghton was appointed Acting Dean.

Plans for the buildings in Shanghai have been under consideration, but it is not expected that actual operations will be begun, or that definite steps will be taken toward securing a faculty, until the close of the war.

The question of the preparation of students who may wish to enter the Shanghai Medical School has been considered at length. The Board has decided not to establish its own preparatory school, as in Peking, but to cooperate with selected colleges and universities in the vicinity in strengthening their work in science and other pre-medical subjects. In reaching this decision, the Board has been influenced by the fact that there are in the general field of the Shanghai School, anxious to cooperate in this work, colleges whose standards of work are high.

To this end, appropriations have been made to enlarge the science department and to provide additional instructors at the Fukien Christian University situated at Foochow, Fukien Province, about 300 miles south of Shanghai, and connected with it by direct steamship service. The officers were authorized also to negotiate with the St. John's University of Shanghai with a view to aiding its scientific department. Appropriations may be made later to other institutions.

### III. AID TO EXISTING MEDICAL SCHOOLS IN CHINA

It is expected that the chief contributions of the China Medical Board to medicine in China will be rendered through the large, modern centers being established at Peking and Shanghai. However, the Board has also been giving aid to medical education by contributions to existing medical schools of high standard and of strategic importance. Such support was continued during the year to the Hunan-Yale Medical School, Changsha, to the Tsinanfu Union Medical College, and to St. John's University of Pennsylvania Medical School in Shanghai.

To the Hunan-Yale School, an institution situated in Central China supported jointly by Yale alumni and the government of Hunan Province, the Board has contributed since 1915. During the year 1917 two new appropriations were made to this school: the sum of \$9,000 toward a total of \$16,125 for an extension of the school budget, and the sum of \$6,200 toward the support of instruction in the Pre-Medical Department. These appropriations each cover three years and are to be paid in annually decreasing amounts.

The medical work at St. John's University in Shanghai will be discontinued when the Shanghai Medical School is opened. Meanwhile, the China Medical Board is continuing to aid the University by contributing the salary of the instructor in anatomy.

## IV. SUPPORT OF MISSIONARY HOSPITALS

The Board has continued during the year to aid important missionary hospitals by making it possible for them to increase their medical staffs and to improve their equipment and plant. Contributions by the Board to missionary hospitals are conditioned upon the providing, by the supporting societies, of at least one-fourth of the total sum desired for increase of staff, equipment, or plant.

Grants have been made to the following missionary hospitals, the details of which will be found in the Treasurer's Report (See pages 281 to 344):

<i>Missionary Society</i>	<i>Place</i>
American Board of Commissioners for Foreign Missions .....	Tehchow, Shantung
Board of Foreign Missions of the Methodist Episcopal Church.	Peking, Chihli Tientsin, Chihli Wuhu, Anhwei
Board of Foreign Missions of the Presbyterian Church in the U. S. A.....	Chefoo, Shantung Paotingfu, Chihli
Foreign Christian Missionary Society .....	Luchowfu, Anhwei Nantungchow, Kiangsu
Medical Mission Auxiliary of the Baptist Missionary Society (English).....	Taiyuanfu, Shansi
United Free Church of Scotland	Mukden, Manchuria

Most of these hospitals had previously received appropriations from the Board. In some cases these appropriations are additional to the original grants; in other cases they are for new undertakings in connection with the same hospitals. This is in accordance with the Board's policy of strengthening hospitals which are already doing excellent work, with the idea that graduates of the future medical schools may serve their internships at these hospitals. Payments have not yet been called for on all these appropriations, for the missionary societies cannot always secure the personnel desired, especially at the present time on account of the war.

## V. FELLOWSHIPS AND SCHOLARSHIPS

Thirty-one medical missionaries on furlough and 12 Chinese doctors have been studying in the United States during the past year on scholarships or fellowships supplied by the China Medical Board. Seven of the medical missionaries have studied at the Harvard Medical School, three at the Johns Hopkins Medical School, three at the University of Pennsylvania, three at the Mayo Clinic, three at the New York Post-Graduate Hospital, two at the Rush Medical School, and two at the Cook County Hospital in Chicago. Also one fellowship holder for either part-time or full-time has been at each of the following institutions: Columbia University, McGill University, Philadelphia Women's Medical College, Peter Bent Brigham Hospital, Philadelphia Polyclinic Hospital, Massachusetts General Hospital, Massachusetts Charitable Eye and Ear Infirmary, Boston Lying-In Hospital, Boston Children's Hospital, New York Presbyterian Hospital, and Chicago Presbyterian Hospital. Of the Chinese doctors, five have studied at the Harvard Medical School, three at the Philadelphia Polyclinic Post-Graduate School and Hospital, two at Johns Hopkins, two at the University of Pennsylvania, one at the

College of Physicians and Surgeons of Columbia University, one at the Massachusetts General Hospital, and one at the Boston City Hospital.

The following missionary doctors and nurses were granted fellowships during the year:

*T. W. Ayers*, Southern Baptist Hospital, Hwanghien.

*L. R. Boutwell*, Foreign Christian Missionary Hospital, Luchowfu.

*N. Worth Brown*, Nanking Hospital, Nanking.

*A. M. Dunlap*, Formerly of Harvard Medical School of China, Shanghai.

*Nina D. Gage*, Yale Hospital, Changsha.

*J. S. Grant*, American Baptist Hospital, Ningpo.

*Charles A. Hayes*, Southern Baptist Hospital, Wuchow.

*Paul V. Helliwell*, Canadian Church Hospital, Kweitah.

*W. G. Hiltner*, Nanking Hospital, Nanking.

*Harvey J. Howard*, Formerly of Canton Hospital, Canton.

*J. Charles Humphreys*, American Baptist Hospital, Ning-yuenfu.

*Mary L. James*, American Episcopal Hospital, Wuchang.

*John H. Korns*, Peking Union Medical College, Peking.

*Claude M. Lee*, American Episcopal Hospital, Wusih.

*C. B. Lesher*, American Baptist Hospital, Chaoyang.

*Stephen C. Lewis*, American Presbyterian Hospital, Chen-chow.

*Mabel A. McCracken*, American Methodist Hospital, Wuhu.

*E. I. Osgood*, Foreign Christian Missionary Hospital, Chenchow.

*W. H. Park*, Southern Methodist Hospital, Soochow.

*W. W. Peter*, Medical Missionary Association, Shanghai.  
(Public Health Education.)

*Ethel Polk*, Southern Methodist Hospital, Soochow.

*B. E. Read*, Peking Union Medical College, Peking.

*J. E. Skinner*, American Methodist Hospital, Yenpingfu.

*Adrian S. Taylor*, Formerly of Southern Baptist Hospital, Yangchow.

*J. Oscar Thomson*, Canton Hospital, Canton.

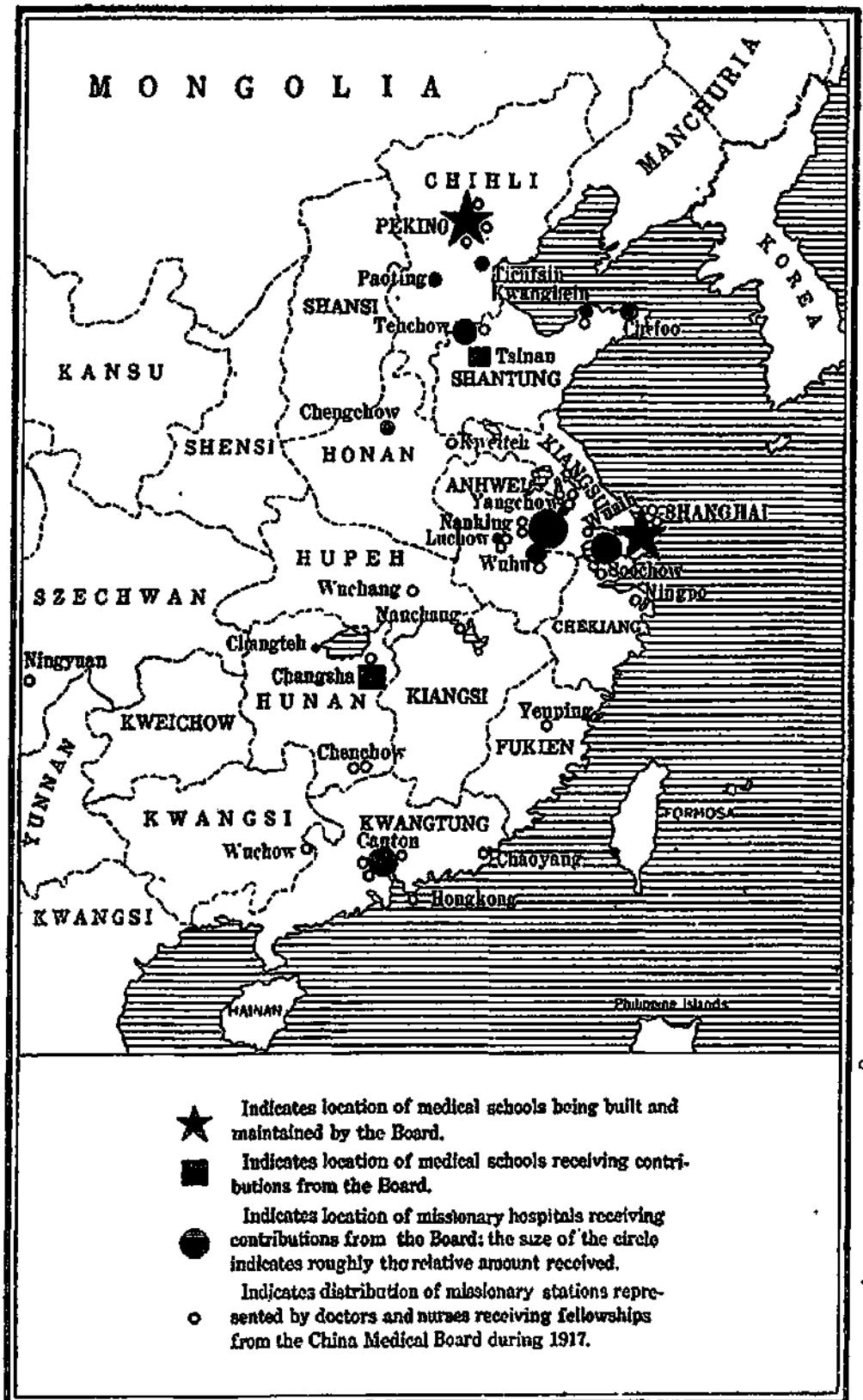


Fig. 53—Medical Education and Other Medical Work in China Supported or Assisted by China Medical Board

*J. G. Vaughan*, American Methodist Hospital, Nanchang.

*Paul Wakefield*, Foreign Christian Missionary Hospital, Luchowfu.

*Andrew H. Woods*, Canton Christian College, Canton.

*R. MacLean Gibson*, London Mission Hospital, Hongkong.

*Ernest M. Johnstone*, Peking Union Medical College, Peking.

*R. V. Taylor*, Southern Baptist Hospital, Yangchow.

*F. F. Tucker*, American Board Hospital, Tehchow.

The following Chinese doctors received appropriations during the year: E. T. Hsieh, Edward Young Kau, Tsing-Liang Li, C. C. Liau, Liu Jui-hua, Way Sung New, Sze-jen Shen, Liyuin Tsao, E. T. H. Tsen, Arthur Waitah Woo, L. S. Woo, F. C. Yen, and Grace Yoh. Dr. Tsao, Dr. Arthur Woo, and Dr. L. S. Woo have not yet arrived in this country to take up their studies. Dr. George Y. Char and Dr. Peter C. Kiang have studied during 1917 under fellowships granted in 1916.

Seven of the former students of the Harvard Medical School of China are completing their medical education in the United States at the expense of the China Medical Board, one of whom is working at the Johns Hopkins and the rest at the Harvard Medical School in Boston.

Three Chinese pharmacists, Messrs. Charles T. Cheng, Hsi Yin-dah, and George K. How, who have been in this country for the past year

studying at the University of Maryland, were granted extensions of their scholarships.

Miss Elizabeth Sze and Miss Lillian Wu are continuing their nursing training at the Johns Hopkins Hospital, and Miss Winifred Mooney of the Red Cross General Hospital, Shanghai, is about to take up work at the Massachusetts General Hospital. Appropriations have been made for two other Chinese nurses from the Red Cross General Hospital to come to the United States for further training.

#### TRANSLATION

Small grants have been made to the Nurses' Association of China for the translation of nursing textbooks, and to the Publication Committee of the China Medical Missionary Association for an increase in the salary of the Chinese pundit who is working with Dr. P. B. Cousland on the translation of medical textbooks.

#### LOSS IN EXCHANGE

The marked increase in the cost of silver currency has created a problem which all organizations interested in China are obliged to face. Three years ago it was possible to purchase as much as \$2.50 Mexican currency for one Ameri-

can gold dollar, but now \$1.50 or \$1.75 is as high an exchange as can be secured. This, of course, has greatly increased the cost of the buildings that are being constructed, because Chinese currency must be used for the materials purchased in China and for the wages of the workmen.

Action has been taken by the Board to provide for its representatives and teachers in China an exchange rate of two Mexican dollars for one gold dollar, and at the urgent request of the missionary boards who have made similar arrangements for their employees, the Board appropriated a sum sufficient to give to all the missionary boards this exchange rate on all payments made to them by the China Medical Board during the year.

#### MISCELLANEOUS

The General Director was absent in Great Britain for the five months ended in November. During his absence Dr. Henry S. Houghton acted as General Director.

The Resident Director in China gave a large part of his time, during the latter half of the year, to Red Cross work for the relief of sufferers from flood and famine in the region of Tientsin.

The Board has granted the Resident Director

a leave of absence with the understanding that he will return to this country on furlough as soon as the work in China will permit.

Dr. Houghton has returned to China to be in charge of the work there, during the absence of the Resident Director.



THE ROCKEFELLER INSTITUTE  
FOR MEDICAL RESEARCH

SPECIAL WAR ACTIVITIES

Report of the Director of Laboratories



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

I have the honor to submit herewith my report of the special war activities of the Rockefeller Institute for Medical Research, which have been supported by The Rockefeller Foundation for the period January 1, 1917, to December 31, 1917.

*Respectfully yours,*  
SIMON FLEXNER,  
*Director of Laboratories.*



## WAR WORK OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH

The Rockefeller Foundation has made special appropriations to the Rockefeller Institute in order to enable the Institute to undertake certain war activities which it was in position to conduct with advantage. These activities are, indeed, for the most part outside the precise scope of the normal work of the Institute as designed by its Founder and Board of Trustees, and as carried into effect by the Board of Scientific Directors. The Institute was created for the purpose of promoting medical discovery through research. In accordance with the principles on which its work was constructed, it has left to other agencies the task of carrying into effect, on a large scale, any discoveries of practical utility which might be made there. However, the imminence of war with, and then later the actual declaration of war against Germany, led the corporation of the Institute to readjust its several kinds of activities in order to place the facilities of the institution on a war basis.

Fortunately, the Institute had made contributions looking toward the prevention and the curative treatment of disease which offered im-

mediate application to the medical problems likely to arise in connection with the greatly enlarged personnel of the Army and Navy, and with the inevitable casualties of large training camps and of actual warfare. For example, the Institute had worked out curative serums for epidemic meningitis and for one of the forms of pneumonia—both of which diseases have always appeared in greater or less force in large military organizations; also, under the support of The Rockefeller Foundation, Dr. Carrel (in conjunction with Dr. Dakin, the chemist) had perfected at Compiègne a method of treating infected surgical wounds which had come to have wide applicability in practice. It seemed, therefore, right and proper that the Rockefeller Institute should employ its resources in men and facilities to aid the Surgeons General of the Army and Navy in dealing with their large and important problems.

Moreover, the fact was patent that medical and allied problems, not yet solved, would call for work of investigation. The several laboratories of the Institute were so equipped in men and materials as to enable it to supplement the various research laboratories at the command of the Government. These resources were placed freely at the disposal of the Surgeons General and other governmental agencies, and have been

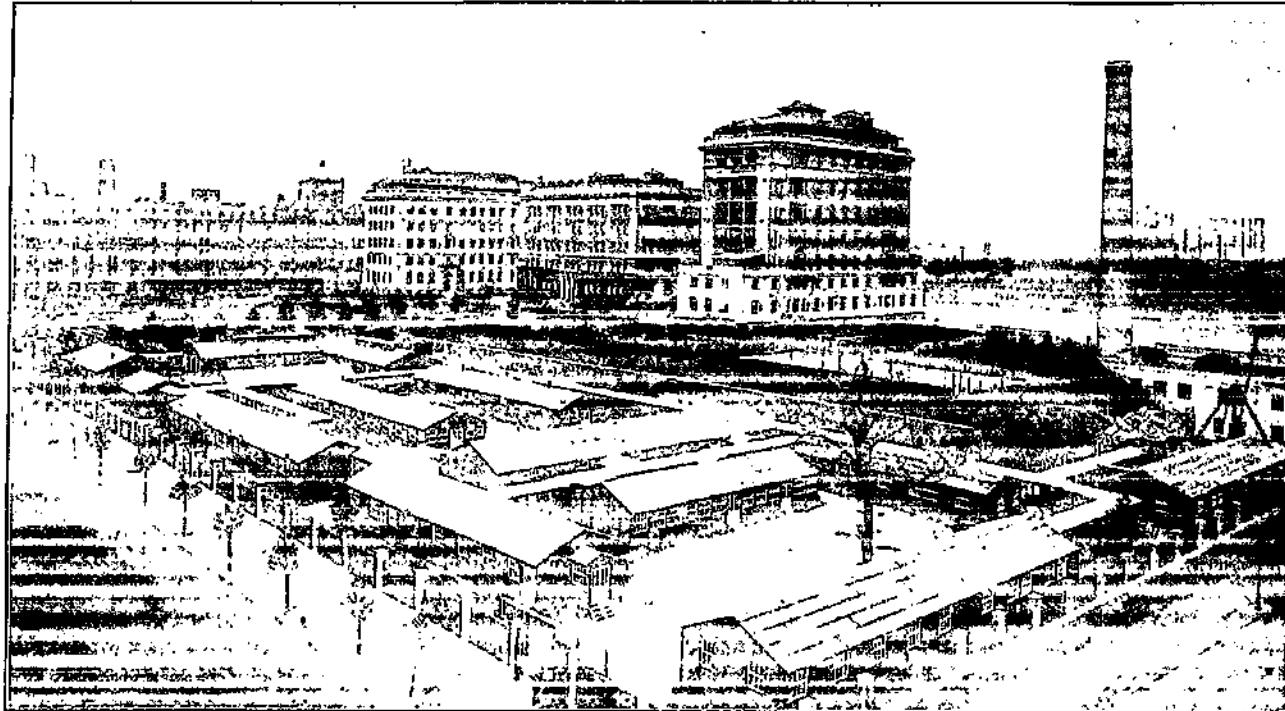


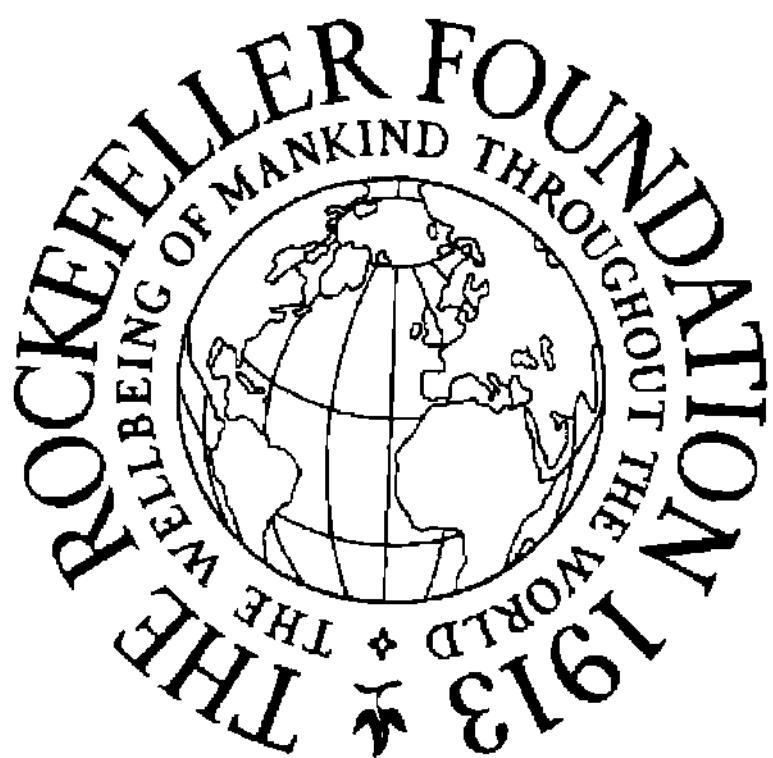
Fig. 54—War Demonstration Hospital at the Rockefeller Institute for Medical Research, New York. Funds Provided by The Rockefeller Foundation

employed on a wide variety of research problems.

Meanwhile, the staff of the Institute has suffered considerable depletion. This has been unavoidable and has been due to two causes. In the first place, a considerable number of the scientific staff insisted on going into active military service; in the second place, some of that staff were peculiarly qualified by special training to give their maximum service in connection with the expeditionary forces in France. All those staff officers are now on leave of absence. On the other hand, a nucleus has been reserved in order that the particular service which the Institute can render the Government should not be too seriously impaired. The Government has cooperated with the Institute in enabling this reserve to be maintained.

#### CARREL-DAKIN TREATMENT OF WOUNDS

Infected war wounds have been extremely numerous as a result of trench warfare. Because of this condition, tetanus was for a time very prevalent and, until recently, gaseous gangrene and suppuration all too common. The incidence of tetanus has been greatly diminished through the general employment of the anti-tetanic serum administered to wounded men as a prophylactic.



Photograph Excised Here

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Fig. 55—Ward in Hospital Illustrating Carrel-Dakin Method of Sterilizing Wounds by Periodic Irrigation

Of the various means introduced to deal with gaseous gangrene and suppuration, the Carrel-Dakin method is the one which has come to have the greatest application. The method involves two essential steps: first, the radical employment of an antiseptic made possible by the surgical conceptions of Dr. Carrel and the devices he invented; and second, the employment of an active antiseptic solution,—in this case a neutral solution of sodium hypochlorite devised by Dr. Dakin, which is brought into intimate and frequent application to the infected tissues.

The effects of the antiseptic are followed by a method of bacteriological control or computation introduced by Carrel. Microscopical preparations are made regularly from the surfaces of the wound, the bacteria present are counted, and the number found are charted. When under the influence of the treatment they fall to a certain average number, it is regarded as safe to close the wound surgically. By the employment of these measures the time factor has been materially reduced, and many lives and limbs have been saved which otherwise would have been lost.

#### PURPOSE OF WAR DEMONSTRATION HOSPITAL

The War Demonstration Hospital of the Rockefeller Institute was planned as a school

in which to teach military surgeons the art of applying the Carrel-Dakin treatment. The idea of a teaching hospital of this kind was conceived after the diplomatic break with Germany occurred and before war was actually declared against that country. Dr. Carrel was, fortunately, in this country at that critical time. He had returned for a brief period to the United States after having been in constant active service in France since the outbreak of the war. It was while he was in charge of the Army Hospital at Compiègne, the laboratory of which was supported by The Rockefeller Foundation, that the method of treatment bearing his and Dr. Dakin's names was perfected. The idea behind the conception of the War Demonstration Hospital was twofold: first, to afford facilities for teaching the surgical treatment of infected wounds; and, second, to construct a hospital on the best model of the base hospitals developed on the Western front. The first patient was received on July 26, 1917. Since that time, the hospital has been in constant operation. It has drawn its patients chiefly from the civilian community, but it has also drawn a number from the Army and Navy.

**DESCRIPTION OF WAR DEMONSTRATION HOSPITAL**

In constructing the War Demonstration Hospital, an endeavor was made to duplicate, on a small scale, the best model of the base hospital developed on the Western front. The unit building system patented by Humphreys, Ltd., of London, which has been employed in the base hospitals of the British Red Cross and St. John's Guild at Etaples, was adopted with certain modifications made necessary by American methods of construction.

The Hospital is essentially a portable structure. The units of which it is composed are five feet in length, with side-walls either eight or ten feet in height. Each of these panels is of double-wall construction, with an air-space between the outer and inner sheathing, thus furnishing insulation against both heat and cold. For roof trusses, a light steel rod system on five foot centres is used. This presents the minimum restriction to light, and effective head room. This particular type of knock-down construction permits elasticity in expansion and is also easily transported.

The plan of the two wards, each of 24-bed capacity, follows very closely that of an ordinary surgical hospital in peace times. Running north and south, the services are grouped at the north end so as to allow the free entrance of the winter

sun at the south end, which opens on a terrace covered in summer with awnings. On each side of the ward two wall panels, hinged at the bottom, are arranged to swing out to permit of rapid exit from the building in case of fire. These openings also furnish additional ventilation in hot weather. Each of the two buildings is 110 feet in length and 22 feet in width with side-walls eight feet in height. For the isolation of contagious cases, a separate small building is provided.

The operating pavilion lies east and west so as to ensure north light all along one side. For this building, 105 feet in length, the wider type of unit, 28 feet in width with walls ten feet high, has been adopted. At the east end is a large work room for nurses, and next to it a sterilizing room easily accessible from the operating room. The etherizing room gives access both to the operating and plaster rooms, while the west end of the building is occupied by the X-ray service with dark room, demonstration, and storage rooms.

For the reception and discharge of patients a separate building is provided. Here, before being admitted to the wards, all the wounded are cleaned, and their histories taken. Their soiled clothing is removed in bags to the laundry building, for disinfection and washing, and hospital

clothes are substituted. Storage compartments are provided at the east end of this building for the cleaned clothing and personal effects, which are returned to the patient upon his discharge.

As far as the limited boundaries of the site permit, the pavilions for the nurses and maids and the dormitory for the orderlies are isolated. Each of these three buildings is 22 feet in width with standard side-walls eight feet high. They accommodate 18 nurses, eight orderlies, and seven maids.

While a hospital of this small capacity—at most 66 beds—would not ordinarily justify a separate steam kitchen and laundry, these have been included in view of the special object of this undertaking. The kitchen is equipped with coal ranges, steam vegetable cookers, and a stock kettle. Refrigeration is supplied to the storage boxes by a portable compression refrigerating plant. A dishwashing plant is installed in one section of the kitchen to which all china is returned from the wards and mess rooms.

The laundry building has two receiving rooms: one is for infected clothing, linen, and bedding, which must pass through either the sterilizing washer or the steam and formaldehyde sterilizer; the other is for ordinary soiled linen. Mattresses and pillows, after sterilization, are stored at the west end of the building, while the linen,

after drying and pressing, is stored near the east end on tables and in bins. The mending room and small storage room are placed at the extremity of the building.

Parallel to the wards is the laboratory building, 135 feet in length and 22 feet in width, containing the chemical and bacteriological laboratories, pharmacy, and lecture room. The laboratory provides facilities for the instruction of a class of about 30 surgeons at a time. For this service, water, gas, and electricity—for both light and power—are furnished.

An administration building contains the general waiting rooms for visitors, with a telephone exchange and offices for the executive staff.

The grouping of the buildings is assigned as they would be at a field hospital. Walkways are provided between all buildings, differences of grade being taken up by inclines rather than by the use of steps. Where patients have to pass from one building to another, closed corridors are provided; otherwise the corridors connecting the pavilions are roofed, but open at the sides.

Adequate heating, ventilating, and sanitary conveniences were regarded as essential to the proper care of the patients. A pressure heating system, using steam pipe coils, has been installed and a minimum temperature of 60° maintained during the severe winter weather. A

separate steam line supplies the requirements of the laundry, kitchen, and sterilizing equipment. The plumbing is that of a permanent hospital, but with the suppression of all elaboration. Hot water is supplied at central points in various buildings by steam coil tanks, so placed that one tank supplies a group of three or four buildings, the length of runs thereby being much reduced. The buildings are lighted by electricity, exposed wiring being used throughout. The fixtures, except in the wards and operating buildings, are merely bulbs with tin reflectors.

Through the cooperation of the architect, the builder, and the contractor, the 15 barracks and huts, together with complete mechanical equipment, were erected in the extraordinarily short period of six weeks.

#### STAFF OF WAR DEMONSTRATION HOSPITAL

The staff of the Hospital consists of surgeons now assigned by the Surgeon General of the Army for instructional purposes, of French military surgeons lent by the French Sanitary Service, and of bacteriologists and chemists in part assigned by the Surgeon General. Medical officers of the Army and Navy are sent regularly for the course of instruction, which ordinarily covers a period of two weeks per class. Two

classes are therefore conducted each month. The medical officers and others (e. g. chemists and bacteriologists) are taught the principles of the method and are required to cover every one of its essential points by actual personal operation. They learn to prepare and to titrate, or control, the Dakin solution in the chemical laboratory; to make the microscopical examinations in the bacteriological laboratory; and to prepare the wounds and apply the treatment in the operating room and at the bedside.

#### INSTRUCTION AT WAR DEMONSTRATION HOSPITAL

Instruction at the War Demonstration Hospital has been given during the year to medical officers of the Army and Navy, to enlisted men of the Army and Navy, to civil surgeons, and to female nurses of the Red Cross and of civil hospitals. For the most part instruction has been given to men in classes conducted in the laboratories, in the wards, and in the operating room; and by lectures with lantern slides and moving pictures. The class work has been arranged in the following manner:

*Regular Class.* Men assigned to this course have been instructed in the clinical methods and proper manner of preparing and applying various antiseptics used in the treatment of infected

wounds. This course extends over a period of two weeks. Twelve courses have been given.

*Special Instruction.* At various times special instruction has been given to individual medical officers, doctors, nurses, and enlisted men; and special demonstrations have been arranged for groups of medical officers, doctors, and nurses.

Following is a detailed report of the number of persons receiving instruction:

*Regular Class*

Medical Officers of the Army.....	117
Medical Officers of the Navy.....	10
Civilians.....	10
	—
Total.....	137

*Special Instruction*

Medical Officers of the Army.....	5
Medical Officers of the Navy.....	1
Enlisted Men of the Army.....	5
Enlisted Men of the Navy.....	10
Female Nurses.....	12
	—
Total.....	33
TOTAL RECEIVING INSTRUCTION.....	170

In addition to the above, special demonstrations were given to two groups of surgeons of base hospitals, to one surgical class attending another school of instruction in New York City,

to one group of civilian surgeons, and to nine groups of nurses of base hospitals: a total of 13. Eighteen lectures and demonstrations were given by members of the staff at various institutions and before various medical societies.

During the year, 106 patients suffering from a wide variety of infections have been treated in the War Demonstration Hospital. The results of the treatment may be briefly stated as follows: discharged cured, 42; discharged improved, 19; still under treatment, 39; discharged unimproved, two; died, four.

In the treatment of these cases the four principles of treating infected wounds have been followed: first, mechanical cleansing, or surgical step; second, sterilization by antiseptic; third, bacteriological control and control of wound healing; fourth, closure.

Empyema, or pus within the pleural cavity, following pneumonia, has been an important problem of the military camps during the past winter and spring. As a considerable number of cases of pneumonia in soldiers and sailors were admitted to the Hospital of the Rockefeller Institute, a number of cases of empyema developed among them. These cases were transferred to the War Demonstration Hospital for operation and treatment. Nine cases, in all, were transferred. Of this number two patients

have died and seven are recovering and will, it is expected, be returned to duty. The results are therefore good. Empyema, especially of the streptococcic form in which it has principally prevailed among our troops, is a serious condition. The treatment for this condition, developed in the War Demonstration Hospital, has been the subject of special study by the Surgeon General and has received application in camp base hospitals.

#### RESEARCH AT WAR DEMONSTRATION HOSPITAL

The bacteriological and chemical laboratories of the Hospital have been engaged not only in the instruction of medical officers and others, but also in the investigation of certain problems of importance. These problems bear on the surgical treatment of wounds in various aspects. They relate to the action of antiseptic drugs other than sodium hypochlorite, to improved methods of applying the antiseptic to the wounds, to the elucidation of the principles of the action of the antiseptics, and to particular subjects assigned by the Surgeon General in connection with recommendations and suggestions made to him from various sources.

The hygienic care of soldiers in camp and the medical care of patients in hospitals rest far more

than the public imagines upon the sciences of bacteriology and chemistry. Bacteriology, especially, is often invoked to protect a company, regiment, or larger unit, from the dangers of a severe disease or the disadvantages of a general quarantine. Thus, if a case of diphtheria appears, any other infected men are quickly detected and removed on the basis of a bacteriological test; the same is true with respect to epidemic meningitis and some other diseases. Once in the hospital, the sick soldier's progress can often be measured best by the bacteriological and chemical tests carried out in the laboratory, and in every case the results of such examinations are of the greatest assistance to the clinician in charge of the patients.

#### AVAILABLE LABORATORY WORKERS FOR ARMY AND NAVY

The rise of bacteriology and clinical chemistry is comparatively recent. Hardly 20 years have elapsed since bacteriologists and chemists were first recognized as valuable adjuncts to the clinical staff of the hospital. It is a far shorter period since they have been regarded as essential to the medical organization for the care of the sick.

The fact was early recognized that the Sur-

geons General would make heavy demands upon the personnel of the bacteriological and clinical chemical laboratories of the country. It was conceived that probably the existing highly trained personnel would prove inadequate to meet the needs. On the other hand, it was believed that the recent general addition of bacteriology and its handmaiden, immunology (serology), to the medical curriculum, and the corresponding improvement in the teaching of chemistry in medical schools, as well as the creation of many diagnostic laboratories in hospitals, would provide a large number of partially trained laboratory workers who could readily and quickly be prepared to carry out, either alone or under supervision, diagnostic work in camp laboratories. Hence it was proposed to establish training courses in bacteriology, serology, and (later) medical chemistry for this class of students. The Surgeons General approved the project and have assigned medical officers and others to the Institute for instruction.

#### COURSES IN BACTERIOLOGY

The laboratories of the Institute give courses in bacteriology and serology to medical officers of the Army and Navy assigned by the Surgeon General of each service. The course in bac-

teriology and serology covers four weeks of intensive work and is repeated once a month. At the outset, 20 places were arranged in the laboratory; the number of places have been increased to 50. Eligible persons have been accepted from the Surgeons General of the Army and Navy; also a few civilians who purpose to join the Army or Navy have been accepted when space was available. Eligibility consists of previous training in laboratory methods with special reference to bacteriology and serology (or immunology). The various laboratories at the cantonments in this country, and the department laboratories and field laboratories in this country and in France, are now provided with men who have had the training given at the Rockefeller Institute. The chemical course is projected to begin early in the spring; each class will continue about four weeks.

Those attending the bacteriological course to December 31, 1917, were 103 officers, 26 men in the Navy, and 14 special civilians: a total of 143.

#### THERAPEUTIC SERUM

Reference has been made to the fact that the Rockefeller Institute originally contributed essentially to the perfection of the serums for the treatment of epidemic meningitis and pneu-

monia; it has also taken a leading part in the preparation of the antidysenteric serum and has recently worked out for the first time a protective and curative serum for gaseous gangrene (*B. welchii* infection).

Before the United States entered the war, the Institute—in order to meet the requests emanating from England, France, Belgium, Italy, and other countries—resumed the preparation of the antimeningococcic serum which it had discontinued several years earlier. The Rockefeller Foundation assumed the cost of the resumption of that manufacture, through which the serum could be supplied gratis to the Allies. Since epidemic meningitis exists in an endemic form widely in this country, its introduction into military camps was a foregone conclusion. With the United States on the brink of war with Germany, it was considered desirable greatly to extend the production of this serum and to increase also the output of the other serums with the perfection of which the Institute had, in the first place, been so closely identified. The Rockefeller Foundation made it possible to do this.

#### ERECTION OF STABLES

Commodious, modern stables were quickly built at the Department of Animal Pathology at

Princeton, and a bacteriological unit was developed to control the serum production. The main effort was directed towards quantity production of antimeningococcic and antipneumococcic serums. A small number of horses has been given over to the preparation of the antidysenteric and antigaseous gangrene serums. Several months necessarily elapsed before any considerable serum production was possible. At the present time the output is satisfactory and the quality of the products superior.

#### PRODUCTION OF SERUM

The curative serums which the Rockefeller Institute is producing for the Army and Navy of the United States, and which incidentally are being supplied for special purposes to civilian communities and to our Allies, are: the antimeningococcic serum for the treatment of epidemic meningitis, the antipneumococcic serum for the treatment of lobar pneumonia Type I infection, the antidysenteric serum for the treatment of bacillary dysentery, and the antigaseous gangrene serum for the prevention and treatment of *B. welchii* infection. All these serums are derived from horses. Only a small number of the horses are kept in the animal house in New York; the preparation of the serum is carried on

chiefly at the Department of Animal Pathology at Princeton, New Jersey. The quantities of the several serums produced during the year are: 532.52 litres, or 26,626 bottles, of antimeningococcic; 22.36 litres, or 1,118 bottles, of anti-dysenteric; 280.00 litres of antipneumococcic; and 75.00 litres of *B. welchii* antitoxin. The last two are not bottled especially, but are supplied in large containers.

#### ANTIGASEOUS GANGRENE SERUM

Reference has already been made to the occurrence of gaseous gangrene as a serious form of wound infection. Perhaps no bacteriological war subject has been so widely studied as that of gas bacillus infection, because of the severity of its effects in infected wounds. All the belligerent countries have assigned some of their best men to an investigation of that condition.

Fortunately, Major Carroll G. Bull of the Rockefeller Institute was able to establish the essential point leading to the solution of the problem. He discovered the toxin which the bacillus produces and through which it injures muscle and other tissues, thus enabling the gas bacilli (*B. welchii*) to multiply and disorganize the tissues. The next step was the preparation of the antidote, or antigaseous gangrene serum.

Dr. Bull has been in England and France for several months demonstrating the properties of the serum and the manner of its preparation. He has already convinced the Army medical officers of England and France, and those of the United States on active service, of the curative, and particularly of the protective, powers of the serum.

#### ANTITETANIC SERUM

It is proposed that, as far as practicable, every severely wounded man shall receive a prophylactic or protective injection of the serum. As a similar protective injection of the antitetanic serum is now given (through which tetanus, very frequent in the first months of the war, has now been practically abolished), it was soon found that both antiseraums could be produced in the same horse. One injection therefore sufficed for protection against both infections and, besides this, the number of horses required to produce the serums is reduced by one-half.

Major Bull will return to this country to instruct manufacturers of biological products in the preparation of the combined serum, and to investigate further certain other problems in connection with gangrenous wound infection.

**ANTIDYSENTERIC SERUM AND VACCINATION**

Fortunately, dysentery has not been very prevalent among our troops. Occasional cases do, however, occur and to combat these cases it is desirable that antidysenteric serum be available. For that reason a small quantity is being prepared, as there are no reliable commercial sources of the serum and the Institute is closely identified with its initial preparation. A method of vaccination against bacillary dysentery is being worked out at the Institute. Should it ever become necessary, vaccination against dysentery could be conducted as it is now conducted against typhoid fever.

**TREATMENT OF PNEUMONIA**

One of the most serious menaces to the health of our troops has been pneumonia. The serum developed in the Rockefeller Hospital for treatment of one of the varieties of this disease, that caused by Type I pneumococci, has been demonstrated to be most efficacious, and every effort is being made to cooperate with the Army in the proper employment of this serum in suitable cases.

Soldiers suffering from pneumonia are being admitted to the Hospital for treatment to as

great an extent as facilities permit. Medical officers are sent to the Rockefeller Hospital, where they are taught the methods of pneumonia diagnosis and treatment perfected there. They live in the Hospital as interns and remain for periods of from six weeks to several months. The twelve officers who have thus far been trained are now in charge of pneumonia patients at base hospitals in this country and abroad.

#### VACCINATION AGAINST PNEUMONIA

Preliminary studies concerning the efficacy of prophylactic vaccination against pneumonia are being carried on under the direction of Dr. Cole.

Experimental studies indicate that such vaccination may be effective against infection with pneumococci, Types I, II, and III, and practical experience with antipneumococcus vaccine among the miners in South Africa has already given indication of its practical value. The purpose of the studies that are being made is to bring sufficient evidence in support of the method to justify its employment in the Army.

#### EPIDEMIC MENINGITIS

Meningococcus carriers—healthy men in the Army and Navy who have acquired the menin-

gococcus in their nasal secretions and continue to harbor it there—are a source of danger to their associates. The Institute has endeavored to assist both the Army and Navy in dealing with the problem of these unfortunate men who must be kept isolated. Improved methods for treating them and freeing them from meningococci have been sought. The results on the whole have been quite good. Up to the present time ten persistent chronic carriers from the Army have been sent to the Hospital, all of whom have been discharged free from meningococci.

Meningitis was quite prevalent in certain camps during the past winter. The antimeningococcic serum produced at the Institute was supplied in large quantities to the Surgeon General for distribution to the several camps.

In addition, studies on vaccination against epidemic meningitis were carried out on a large scale at Camp Funston by Lieut. Gates. The results of his investigation are now in the hands of the Surgeon General.

#### TREATMENT OF SYPHILIS

At the laboratories of the Institute a new drug for the treatment of syphilis has been perfected which it is hoped may supplant salvarsan, at least in this country. Before having the drug

prepared in large quantities, and before putting it out for general use, precise tests of its action and the best manner of its administration will be carried out at the Hospital. The action of the drug in human cases is very satisfactory, bearing out the high hopes for its usefulness based on the animal tests. It has been patented in this country, and patents have been applied for in many foreign countries. It is proposed to have it manufactured under license, so as to protect the public from exorbitant prices and in order to insure the quality of the product. In this connection it may be added that the Institute has assisted the Surgeon General in arriving at a proper standard of value of salvarsan, which is now being manufactured under Government license.

#### COMBATING HEMORRHAGE AND SHOCK

One of the most serious consequences of wounds received on the battlefield is hemorrhage. Hemorrhage is the basal cause of many cases of shock, which in turn is the cause of many deaths.

Studies begun before the war and pursued later, for the express purpose of combating hemorrhage, have provided two methods of relieving its effects. Both are now being em-

ployed on the Western front. One method is the storing of red corpuscles removed from healthy persons. These can be resuspended in a suitable fluid and injected into the blood vessels. Excellent results have been obtained in this way. The other method is the employment of a sterile solution of gum arabic to replace the volume of blood lost. This latter has proved an excellent method of reestablishing the blood pressure and thus tiding over a very dangerous period. The gum solution is far superior to salt solution, because the latter leaves the blood vessels very soon and fails to maintain the blood pressure until the normal mechanism is restored.

#### PRODUCTION OF ACETONE

Acetone is a solvent extensively employed in aircraft production. A large program of aircraft manufacture calls for immense quantities of acetone. The present sources of supply are inadequate. Other belligerent countries, notably Germany and England, have turned to bacterial action for their increased output of the solvent. Methods, said to be successful, have been devised in both Germany and England; they are protected by patents. The precise nature of the German method is not known. The Weitzman process is used in England.

This problem of perfecting a method of acetone production by bacterial action was very early put before the Rockefeller Institute. Apparently, the problem has now been solved by Dr. J. H. Northrup. He has secured from potatoes a bacterium which acts upon starch either in the pure state or in grain, with the formation of a high percentage of acetone. Secondary, or by-products, are always formed in these bacterial fermentations; in the Weitzman method the chief secondary product is said to be butyl alcohol, which at present has a limited commercial application only. Luckily, in the Northrup process, the by-product is ethyl (or ordinary alcohol), which just now is of high commercial value. A patent has been applied for in order to protect the method and to enable the Government to use it without the necessity of paying royalty.

#### SURGICAL INVESTIGATION AT THE FRONT

Arrangements have been made to set up a laboratory at St. Cloud, near Paris, where further studies may be made on the repair of wounds, on hemorrhage and shock due to surgical injury, on gunshot wounds of the abdomen, and such other problems as may arise. The work there will be under the personal direction

of Dr. Carrel. Arrangements have also been made for one or more small laboratories in connection with field ambulances located near the front lines. The reason for multiplying the small field laboratories arises from the fact that a given sector, served by such an ambulance with its laboratory, may be quiet for a time, while in another sector, also served in this manner, active fighting is going on. It is possible to transfer laboratory personnel from one to the other—from the quiet to the active sector—and in that way forward the studies which the establishment of the field ambulances was designed to accomplish.

# **THE ROCKEFELLER FOUNDATION**

## **Report of the Treasurer**

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*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, 1917, to December 31, 1917.

*Respectfully yours,*

L. G. MYERS,

*Treasurer.*



## TREASURER'S REPORT

Income and other funds available for appropriation during the year, amounting to \$17,678,851.65, were as follows:

Income from principal funds (not including special funds) and from invested income and reserve .....	\$7,153,851.65
Principal funds made available for appropriation, including \$25,000.00 of the gift from the Estate of Laura S. Rockefeller .....	5,025,000.00
Gift from Mr. John D. Rockefeller.	5,500,000.00
<hr/>	
Total.....	<u>\$17,678,851.65</u>

The undisbursed balance carried over from 1916, after adding sundry refunds, was \$5,407,282.82, which, added to the above figure, made a total of \$23,086,134.47 available for disbursement. Of this sum \$11,457,086.36 was disbursed, leaving a balance of \$11,629,048.11, which should be divided as follows:

Balance payable on appropriations made in 1917 and prior years....	\$4,133,973.86
Amount available for appropriation —not taking into account pledges due in 1918, referred to below...	7,495,074.25
<hr/>	
Total.....	<u>\$11,629,048.11</u>

The appropriations that become effective in 1918 amount to \$6,223,737.00. If this sum be considered a present liability instead of a charge against 1918 income, the amount available for appropriation is reduced to \$1,271,337.25.

The amounts payable on appropriations above specified do not include appropriations which become effective in 1919 and subsequent years, amounting to \$3,363,565.00.

Principal funds, including reserve and special funds, increased during the year from \$102,084,447.79 to \$122,-220,801.85, a difference of \$20,186,354.06, which is accounted for as follows:

Mr. Rockefeller's gift of 29,718 shares Standard Oil Company (Indiana) capital stock—Market price on date of receipt, \$867.00 per share	\$25,765,506.00
Mr. Rockefeller's gift of 10 shares American Ship Building Company common stock.....	350.00
<b>Gross Increase .....</b>	<b>\$25,765,856.00</b>
Deduct principal funds made available for appropriation .....	\$5,025,000.00
Net loss on securities sold, redeemed and exchanged.....	554,501.94
	<b>5,579,501.94</b>
<b>Net Increase.....</b>	<b><u>\$20,186,354.06</u></b>

In addition to the above, the amount expended for lands, buildings and equipment, increased during the year from \$630,959.37 to \$812,704.92, a difference of \$181,745.55. This sum is included in payments on account of appropriations and is shown in detail in Exhibit O.

The financial condition and operations are set forth in the following exhibits:

Balance Sheet.....	Exhibit A
Statements of Receipts and Disbursements of Income.....	Exhibit B
<b>Foundation's Appropriations:</b>	
War Work.....	Exhibit C
Infantile Paralysis.....	Exhibit D
Mental Hygiene.....	Exhibit E
Rockefeller Institute for Medical Research.....	Exhibit F
School of Hygiene and Public Health	Exhibit G
Founder's Designations.....	Exhibit H
Miscellaneous.....	Exhibit I

International Health Board Appropriations.....	Exhibit J
China Medical Board Appropriations ..	Exhibit K
Summary of Appropriations and Payments .....	Exhibit L
Additional Appropriations for Future Years.....	Exhibit M
Statements of Principal Funds .....	Exhibit N
Land, Buildings and Equipment Funds .....	Exhibit O
Transactions Relating to Invested Funds .....	Exhibit P
Schedule of Securities Belonging to General Funds.....	Exhibit Q
Schedule of Securities Belonging to Special Funds.....	Exhibit R

## EXHIBIT A

## BALANCE SHEET, DECEMBER 31, 1917

## ASSETS

## I. INVESTMENTS:

General Schedule (See Exhibit Q).....	\$126,283,791.51
Less amount of income investments (see below).....	4,149,289.66
	<hr/>
Special (See Exhibit R).....	\$122,134,501.85
	<hr/>
	86,300.00
	<hr/>
	\$122,220,801.85
	<hr/>

## II. LAND, BUILDINGS, AND EQUIPMENT (Exhibit O).....

\$812,704.92

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## III. INCOME ACCOUNTS:

Income invested temporarily (Exhibit B).....	\$4,149,289.66
Funds in the hands of agents, to be accounted for, and sundry accounts receivable....	812,543.23
Moneys loaned.....	9,675,000.00
	<hr/>
	\$14,636,832.89

## Deduct Offsetting Liabilities:

Bank loans and overdraft discharged January 2 and 3, 1918).....	\$2,941,119.13
Accounts payable .....	36,779.30
	<hr/>
	2,977,898.43
	<hr/>

\$11,658,934.46

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TOTAL..... \$134,692,441.23

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## EXHIBIT A

## BALANCE SHEET, DECEMBER 31, 1917

## FUNDS AND OBLIGATIONS

## I. FUNDS:

General Fund (Exhibit N) ....	\$120,765,856.00
Estate Laura S. Rockefeller Fund (Exhibit N) ....	152,733.00
Reserve Fund (Exhibit N) ....	1,215,912.85
	<u>\$122,134,501.85</u>
Special Funds (Exhibit N)	
Gift of John D. Rockefeller .	\$37,000.00
Gift of Laura S. Rockefeller.	49,300.00
	<u>86,300.00</u>
	<u><u>\$122,220,801.85</u></u>

II. LAND, BUILDINGS, AND EQUIP-  
MENT FUND:

Appropriations from income (Exhibit O).....	<u>\$812,704.92</u>
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## III. INCOME ACCOUNTS:

Joint Account Belgian Children in Switzerland (Exhibit B) ..	\$1,847.28
Estate Laura S. Rockefeller Fund:	
Unappropriated income.....	28,039.07
General Fund:	
<sup>1</sup> Balance payable on approp- riations.....	\$4,133,973.86
<sup>1</sup> Unappropriated income ...	7,495,074.25
	<u>11,629,048.11</u>
	<u><u>\$11,658,934.46</u></u>
TOTAL.....	<u><u>\$134,692,441.23</u></u>

<sup>1</sup> It should be noted that these figures do not take into account appropriations and pledges payable in 1918 amounting to \$6,223,737.00. If allowance is made for this sum, unappropriated income will amount to but \$1,271,837.25. Neither are appropriations and pledges, amounting to \$3,363,565.00, which become effective in 1919 and subsequent years, included in the balance sheet. Both of these liabilities are, for the purposes of this report, considered as charges against the income for the year in which the appropriations become payable.

## EXHIBIT B

STATEMENTS OF RECEIPTS AND DISBURSEMENTS OF INCOME  
AND OF OTHER FUNDS AVAILABLE FOR APPROPRIATION

## GENERAL FUNDS

## RECEIPTS

Balance January 1, 1917.....	\$5,390,161.94
Sundry refunds of amounts disbursed in previous years.....	17,120.88
	<hr/>
	\$5,407,282.82
Income from principal funds and funds temporarily invested....	\$7,153,851.65
Gift from Mr. John D. Rockefeller	5,500,000.00
Principal Funds made available for appropriation by action of the Board:	
General Fund \$5,000,000.00	
Laura S.	
Rockefeller	
Fund.....	25,000.00
	<hr/>
	5,025,000.00
	<hr/>
	17,678,851.65
Total amount available.....	<hr/> \$23,086,134.47

## DISBURSEMENTS

INTERNATIONAL HEALTH BOARD (Exhibit J)	
Hookworm, Malaria, and Yellow Fever work.....	\$431,992.24
Tuberculosis work in France ...	38,481.37
Medical Education.....	8,621.17
Miscellaneous.....	78,734.40
	<hr/>
	\$557,829.18
CHINA MEDICAL BOARD (Exhibit K)	
Missionary Societies—Hospitals.....	\$48,968.75
Fellowships and Scholarships..	44,515.39
Medical Schools	
Unaffiliated.....	107,079.10
Affiliated.....	263,989.26
Miscellaneous.....	36,869.22
	<hr/>
	501,421.72
WAR WORK (Exhibit C)	
Well-being of Soldiers, Sailors, and Prisoners-of-war .....	\$1,839,350.84
Medical work.....	228,634.72
Humanitarian work.....	3,876,982.97
	<hr/>
	5,944,968.53
Carried Forward .....	<hr/> \$7,004,219.43 \$23,086,134.47

EXHIBIT B—ContinuedSTATEMENTS OF RECEIPTS AND DISBURSEMENTS OF INCOME  
AND OF OTHER FUNDS AVAILABLE FOR APPROPRIATION

## GENERAL FUNDS

<i>Brought Forward</i> .....	\$7,004,219.43	\$23,086,134.47
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AFTER CARE OF INFANTILE PARALYSIS CASES (Exhibit D) .....	44,737.49
MENTAL HYGIENE (Exhibit E) ...	48,800.00
ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH (Exhibit F) .....	3,127,913.68
SCHOOL OF HYGIENE AND PUBLIC HEALTH (Exhibit G) .....	31,319.70
FOUNDER'S DESIGNATIONS (Exhibit H).....	942,251.42
MISCELLANEOUS (Exhibit I).....	152,178.36
ADMINISTRATION (Exhibit I).....	105,532.28
COST OF REGISTERING BONDS.....	134.00
	<hr/>
	\$11,457,086.36

## BALANCE:

Securities (Exhibit Q) .....	\$4,149,289.66
Moneys loaned .....	9,645,113.65
Funds in the hands of agents, to be accounted for, and sundry accounts receivable.....	812,543.23
	<hr/>
	\$14,606,946.54

## DEDUCTIONS:

Bank loans and overdraft.....	\$2,941,119.13
Accounts payable.....	36,779.30
	<hr/>
	2,977,898.43
	<hr/>
	11,629,048.11
	<hr/>
	\$23,086,134.47
	<hr/>
	\$23,086,134.47

## BALANCE AS ABOVE IS APPORTIONED AS FOLLOWS:

Payable on appropriations and pledges for 1917 and previous years.....	\$4,133,973.86
Amount available for appropriation.....	7,495,074.25
	<hr/>
	\$11,629,048.11

EXHIBIT B—*Continued*

STATEMENTS OF RECEIPTS AND DISBURSEMENTS OF  
 INCOME AND OTHER FUNDS AVAILABLE  
 FOR APPROPRIATION

## SPECIAL FUNDS

## LAURA S. ROCKEFELLER FUNDS INCOME

Income collected during the year .....	<u>\$3,000.00</u>
Amount paid to the several societies designated by Mrs. Rockefeller.....	<u>\$3,000.00</u>

## JOHN D. ROCKEFELLER FUND INCOME

Income collected during the year .....	<u>\$1,850.00</u>
Amount paid to the several societies designated by Mr. Rockefeller.....	<u>\$1,850.00</u>

## ESTATE LAURA S. ROCKEFELLER FUND INCOME

Balance—January 1, 1917.....	\$16,687.65
Income collected during the year .....	<u>11,351.42</u>
Balance accounted for in moneys loaned...	<u>\$28,039.07</u>

## JOINT ACCOUNT BELGIAN CHILDREN IN SWITZERLAND

Balance—January 1, 1917.....	\$48,750.00
Payments during the year.....	<u>46,902.72</u>
Balance accounted for in moneys loaned...	<u>\$1,847.28</u>

## EXHIBIT C

1917 FOUNDATION APPROPRIATIONS,  
 UNPAID BALANCES OF APPROPRIATIONS MADE IN PREVIOUS YEARS,  
 AND PAYMENTS THEREON MADE IN 1917

## WAR WORK

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
WELL-BEING OF SOLDIERS, SAILORS, AND PRISONERS- OF-WAR			
American Library Assoc- tion.			
(R.F. 2262) Under this appropriation \$25,000.00 was ad- vanced to the As- sociation for the pur- pose of inaugurating its financial cam- paign, with the un- derstanding that it would be repaid by the Association from budget funds re- ceived from other sources. This ad- vance has since been repaid . . . . .	.....	\$25,000.00	.....
American Social Hygiene Association.			
(R.F. 2251, 2256) For the support of work- ers serving under the direction of the Com- mission on Training Camp Activities . . .	.....	20,000.00	\$17,376.71
(R.F. 2263) To pro- vide lecture and ex- hibit material for use in American Army camps . . . . .	.....	5,000.00	5,000.00
Committee of Fourteen of New York City.			
(R.F. 2257) For the support of workers serving under the di- rection of the Com- mission on Training Camp Activities . . .	.....	5,000.00	5,000.00
<i>Carried Forward</i> . . . . .	.....	\$55,000.00	\$27,376.71

## EXHIBIT C—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	.....	\$55,000.00	\$27,376.71
WELL-BEING OF SOLDIERS, SAILORS, AND PRISONERS- OF-WAR (Cont.):			
Commission on Training Camp Activities.			
(R.F. 2265) Training Camp Auxiliary Fund Committee. Toward the budget for the year beginning Sep- tember 1, 1917 .....	.....	25,000.00	25,000.00
Jewish War Relief and Welfare Work Com- mittee.			
(R.F. 2291) For wel- fare work during 1918	.....	100,000.00	100,000.00
Playground and Recre- ation Association of America.			
(R.F. 2250) For the support of workers serving under the di- rection of the Com- mission on Training Camp Activities ...	.....	20,000.00	20,000.00
(R.F. 2266, 2267) For administration ex- penses.....	.....	200,000.00	125,000.00
Young Men's Christian Association.			
International Com- mittee.			
(R.F. 2179, 2195) For the establishment and maintenance of recreation centers in connection with the military forces on the Mexican border.	\$20,000.00	.....	20,000.00
(R.F. 2232) For work in prisoners - of - war camps and in training camps abroad .....	.....	300,000.00	225,000.00
(R.F. 2233) For work in camps of the Am- erican Army and Navy.....	.....	200,000.00	200,000.00
<i>Carried Forward.....</i>	\$20,000.00	\$900,000.00	\$742,376.71

## EXHIBIT C—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$20,000.00	\$900,000.00	\$742,376.71
WELL-BEING OF SOLDIERS, SAILORS, AND PRISONERS- OF-WAR (Cont.):			
Young Men's Christian Association (Cont.):			
National War Work Council.			
(R.F. 2248) For car- rying on sex educa- tion work.....	.....	25,000.00	25,000.00
(R.F. 2268) Under this appropriation \$1,500,000.00 was advanced to the Council toward its general budget for the period October 1, 1917 to July 1, 1918, with the understand- ing that it would be repaid by the Coun- cil before December 31, 1917, from bud- get funds received from other sources. This advance has since been repaid...	.....	1,500,000.00	.....
(R.F. 2269) Toward its general budget for the period October 1, 1917 to July 1, 1918	.....	1,000,000.00	1,000,000.00
(R.F. 2271) For the purchase of testa- ments for distribu- tion to American sol- diers and sailors ...	.....	25,000.00 <sup>1</sup>	25,000.00
Young Women's Chris- tian Association.			
(R. F. 2261, 2270) For work in connection with the American Army training camps	.....	300,000.00	46,974.13
<i>Carried Forward.....</i>	\$20,000.00	\$3,750,000.00	\$1,839,350.84

<sup>1</sup> This appropriation was paid from the principal of the gift from the Estate of Laura S. Rockefeller.

## EXHIBIT C—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$20,000.00	\$3,750,000.00	\$1,839,350.84
<b>MEDICAL WORK</b>			
National Committee for Mental Hygiene.			
(R.F. 2234) To provide buildings for a Naval Psychiatric Unit .....	.....	15,000.00	.....
(R.F. 2235) For expenses incurred in connection with Dr. Salmon's visit to Europe.....	.....	2,500.00	1,798.40
Rockefeller Institute for Medical Research.			
(R.F. 2142) For medical research and supplies in Europe.....	25,000.00	.....	1,836.32
(R.F. 2225, 2246) For hospital under control of Dr. Carrel, for teaching military and other surgeons new methods of surgical treatment of infected wounds..	.....	300,000.00	200,000.00
(R.F. 2228) For war research and relief during the year 1917	.....	25,000.00	.....
(R.F. 2229) For additional equipment, assistance and material at the Princeton Farm for the preparation of serums for war relief work..	.....	25,000.00	.....
(R.F. 2230) For additional equipment for teaching military and naval surgeons in preparation for war relief.....	.....	10,000.00	.....
Yale University.			
(R.F. 2243) For creating a mobile hospital unit.....	.....	25,000.00	25,000.00
<i>Carried Forward.....</i>	\$45,000.00	\$4,152,500.00	\$2,067,985.56

## EXHIBIT C—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$45,000.00	\$4,152,500.00	\$2,067,985.56
<b>HUMANITARIAN WORK</b>			
American Red Cross.			
(R.F. 2247) For the war fund of the American Red Cross ..	.....	5,000,000.00 <sup>1</sup>	3,500,000.00
(R.F. 2254) Special Red Cross dividend declared by the American Ship Building Company.....	.....	14,972.00	14,972.00
(R.F. 2255) Special Red Cross dividend declared by the National Lead Company.....	.....	29,400.00	29,400.00
Armenia and Syria.			
(R.F. 2215) American Committee for Armenian and Syrian Relief.....	.....	50,000.00	50,000.00
Belgium.			
(R.F. 2192) Stipends for Belgian professors in England.....	10,000.00	.....	7,482.43
(R.F. 2231, 2236) For furnishing a supplementary ration to Belgian children ..	.....	150,000.00	100,000.00
France.			
(R.F. 2211, 2294) Tuberculosis work in France—For expenses incurred in connection with Dr. Herman M. Biggs' visit to France ....	.....	17,111.11	10,611.11
Poland, Serbia, Montenegro and Albania.			
(R.F. 2165) For relief work.....	974,468.68	.....	61,250.05
<i>Carried Forward.....</i>	\$1,029,468.68	\$9,413,983.11	\$5,841,701.15

<sup>1</sup> A portion of the principal fund of the Foundation was made available for this appropriation.

## EXHIBIT C—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$1,029,468.68	\$9,413,983.11	\$5,841,701.15
HUMANITARIAN WORK <i>(Cont.):</i>			
Prisoners-of-war Welfare Work. (R.F. 2193, 2293) Adminis- tration.....	299,622.00	1,195.18	25,817.18
(R.F. 2194) Supply Division.....	200,000.00	.....	.....
Turkey. (R.F. 2192A, 2292) For the relief of the non-Moslem popula- tion within the Turk- ish Empire.....	100,000.00	5,504.07	30,504.07
General Relief Work. (R.F. 2157) To be ex- pended at the discre- tion of the Director of the War Relief Commission.....	18,623.00	.....	3,203.74
Dr. Wallace Buttrick's Mission to Europe. (R.F. 2249) Salaries and expenses.....	.....	18,000.00	10,233.52
War Relief Commission. (R.F. 2209) Adminis- tration 1916.....	5,181.50	.....	3,075.94
(R.F. 2216) Adminis- tration 1917.....	.....	50,000.00	30,432.93
<b>GROSS TOTALS.</b>	<b>\$1,652,895.18</b>	<b>\$9,488,682.36</b>	<b>\$5,944,968.53</b>
Unexpended balances of appropriations al- lowed to lapse.			
R.F. 2165.. \$810,000.00			
2192A.. 75,000.00			
2193.. 275,000.00			
2194.. 200,000.00			
2142.. 23,163.68			
2209.. 2,105.56	1,385,269.24	.....	.....
R.F. 2211.. \$6,500.00			
2235.. 701.60			
2236.. 50,000.00			
2249.. 7,766.48			
2262.. 25,000.00			
2268.. 1,500,000.00			
	.....	1,589,968.08	.....
<b>NET TOTALS..</b>	<b>\$267,625.94</b>	<b>\$7,898,714.28</b>	<b>\$5,944,968.53</b>

## EXHIBIT D

## INFANTILE PARALYSIS

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
After Care of Infantile Paraly- sis Cases. (R.F. 2181, 2227) For ex- penses involved in organ- ization in New York City	\$14,693.72	\$1,800.00	\$16,493.72
(R.F. 2253) For adminis- trative expenses .....	.....	15,000.00	4,536.22
Brooklyn Bureau of Charities. (R.F. 2189) For the after care of Infantile Paralysis cases. Total pledge of \$12,- 000.00 extending over a period of six months ending March 31, 1917. (Instal- ment due 1917) .....	.....	6,000.00	6,000.00
New York City Department of Health. (R.F. 2176) For use in con- trolling the epidemic of Infantile Paralysis .....	27,508.58	.....	1,620.12
Rockefeller Institute for Medi- cal Research. (R.F. 2184) For publica- tion of pamphlet on Polio- myelitis .....	1,438.28	.....	87.43
State Charities Aid Associa- tion. (R.F. 2187, 2224, 2226) For expenses incurred through the Association's coopera- tion with the State De- partment of Health in pro- viding for the after care of Infantile Paralysis cases..	2,000.00	14,000.00	16,000.00
 Unexpended balances of ap- propriations allowed to lapse. (R.F. 2176) .... \$25,888.46 (R.F. 2184) .... 1,350.85	 \$45,640.58		
	27,239.31	.....	.....
TOTALS.....	<u>\$18,401.27</u>	<u>\$36,800.00</u>	<u>\$44,737.49</u>

**EXHIBIT E**  
**MENTAL HYGIENE**

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
National Committee for Men- tal Hygiene.			
(R.F. 2107) For a survey under the direction of the committee of the care and treatment of insane in various states.....	\$2,800.00	.....	\$2,800.00
(R.F. 2206) For adminis- tration expenses .....	.....	\$7,000.00	7,000.00
(R.F. 2168) To defray for one year the cost of a pro- posed psychiatric depart- ment for the examination of prisoners at Sing Sing Prison.....	5,000.00	.....	5,000.00
(R.F. 2258) For the sup- port of the Psychiatric Clin- ic at Sing Sing Prison for the year ending July 31, 1918 .....	.....	10,000.00	10,000.00
(R.F. 2259) For the work of the committee in aiding state commissions on pro- vision for the mentally defective, during the year ending July 31, 1918.....	.....	23,500.00	15,000.00
(R.F. 2260) For studies in the psychopathology of crime.....	.....	15,000.00	9,000.00
<b>TOTALS.....</b>	<b>\$7,800.00</b>	<b>\$55,500.00</b>	<b>\$48,800.00</b>

**EXHIBIT F**

**ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH**  
**FOR ENDOWMENT AND CURRENT EXPENSES**

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
(R.F. 2135, 2212, 2213, 2299) For its corpo- rate purposes.....	\$1,000,000.00	\$107,156.08	\$1,057,156.08
(R.F. 2172) For its cur- rent expenses.....	80,000.00	.....	70,757.60
(R.F. 2173) For altera- tion of buildings....	80,303.72	.....	.....
<i>Carried Forward.....</i>	<i>\$1,160,303.72</i>	<i>\$107,156.08</i>	<i>\$1,127,913.68</i>

EXHIBIT F—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
Brought Forward ....	\$1,160,303.72	\$107,156.08	\$1,127,913.68
(R.F. 2244) For its permanent endowment.....	.....	2,000,000.00	2,000,000.00
(R.F. 2245) For construction of coal pockets.....	.....	30,000.00	.....
	<hr/>	<hr/>	<hr/>
	\$1,160,303.72		
Unexpended balance of appropriation allowed to lapse.			
(R.F. 2172) .....	9,242.40	.....	.....
	<hr/>	<hr/>	<hr/>
TOTALS.....	<u>\$1,151,061.32</u>	<u>\$2,137,156.08</u>	<u>\$3,127,913.68</u>

## EXHIBIT G

## SCHOOL OF HYGIENE AND PUBLIC HEALTH

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
Johns Hopkins University.			
(R.F. 2170, 2223) For the establishment and maintenance of a school of hygiene and public health.....	\$237,000.00	\$15,000.00	\$11,319.70
(R.F. 2242) For administration and equipment of the School of Hygiene and Public Health during the year 1917-18.....	.....	70,290.00	20,000.00
	<hr/>	<hr/>	<hr/>
		\$85,290.00	
Unexpended balance of appropriation allowed to lapse.			
(R.F. 2223) .....	.....	12,500.00	.....
	<hr/>	<hr/>	<hr/>
TOTALS.....	<u>\$237,000.00</u>	<u>\$72,790.00</u>	<u>\$31,319.70</u>

**EXHIBIT H**  
**FOUNDER'S DESIGNATIONS**

	1917 PAYMENTS
Alta Social Settlement—Balance amounting to \$10,666.68, due on designations towards budget and repair fund, for year ending September 1, 1917.....	\$7,927.30
American Baptist Foreign Mission Society.....	150,000.00
American Baptist Home Mission Society.....	75,000.00
American Baptist Publication Society.....	12,116.37
American Red Cross.....	5,000.00
Baptist Missionary Convention of the State of New York—For expenses \$12,500.00.....	9,374.99
Baptist State Mission Board of Pennsylvania.....	600.00
Baptist Union of Western Canada .....	10,000.00
Blue Ridge Association.....	500.00
Boy Scouts of America—Balance due on designation of \$4,500.00 for the support of the work in greater New York.....	2,250.00
Brooklyn Bureau of Charities.....	2,000.00
Bureau of Municipal Research—Balance due on designation of \$3,750.00 for expenses of Training School for Public Service.....	2,500.00
Children's Aid Society of New York.....	2,500.00
Cleveland Baptist City Mission Society.....	5,000.00
Foreign Mission Board of the Southern Baptist Convention.....	14,632.76
Girls' Branch of the Public School Athletic League of the City of New York.....	300.00
National League on Urban Conditions Among Negroes —For expenses.....	3,000.00
New York Association for Improving the Condition of the Poor.....	6,000.00
New York City Baptist Mission Society—For expenses \$23,000.00.....	17,250.00
Philharmonic Society of New York.....	4,000.00
Public Education Association of the City of New York	5,000.00
Society for Italian Immigrants.....	500.00
State Charities Aid Association.....	5,000.00
United Hospital Fund of New York.....	5,000.00
Whittier House.....	800.00
Young Men's Christian Association:	
Cleveland, Ohio.....	2,000.00
Tarrytown, N. Y.....	500.00
University of Minnesota (Building Fund).....	25,000.00
International Committee.....	51,250.00
International Committee—Home Department.....	16,250.00
State Executive Committee—New York State.....	1,000.00
Young Women's Christian Association:	
National Board.....	500,000.00
BALANCE SUBJECT TO MR. ROCKEFELLER'S DESIGNATIONS—January 1, 1917.....	\$907,488.11
Carried Forward.....	\$907,488.11    \$942,251.42

## EXHIBIT H—Continued

	1917 PAYMENTS
<i>Brought Forward</i> .....	\$907,488.11 \$942,251.42
Set aside for Mr. Rockefeller's designations during the year 1917 .....	\$1,000,000.00 .....
Unexpended portion of amount set aside for designations during 1917 made available for the general purposes of the Foundation. (By a letter dated July 19, 1917, Mr. Rockefeller surrendered his right to designate the distribution of any part of the Foundation's income.) .	965,236.69 34,763.31 .....
<b>TOTALS</b> .....	<b>\$942,251.42 \$942,251.42</b>

EXHIBIT I  
MISCELLANEOUS

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
American Academy in Rome. (R.F. 215) For general purposes, \$10,000.00 per year for ten years, beginning with 1914. (Installment due 1917) ...		..... \$10,000.00	\$10,000.00
American Social Hygiene Association. (R.F. 2188) For current expenses. Total pledge of \$20,000.00 extending over a period of two years, beginning with 1916. (Installment due 1917) .....		..... 10,000.00	10,000.00
(R.F. 2264) For current expenses, 1916-1917 ...		..... 5,000.00	5,000.00
Bureau of Municipal Research. (R.F. 265) For constructive studies in Government of State of New York, \$10,000.00 per year for five years, beginning with 1915. (Installment due 1917) ...		..... 10,000.00	10,000.00
<i>Carried Forward</i> .....		..... \$35,000.00	\$35,000.00

## EXHIBIT I—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward</i> .....	.....	\$35,000.00	\$35,000.00
Bureau of Municipal Re- search. ( <i>Cont.</i> ):			
(R.F. 2102) For its New York City work, \$15,- 000.00 per year for four years beginning with 1916. (Installment due 1917). ....	.....	15,000.00	15,000.00
Committee on Scientific Re- search in Governmental Problems.			
(R.F. 2183) For cost of publication of scientific studies.....	\$12,000.00	.....	4,000.00
(R.F. 2196, 2214) For studies in governmental problems.....	2,000.00	3,500.00	5,500.00
Committee of Reference and Counsel of the Annual Foreign Mission Confer- ence of North America.			
(R.F. 228) For carrying out its program of co- operation and coordi- nation in foreign mis- sionary work of the principal American Mission Boards. Total pledge of \$425,000.00 ex- tending over a period of ten years, beginning with 1914. (Install- ment due 1917)....	.....	50,000.00	50,000.00
Investigation of Industrial Relations.			
(R.F. 2140) Administra- tion 1916.....	5,182.05	.....	.....
(R.F. 2205) Administra- tion 1917.....	.....	20,000.00	13,868.98
National Committee for the Prevention of Blind- ness.			
(R.F. 233) \$5,000.00 per year for five years be- ginning with 1914. (In- stallment due 1917)...	.....	5,000.00	5,000.00
<i>Carried Forward</i> .....	\$19,182.05	\$128,500.00	\$128,368.98

## EXHIBIT I—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward</i> .....	\$19,182.05	\$128,500.00	\$128,368.98
New York Association for Improving the Condition of the Poor.			
(R.F. 239) For the purpose of providing pensions for dependent widows with families. \$20,000.00 a year for ten years beginning with 1914. (Balance of Installment due 1916)...	15,000.00	.....	15,000.00
(Installment due 1917)...	.....	20,000.00	5,000.00
ASSET ACCOUNTS:			
(R.F. 2204) Books for the Library.....	.....	700.00	282.79
(R.F. 2203) Furniture and Fixtures.....	.....	2,000.00	1,907.07
(R.F. 2252) Grand Chenier Tract, Taxes and Expenses.....	.....	3,000.00	1,619.52
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	\$34,182.05	\$154,200.00	
Unexpended balances of appropriations allowed to lapse.			
(R.F. 2140).....	5,182.05	.....	.....
(R.F. 2203).....	\$92.93		
(R.F. 2204).....	417.21	.....	.....
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TOTALS.....	<u>\$29,000.00</u>	<u>\$153,689.86</u>	<u>\$152,178.36</u>
ADMINISTRATION:			
(R.F. 2201, 2295, 2291A) Secretary's office.....	.....	\$97,353.72	\$91,950.73
(R.F. 2202, 2296, 2291A) Treasurer's office .....	.....	14,439.07	13,581.55
	<hr/>	<hr/>	<hr/>
Unexpended balance of appropriation allowed to lapse.			
(R.F. 2295).....	.....	90.61	.....
	<hr/>	<hr/>	<hr/>
TOTALS.....	<u>.....</u>	<u>\$111,702.18</u>	<u>\$105,532.28</u>

## EXHIBIT J

INTERNATIONAL HEALTH BOARD<sup>1</sup>

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<b>HOOKWORM WORK:</b>			
Southern States:			
Alabama:			
1917 .....	.....	\$3,650.00	\$164.98
Arkansas:			
1917 .....	.....	2,250.00	62.67
Georgia:			
1917 .....	.....	2,150.00	.....
Kentucky:			
1916 .....	1,743.73	.....	1,267.45
1917 .....	.....	2,600.00	1,782.35
Louisiana:			
1916 .....	1,131.16	.....	444.35
1917 .....	.....	3,750.00	881.64
Maryland:			
1917 .....	.....	1,500.00	4.60
Mississippi:			
1916 .....	3,979.25	.....	2,291.48
1917 .....	.....	6,236.00	3,036.77
North Carolina:			
1916 .....	207.01	.....	100.00
1917 .....	.....	7,336.25	600.00
South Carolina:			
1916 .....	2,480.11	.....	1,552.22
1917 .....	.....	8,937.50	5,843.33
Tennessee:			
1916 .....	2,752.37	.....	1,549.94
1917 .....	.....	15,500.00	4,627.33
Texas:			
1916 .....	1,821.58	.....	899.75
1917 .....	.....	14,337.50	1,663.53
Virginia:			
1916 .....	1,608.32	.....	1,270.39
1917 .....	.....	7,950.00	3,901.83
Central America:			
Costa Rica:			
1916 .....	8,489.31	.....	3,819.29
1917 .....	.....	21,194.00	3,291.98
Guatemala:			
1916 .....	6,528.07	.....	1,670.90
1917 .....	.....	12,280.00	7,596.34
<i>Carried Forward</i> .....	\$30,740.91	\$109,671.25	\$48,323.12

<sup>1</sup>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 for the year. From these large grants the Board then makes its own appropriations for specific objects.

## EXHIBIT J—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$30,740.91	\$109,671.25	\$48,323.12
<b>HOOKWORM WORK (Cont.):</b>			
<b>Central America (Cont.):</b>			
<i>Nicaragua:</i>			
1916.....	10,509.42	.....	3,160.30
1917.....	.....	21,560.00	10,894.37
<i>Panama:</i>			
1916.....	6,150.60	.....	3,664.37
1917.....	.....	20,210.00	14,650.40
<i>Salvador:</i>			
1916.....	7,865.66	.....	2,912.49
1917.....	.....	10,179.00	6,878.29
<b>South America:</b>			
<b>Brazil:</b>			
1916.....	1,933.73	.....	1,933.73
1917.....	.....	38,375.00	20,105.36
<b>British Guiana:</b>			
1916.....	10,633.19	.....	2,794.61
1917.....	.....	16,284.50	10,750.32
<b>Dutch Guiana:</b>			
1916.....	3,739.00	.....	2,461.46
1917.....	.....	11,399.00	9,293.04
<b>British West Indies:</b>			
<b>Antigua:</b>			
1916.....	3,767.64	.....	1,905.12
1917.....	.....	5,620.00	1,486.55
<b>Cayman Islands—Survey:</b>			
1917.....	.....	800.00	222.93
<b>Grenada:</b>			
1916.....	4,412.56	.....	1,896.50
1917.....	.....	6,470.00	3,906.18
<b>St. Lucia:</b>			
1916.....	1,771.58	.....	1,662.88
1917.....	.....	7,760.60	5,100.09
<b>St. Vincent:</b>			
1916.....	4,100.02	.....	1,416.69
1917.....	.....	7,807.60	4,029.93
<b>Tobago—Survey:</b>			
1917.....	.....	800.00	425.91
<b>Trinidad:</b>			
1916.....	13,173.25	.....	1,550.64
1917.....	.....	8,470.00	5,066.97
<b>The East:</b>			
<b>Administration:</b>			
1916.....	67.30	.....	67.30
1917.....	.....	300.00	299.70
<i>Carried Forward.....</i>	\$98,864.86	\$265,706.95	\$166,850.25

## EXHIBIT J—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward</i> .....	\$98,864.86	\$265,706.95	\$166,859.25
<b>HOOKWORM WORK (Cont.):</b>			
<b>The East (Cont.):</b>			
Ceylon:			
1916.....	7,433.61	.....	2,122.02
1917.....	.....	16,650.00	11,982.63
China—Hunan Province:			
1917.....	.....	5,000.00	2,873.28
Egypt:			
1915.....	15,891.88	.....	.....
Federated Malay States and Java—Hookworm Commission:			
1916.....	14,503.12	.....	11,474.81
1917.....	.....	13,081.72	4,084.55
Fiji Islands:			
1917.....	.....	5,532.36	1,984.79
Papua and Queensland Survey:			
1917.....	.....	2,000.00	73.87
Philippine Hospital Ship:			
1917.....	.....	12,500.00	.....
Seychelles Islands:			
1917.....	.....	5,312.80	3,688.32
Siam:			
1916.....	1,310.83	.....	2.27
1917.....	.....	5,000.00	1,648.86
Field expenses not covered by Budgets:			
Salaries and expenses of Field Staff:			
1916.....	5,065.39	.....	2,321.14
Salaries of Field Staff:			
1917.....	.....	150,000.00	132,295.45
Traveling expenses of Field Staff:			
1917.....	.....	60,000.00	33,309.03
Traveling expenses of families of Field Staff:			
1917.....	.....	2,000.00	1,699.03
<i>Carried Forward</i> .....	\$143,069.69	\$542,783.83	\$376,419.30

## EXHIBIT J—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward</i> .....	\$143,069.69	\$542,783.83	\$376,419.30
<b>HOOKWORM WORK (Cont.):</b>			
The East (Cont.):			
Field expenses not covered by Budgets. (Cont.):			
Drugs for conserving health of members of the Field Staff.....	.....	500.00	43.49
Purchase of automobiles for use of directors in training .....	.....	3,000.00	1,171.20
Field equipment and supplies .....	.....	3,000.00	2,464.68
Miscellaneous:			
Pamphlet on control of hookworm disease..	.....	700.00	.....
Leaflet on hookworm disease.....	.....	700.00	591.19
Lecture charts on hookworm disease.....	.....	500.00	274.20
School chart on hookworm disease.....	.....	1,400.00	470.27
Conference of health officers of the Southern States.....	.....	2,500.00	2,073.40
Portable house and office, and losses incurred on account of earthquake in Salvador.....	.....	8,600.00	6,060.74°
Motor boat for Dutch Guiana.....	.....	3,000.00	2,710.65
Investigation of sewage disposal			
1916.....	335.61	.....	.....
1917.....	.....	10,000.00	.....
<b>MALARIA WORK:</b>			
Southern States:			
Arkansas:			
1917.....	.....	6,240.00	3,141.33
Mississippi:			
1916.....	15,191.95	.....	7,077.47
1917.....	.....	41,170.00	25,914.02
<i>Carried Forward</i> .....	\$158,597.25	\$624,093.83	\$428,411.94

## EXHIBIT J—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward</i> .....	\$158,597.25	\$624,093.83	\$428,411.94
<b>YELLOW FEVER WORK:</b>			
Yellow Fever Commission:			
1916.....	6,004.16	.....	1,467.33
Yellow Fever Control:			
Guayaquil, Ecuador..	.....	20,000.00	
East coast of Brazil..	.....	5,000.00	1,609.42
Salaries of Yellow Fever Commission.....	.....	35,000.00	.....
Traveling expenses of Yellow Fever Commis- sion.....	.....	12,000.00	503.55
<b>TUBERCULOSIS WORK IN FRANCE:</b>			
Inauguration of work...	.....	25,000.00	18,579.08
Central administration ..	.....	24,265.00	14,122.58
Medical division.....	.....	33,798.00	5,211.71
Educational division ...	.....	16,820.00	568.00
<b>MEDICAL EDUCATION:</b>			
Trip to South America of advisor in medical education.....	.....	7,400.00	5,618.79
Sao Paulo, Brazil, De- partment of Hygiene —Equipment.....	.....	10,000.00	179.59
University of Pennsyl- vania:			
1916.....	1,000.00	.....	600.94
1917.....	.....	2,500.00	1,250.00
Chagas, Dr. Carlos P. Fellowship.....	.....	2,650.00	971.85
<b>MISCELLANEOUS:</b>			
Survey and Education:			
Administration 1917	.....	18,420.00	13,854.57
Express, freight, and ex- change.....	.....	4,000.00	3,022.17
Income tax on non-resi- dent aliens.....	.....	3,500.00	.....
	<b>\$165,601.41</b>	<b>\$844,446.83</b>	<b>\$495,971.52</b>
<b>ADMINISTRATION:</b>			
Home Office.....	128.77	75,540.16	61,857.66
<i>Carried Forward</i> .....	<b>\$165,730.18</b>	<b>\$919,986.99</b>	<b>\$557,820.18</b>

## EXHIBIT J—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$165,730.18	\$919,986.99	\$557,829.18
Balance of funds appropriated by the Rockefeller Foundation for the Board's work during 1917 remaining unappropriated by the International Health Board on December 31, 1917.....		31,163.99	.....
	<hr/>	<hr/>	<hr/>
	\$165,730.18	\$951,150.98	
Unexpended balances of appropriations and unappropriated balance allowed to lapse .....	84,480.46	94,788.49	.....
	<hr/>	<hr/>	<hr/>
<b>TOTALS.....</b>	<b>\$81,249.72</b>	<b>\$856,362.49</b>	<b>\$557,829.18</b>

## EXHIBIT K

CHINA MEDICAL BOARD<sup>1</sup>

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
MISSIONARY SOCIETIES— HOSPITALS:			
American Baptist Foreign Mission Society.			
(C.M. 276) Ningpo Hospital, for salaries of doctor and nurse, \$2,250.00 per year for five years, beginning with 1918. ....		.....	.....
(C.M. 277) Shaohsing Hospital, for support of foreign nurse, Chinese business manager and foreign doctor, \$2,475.00 per year for five years, beginning with 1918. ....		.....	.....
<i>Carried Forward.....</i>	.....	.....	.....

<sup>1</sup> 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.

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	.....	.....	.....
MISSIONARY SOCIETIES—			
HOSPITALS (Cont.):			
American Baptist Foreign Mission Society. (Cont.):			
(C.M. 278) Shaohsing Hospital, equipment and residences for Chinese staff, nurse, and physician .....	\$8,512.50	.....	.....
American Board of Commissioners for Foreign Missions.			
(C.M. 211, 294) Tehchow Hospital, for salary of two doctors, \$3,236.00 per year for five years, beginning with 1915. (Balance due on previous installments) .....	5,418.00	.....	\$1,054.00
(Installment due 1917)	.....	\$3,236.00	263.50
(C.M. 297) Tehchow Hospital, employees salaries, \$3,951.00 per year for five years, beginning with 1916. (Balance of installment due 1916)	2,963.25	.....	2,172.75
(Installment due 1917)	.....	3,951.00	.....
(C.M. 2229) Tehchow Hospital, for support of a business manager, \$201.00 per year for five years, beginning with 1916. (Installments for 1916 and 1917) .....	.....	402.00	201.00
Board of Foreign Missions of the Methodist Episcopal Church.			
(C.M. 283, 2176) Wuhu Hospital, for salary and allowance of doctor, \$900.00 per year for five years, beginning with 1916. (Installment due 1916).	825.00	.....	825.00
<i>Carried Forward.....</i>	\$17,718.75	\$7,589.00	\$4,516.25

EXHIBIT K—*Continued*

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
Brought Forward.....	\$17,718.75	\$7,589.00	\$4,516.25
MISSIONARY SOCIETIES—			
HOSPITALS ( <i>Cont.</i> ):			
Board of Foreign Missions of the Methodist Epis- copal Church. ( <i>Cont.</i> ):			
(Installment due 1917) .....	975.00	675.00	
(C.M. 223, 2102) Pe- king, salary of two doctors; Changli, sal- ary of physician and foreign nurse; Taian- fu, salary of physi- cian and foreign nurse. \$11,800.00 a year for five years, beginning with 1916. (Installments due in previous years) .. \$21,200.00			
Less por- tion of ap- propriation lapsed.. 18,800.00	2,400.00	.....	2,400.00
(Install- ment due 1917) ... \$11,800.00			
Less por- tion of ap- propriation lapsed.. 9,400.00	.....	2,400.00	800.00
Board of Missions of the Methodist Episcopal Church, South.			
(C.M. 236, 2105) Soo- chow Hospital, for doctor's residence, outfit, traveling ex- penses, and medical allowance, \$3,500.00; for salary \$600.00 per year for five years, beginning with 1916. (Balance of install- ment due 1916) .... 3,000.00	.....	3,000.00	
(Installment due 1917) .....	600.00	.....	
Carried Forward.....	\$23,118.75	\$11,584.00	\$11,391.25

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$23,118.75	\$11,564.00	\$11,391.25
<b>MISSIONARY SOCIETIES—</b>			
<b>HOSPITALS (Cont.):</b>			
Board of Missions of the Methodist Episcopal Church, South and American Baptist Foreign Mission Society, jointly.			
(C.M. 2151) New Union Hospital at Huchow, for building and equipment. ....	.....	20,000.00	.....
(C.M. 2152) Hospital at Huchow, for support of a foreign physician, \$5,025.00 extending over a period of five years, beginning with 1918. ....	.....	.....	.....
(C.M. 2153) Hospital at Huchow, for support of a foreign nurse, \$3,000.00 extending over a period of five years, beginning with 1918 ..	.....	.....	.....
(C.M. 2154) Hospital at Huchow, for support of a Chinese physician, \$2,250.00 extending over a period of five years, beginning with 1918 ..	.....	.....	.....
Board of Foreign Missions of the Presbyterian Church in the U. S. A.			
(C.M. 284) Chefoo Hospital, for salary and allowance of doctor and nurse, \$2,625.00 per year for five years, beginning with 1917. (Installation due 1917) ....	.....	2,625.00	825.00
(C.M. 2242) Chefoo Hospital, for the installation of an electric lighting system. ....	.....	900.00	900.00
<i>Carried Forward.....</i>	\$23,118.75	\$35,089.00	\$13,116.25

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward</i> .....	\$23,118.75	\$35,089.00	\$13,116.25
<b>MISSIONARY SOCIETIES—</b>			
<b>HOSPITALS (Cont.):</b>			
Board of Foreign Mis- sions of the Presby- terian Church in the U. S. A. (Cont.):			
(C.M. 285) Hwaiyuen Hospital, for salary and allowance of phy- sician and nurse, and running expenses, \$3,- 375.00 per year for five years, beginning with 1918.....	.....	.....	.....
(C.M. 286) Hwaiyuen Hospital, for resi- dence of doctor, and equipment .....	5,250.00	.....	.....
(C.M. 287) Paotingfu Hospital, for equip- ment and repairs...	117.50	.....	117.50
(C.M. 214, 295) Pa- otingfu, for salaries of doctor and two nurses and residence; Shuntehfu, for sal- aries of doctor and two nurses and resi- dence. Salaries, \$9,- 200.00 per year for five years, beginning with 1916. (Balance of installment due 1916). ....	4,400.00	.....	.....
(Installment due 1917). ....	.....	9,200.00	.....
(C.M. 2189) Paoting- fu Hospital, for sal- ary of Business Manager.....	.....	900.00	900.00
(C.M. 2142) Shun- tehfu Hospital, for maintenance, \$750.00 per year for five years, beginning with 1916. (Installment due 1917). ....	.....	750.00	.....
<i>Carried Forward</i> .....	\$32,886.25	\$45,939.00	\$14,133.75

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$32,886.25	\$45,939.00	\$14,133.75
<b>MISSIONARY SOCIETIES—</b>			
HOSPITALS ( <i>Cont.</i> ):			
Board of Foreign Mis- sions of the Presby- terian Church in the U. S. A. ( <i>Cont.</i> ):			
(C.M. 2144) Changteh Hospital, for current expenses, \$2,625.00 per year for five years, <u>beginning with 1916.</u> (Balance of install- ment due 1916) ....	1,800.00	.....	225.00
(Installment due 1917) ..... (C.M. 2145) Changteh Hospital, for capital expenditures.....	.....	2,625.00	.....
Canton Christian Col- lege.	13,050.00	.....	.....
(C.M. 2139) Canton Hospital, for a busi- ness manager and current expenses, \$4,- 500.00 per year for five years, <u>beginning</u> with 1917. (Install- ment due 1917) ....	.....	4,500.00	4,500.00
Church of Scotland For- eign Mission Com- mittee.			
(C.M. 288) Ichang Hospital, for equip- ment.....	375.00	.....	.....
(C.M. 289) Ichang Hospital, for support of a third foreign doctor and nurse, \$2,250.00 per year for five years, be- ginning with 1918..	.....	.....	.....
<i>Carried Forward.....</i>	\$48,111.25	\$53,064.00	\$18,853.75

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$48,111.25	\$53,064.00	\$18,858.75
<b>MISSIONARY SOCIETIES—</b>			
<b>HOSPITALS (Cont.):</b>			
Executive Committee of Foreign Missions of the Presbyterian Church in the United States, South.			
(C.M. 221, 2101) Soochow, for salary, outfit and travel to field of doctor and foreign nurse; Kashing, for salary, outfit and travel to field of foreign nurse. Salaries, \$3,600.00 per year for five years, beginning with 1915. (Balance of installments from previous years)	7,750.00	.....	3,125.00
(Installment due 1917).....	.....	3,600.00	.....
Foreign Christian Missionary Society.			
(C.M. 215, 2100) Luchowfu, for salaries, allowances and outfits of doctor and nurse; Nantungchow, for salary allowance and outfit of nurse. Salaries and allowances, \$4,200.00 per year for five years, beginning with 1918.....	.....	.....	.....
(C.M. 2218) Nantungchow Hospital, for support of a second physician, \$8,400.00 extending over a period of five years, beginning with 1918 ..	.....	.....	.....
(C.M. 2219) Nantungchow Hospital, for doctor's residence ..	.....	3,000.00	.....
<i>Carried Forward.....</i>	\$55,861.25	\$59,664.00	\$21,983.75

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$55,861.25	\$59,664.00	\$21,983.75
<b>MISSIONARY SOCIETIES—</b>			
<b>HOSPITALS (Cont.):</b>			
Foreign Christian Missonary Society. (Cont.):			
(C.M. 2220) Luchow-fu Hospital, for support of a Chinese doctor.....	.....	360.00	360.00
Foreign Mission Board of the Southern Baptist Convention.			
(C.M. 279) Laichowfu Hospital, for salary of additional physician and wife, and nurse, \$1,650.00 per year for five years, beginning with 1918	.....	.....	.....
(C.M. 280) Laichowfu Hospital, for equipment and outgoing expenses of a physician and wife.....	750.00	.....	.....
(C.M. 281) Hwanghien Hospital, for salary of physician, \$900.00 per year for five years, beginning with 1918.....	.....	.....	.....
(C.M. 282) Hwanghien Hospital, for outfit and travel of a physician.....	750.00	.....	.....
(C.M. 225, 2103) Warren Memorial Hospital, Hwanghien, for salary of a nurse, \$600.00 per year for five years, beginning with 1916. (Balance of Installment due 1916).....	600.00	.....	600.00
(Installment due 1917).....	.....	600.00	450.00
<i>Carried Forward.....</i>	\$57,961.25	\$60,624.00	\$23,393.75

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$57,961.25	\$60,624.00	\$23,393.75
<b>MISSIONARY SOCIETIES—</b>			
<b>HOSPITALS (Cont.):</b>			
Foreign Mission Board of the Southern Baptist Convention (Cont.):			
(C.M. 232, 2104) Yang- chow Hospital, for salary of a nurse, \$600.00 per year for five years, beginning with 1916. (Balance of installment due 1916).....	450.00	.....	450.00
(Installment due 1917)	.....	600.00	175.00
(C.M. 228, 2106) Cheng- chow, for salary of a doctor, \$1,200.00 per year for five years, beginning with 1916. (Balance of install- ment due 1916) ....	850.00	.....	850.00
(Installment due 1917)	.....	1,200.00	350.00
London Missionary So- ciety.			
(C.M. 2167) Siaochang Hospital, for support of an additional nurse, \$600.00 per year for five years, beginning with 1918	.....	.....	.....
Medical Mission Auxili- ary of London, E. C.			
(C.M. 2201) Tai Yuan Fu Hospital, for im- provements and sup- plies .....	.....	3,150.00	.....
United Free Church of Scotland.			
(C.M. 2232) Mukden Hospital, for sup- port of nurse, \$750.00 per year for five years, beginning with 1918.....	.....	.....	.....
(C.M. 2233) Mukden Hospital, for im- provements.....	.....	9,000.00	.....
<i>Carried Forward.....</i>	\$59,261.25	\$74,574.00	\$25,218.75

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$59,261.25	\$74,574.00	\$25,218.75
<b>MISSIONARY SOCIETIES—</b>			
<b>HOSPITALS (Cont.):</b>			
University of Nanking.			
(C.M. 2137) For cur- rent expenses of its hospital, \$9,250.00 per year for five years, <u>beginning with</u> 1917. (Installment due 1917).....	.....	9,250.00	9,250.00
(C.M. 2138) For build- ings and equipment.	25,000.00	.....	13,000.00
Woman's Foreign Mis- sionary Society of the Methodist Epis- copal Church.			
(C.M. 2175) Isabella Fisher Hospital, Tien- tsin, for equipment .	.....	1,500.00	1,500.00
<b>Loss in Exchange.</b>			
(C.M. 2251) To cover loss in exchange on payments to Mis- sionary Societies, for their hospitals, during 1917.....	.....	20,000.00	.....
<b>FELLOWSHIPS:</b>			
Medical Missionaries and Nurses on Furlough.	10,516.68	32,700.00	23,312.30
Medical Fellowships, Chinese.....	4,636.24	9,900.00	7,525.61
Miscellaneous Fellowships	5,095.00	10,000.00	3,910.00
<b>SCHOLARSHIPS:</b>			
Students of Harvard Medi- cal School in China	2,973.31	12,000.00	6,263.48
Chinese Pharmacists ...	2,199.00	2,610.00	2,754.00
Chinese Nurses.....	1,600.00	4,000.00	750.00
<b>MEDICAL SCHOOLS—UN- AFFILIATED:</b>			
St. John's University of Pennsylvania Medi- cal School, Shanghai.			
(C.M. 2200) For sup- port of teacher of anatomy and dissec- tion.....	.....	1,500.00	1,500.00
<i>Carried Forward.....</i>	\$111,281.48	\$178,034.00	\$94,984.14

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
Brought Forward.....	\$111,281.48	\$178,034.00	\$94,984.14
MEDICAL SCHOOLS—UN- AFFILIATED (Cont.):			
Tsinanfu Union Medical College.			
(C.M. 251) For build- ings and equipment.	30,000.00	.....	26,763.45
(C.M. 252) For cur- rent expenses of edu- cating students sent to Tsinanfu by the China Medical Board during a period of five years.....	90,000.00	.....	28,150.90
(C.M. 2217) To cover loss in exchange in connection with ap- propriations C.M. 251 and 252.....	.....	20,000.00	.....
Yale Foreign Missionary Society.			
(C.M. 27) For support of Hunan-Yale Med- ical School, Chang- sha, \$16,200.00 per year for five years, beginning with 1915.	8,100.00	.....	8,100.00
(Balance of install- ment due 1916) ....	.....	16,200.00	8,100.00
(Installment due 1917).....	30,000.00	.....	20,000.00
(C.M. 2133) For lab- oratory and equip- ment at medical school, Changsha...	.....	4,000.00	4,000.00
(C.M. 2230) For ex- tended budget of Hu- nan-Yale Medical School, Changsha, \$9,000.00 extending over a period of three years begin- ning with 1917. (In- stallment due 1917).	\$269,381.48	\$218,234.00	\$190,098.49

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward</i> .....	\$269,381.48	\$218,234.00	\$190,098.49
<b>MEDICAL SCHOOLS—UN- AFFILIATED (Cont.):</b>			
<b>Yale Foreign Missionary Society. (Cont.):</b>			
(C.M. 2231) For sup- port of a third in- structor in the Pre- Medical Department of the Hunan-Yale Medical School, \$6,- 200.00 extending over a period of three years, beginning with 1917. (Installment due 1917).....	.....	2,700.00	2,700.00
(C.M. 2249) To cover loss in exchange in connection with ap- propriation C.M. 2133.....	.....	8,500.00	7,764.75
<b>MEDICAL SCHOOLS—AF- FILIATED:</b>			
<b>Peking Union Medical College.</b>			
<b>Assets:</b>			
(C.M. 212) Purchase of Union Medical Col- lege, Peking.....	26,368.21	.....	.....
(C.M. 213, 2212, 2213) Purchase of addi- tional property .....	4,147.96	17,400.00	.....
(C.M. 248) Purchase of small adjoining lot.....	1,080.00	.....	1,076.71
(C.M. 239) Purchase of property of Prince Yu.....	61,406.30	1,214.50	62,620.80
(C.M. 249) Miscel- laneous land pur- chases.....	18,923.29	.....	6,521.52
(C.M. 2170) Purchase of land adjoining Prince I's property .	.....	3,000.00	.....
(C.M. 2165) Plans for a hospital and labor- atory.....	1,000.00	.....	.....
<i>Carried Forward</i> .....	\$382,307.24	\$251,048.50	\$270,782.27

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward.....</i>	\$382,307.24	\$251,048.50	\$270,782.27
MEDICAL SCHOOLS—AFFILIATED (Cont.):			
Peking Union Medical College.			
Assets (Cont.):			
(C.M. 2196, 2228, 2267) Buildings and fixed equipment.....	.....	252,600.00	.....
(C.M. 2197) Movable equipment.....	.....	25,000.00	.....
(C.M. 2188, 2214) Repairs and alterations.....	.....	32,800.00	.....
Accessories:			
(C.M. 266, 2198) Furnishings, apparatus, etc.....	1,141.26	25,000.00	.....
Operation in China:			
(C.M. 219, 273, 2107) Budget, Previous years.....	79,291.08	.....	37,320.19
(C.M. 2190) Budget 1917-18.....	.....	92,000.00	.....
(C.M. 2246) Traveling expenses of Miss Susan H. Connelly....	.....	316.85	316.85
(C.M. 2262) Outfit and travel of Dr. F. H. Dieterich .....	.....	615.87	.....
Administration in U.S.A.			
(C.M. 299, 2159, 2168, 2192) Budget 1916-17.....	12,312.32	500.00	8,018.42
(C.M. 2191) Budget 1917-18.....	.....	26,000.00	6,039.55
Pre-Medical School Administration.			
Accessories:			
(C.M. 2161) Furnishings, apparatus, etc.	15,000.00	.....	.....
Operation:			
(C.M. 2162) Budget 1917-18.....	.....	26,000.00	1,000.00
Red Cross Hospital, Shanghai.			
Accessories:			
(C.M. 2109) Automobile and ambulance.	510.00	.....	.....
<i>Carried Forward.....</i>	\$490,561.90	\$731,881.22	\$323,477.28

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
<i>Brought Forward</i> .....	\$490,561.90	\$731,881.22	\$323,477.28
MEDICAL SCHOOLS—AFFILIATED (Cont.):			
Red Cross Hospital, Shanghai. (Cont.)			
Administration:			
(C.M. 256, 268) Bud- get 1916-17.....	19,667.89	.....	14,527.78
(C.M. 256, 2248) Bud- get 1917-18.....	.....	51,209.00	.....
Shanghai Medical School.			
Assets:			
(C.M. 2199) Build- ings and fixed equip- ment.....	.....	22,000.00	179.86
(C.M. 2215) Library.....	.....	3,000.00	.....
Administration:			
(C.M. 2193, 2169) Sal- ary and traveling ex- penses.....	.....	6,500.00	3,673.96
Purchase of Land in China (C.M. 2110). .	195,582.62	.....	122,693.62
MISCELLANEOUS:			
Emergency Fund:			
(C.M. 2211) For aid of medical work of va- rious kinds in China, at the discretion of the Resident Di- rector .....	.....	3,000.00	.....
Translation:			
Nurses Association of China.			
(C.M. 2185) For trans- lation of nursing text books .....	.....	600.00	.....
Cousland, Dr. P. B.			
(C.M. 2135) For ex- penses, 1916.....	881.36	.....	881.36
(C.M. 2136, 2245) For expenses, 1917 .	.....	2,500.00	2,500.00
Income Tax:			
(C.M. 2247) Income tax on non-resident aliens.....	.....	2,500.00	.....
<i>Carried Forward</i> .....	\$706,693.77	\$828,190.22	\$467,933.86

## EXHIBIT K—Continued

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
Brought Forward.....	\$706,693.77	\$823,190.22	\$467,933.86
MISCELLANEOUS. (Cont.):			
Peking Office—Administration.			
(C.M. 260, 271, 274)			
Budget 1916-17....	10,216.86	.....	9,431.39
(C.M. 2195, 2250)			
Budget July 1 to December 31, 1917....	.....	13,750.00	3,750.00
ADMINISTRATION:			
Home Office.			
(C.M. 275, 2264) Bud- get 1916-17.....	10,545.52	5,000.00	11,356.23
(C.M. 2194, 2265)			
Budget July 1 to December 31, 1917....	.....	13,300.00	8,950.24
		<u>\$855,240.22</u>	
Balance of funds appropri- ated by the Rockefeller Foundation for the Board's work during 1917 remaining unap- propriated by the China Medical Board on December 31, 1917.	.....	1,445.28	.....
		<u>\$727,456.15</u>	<u>\$856,685.50</u>
Unexpended balances of ap- propriations and un- appropriated balance allowed to lapse.....	36,744.77	13,575.22	.....
		<u>\$690,711.38</u>	<u>\$843,110.28</u>
		<u>\$501,421.72</u>	

## EXHIBIT L

## SUMMARY OF APPROPRIATIONS AND PAYMENTS

	PRIOR APPROPRIA- TIONS	1917 APPROPRIA- TIONS	1917 PAYMENTS
INTERNATIONAL HEALTH BOARD.	\$81,249.72	\$856,362.49	\$557,829.18
CHINA MEDICAL BOARD.....	690,711.38	848,110.28	501,421.72
WAR WORK.....	267,625.94	7,898,714.28	5,944,968.53
AFTER CARE OF INFANTILE PARALYSIS CASES.....	18,401.27	36,800.00	44,737.49
MENTAL HYGIENE.....	7,800.00	55,500.00	48,800.00
ROCKEFELLER INSTITUTE—ENDOWMENT AND CURRENT EXPENSES.....	1,151,061.32	2,137,156.08	3,127,913.68
SCHOOL OF HYGIENE AND PUBLIC HEALTH.....	237,000.00	72,790.00	31,319.70
FOUNDER'S DESIGNATIONS.....	907,488.11	34,763.31	942,251.42
MISCELLANEOUS.....	29,000.00	153,689.86	152,178.36
ADMINISTRATION.....	.....	111,702.18	105,532.28
	<u>\$3,390,337.74</u>	<u>\$12,200,588.48</u>	<u>\$11,456,952.36</u>

Prior appropriations.....	\$3,390,337.74
1917 appropriations.....	<u>12,200,588.48</u>
Total appropriations.....	\$15,590,926.22
1917 payments.....	11,456,952.36
Balance payable on appropriations.....	<u>\$4,133,973.86</u>

## EXHIBIT M

## ADDITIONAL APPROPRIATIONS FOR FUTURE YEARS

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 1918:

INTERNATIONAL HEALTH BOARD . . . . .	\$1,500,000.00
CHINA MEDICAL BOARD . . . . .	1,345,657.00
WAR WORK. . . . .	2,948,000.00
AFTER CARE OF INFANTILE PARALYSIS CASES. . . . .	15,000.00
MENTAL HYGIENE. . . . .	7,000.00
ROCKEFELLER INSTITUTE AND MEDICAL EDUCATION . . . . .	49,000.00
SCHOOL OF HYGIENE AND PUBLIC HEALTH. . . . .	110,617.00
MISCELLANEOUS. . . . .	253,463.00
	<hr/>
Year 1919. . . . .	1,110,000.00
Year 1920. . . . .	1,575,000.00
Year 1921. . . . .	65,000.00
Year 1922. . . . .	60,000.00
Year 1923. . . . .	55,000.00
Year 1924. . . . .	15,000.00
	<hr/>
	<u>\$9,103,737.00</u>

In addition to the foregoing, the China Medical Board has made pledges and appropriations which become effective in future years, and will require for payment the following amounts:

Year 1918. . . . .	\$1,106,607.00
Year 1919. . . . .	251,913.00
Year 1920. . . . .	91,827.00
Year 1921. . . . .	66,900.00
Year 1922. . . . .	50,225.00
Year 1923. . . . .	22,700.00
	<hr/>
	<u>\$1,590,172.00</u>

As the appropriation to the China Medical Board, included in the Foundation's requirements for future years, provides for the 1918 appropriations of the Board, this item is deducted

1,106,607.00

\$483,565.00

## EXHIBIT N

## STATEMENTS OF PRINCIPAL FUNDS

## GENERAL FUND

Gifts from May 29, 1913 to December 31, 1916.....	\$100,000,000.00
Gift from Mr. Rockefeller, February 28, 1917.....	25,765,506.00
Gift from Mr. Rockefeller, as of March 6, 1914.....	350.00
	<hr/>
	\$125,765,856.00
Less amount made available for appropriation by action of Board, accounted for in Exhibit B.....	5,000,000.00
	<hr/>
Balance.....	\$120,765,856.00
The total fund is invested in the securities listed in General Schedule, Exhibit Q.....	<u>\$120,765,856.00</u>

## ESTATE OF LAURA S. ROCKEFELLER FUND

Balance of gifts January 1st, 1917.	\$177,733.00
Less amount made available for appropriation by action of Board, accounted for in Exhibit B.....	25,000.00
	<hr/>
Balance.....	\$152,733.00
The total fund is invested in the securities listed in General Schedule, Exhibit Q.....	<u>\$152,733.00</u>

## RESERVE

Balance January 1, 1917.....	\$1,770,414.79
Loss on securities sold and redeemed during the year.....	554,501.94
	<hr/>
Balance.....	\$1,215,912.85
The total fund is invested in the securities listed in General Schedule, Exhibit Q.....	<u>\$1,215,912.85</u>

## EXHIBIT N—Continued

## LAURA S. ROCKEFELLER FUNDS

Gifts . . . . .	<u>\$49,300.00</u>
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The total fund is invested in the securities listed in Exhibit R . . .	<u>\$49,300.00</u>
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## JOHN D. ROCKEFELLER FUND

Gifts . . . . .	<u>\$37,000.00</u>
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The total fund is invested in the securities listed in Exhibit R . . .	<u>\$37,000.00</u>
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## EXHIBIT O

## LAND, BUILDINGS, AND EQUIPMENT FUNDS

Appropriations to December 31, 1916 . . . . .	<u>\$630,959.37</u>
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From this is deducted the value of merchandise, drugs, etc., now withdrawn from this account and carried as a receivable.	<u>\$13,599.22</u>
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Amount of depreciation of Foundation's equipment for years 1913-1916, inclusive, is also deducted . . . .	<u>5,695.04</u>
	<u>19,294.26</u>

Balance . . . . .	<u>\$611,665.11</u>
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Appropriations to China Medical Board expended for real and personal property during the year:	
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Additional cost Peking Union Medical College . . . . .	<u>\$104.88</u>
Additional land Peking Union Medical College . . . . .	<u>70,219.03</u>
Library Peking Union Medical College . . . . .	<u>4,033.04</u>
Miscellaneous land purchases in China . . . . .	<u>122,693.62</u>
Library Shanghai Medical School . . . . .	<u>179.86</u>

	<u>\$197,230.43</u>
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Appropriations for taxes on Grand Chenier Tract . . . .	<u>1,619.52</u>
Foundation Library and Equipment . . . . .	<u>2,189.86</u>

	<u>201,039.81</u>
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Carried Forward . . . . .	<u>\$812,704.92</u>
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## EXHIBIT O—Continued

## LAND, BUILDINGS, AND EQUIPMENT FUNDS—Continued

*Brought Forward* ..... \$812,704.92

This fund is represented by the  
following property:

The Rockefeller Foundation:

Grand Chenier Tract

(Land, taxes, fees, etc.) \$235,493.99

Furniture and Fixtures .. 11,238.07

Library—New York City 1,176.07

\_\_\_\_\_ \$247,908.13

China Medical Board:

Property of Peking Union

Medical College ..... \$189,860.54

Property of Prince Yu—

China ..... 126,214.50

Property of Mr. Ying—

China ..... 20,381.51

Miscellaneous land pur-

chases ..... 194,709.23

Harvard Medical School. 28,800.00

Equipment—New York

City ..... 618.11

Equipment—Peking, China 4,033.04

Equipment — Shanghai,

China ..... 179.86

\_\_\_\_\_ 564,796.79

\_\_\_\_\_ \$812,704.92 \$812,704.92

## EXHIBIT P

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## TRANSACTIONS RELATING TO INVESTED FUNDS

## SECURITIES SOLD, REDEEMED, AND EXCHANGED

	NAME	INTEREST RATE	PROCEEDS	GAIN	LOSS	TREASURER'S REPORT
\$15,000.	American Agricultural Chemical Co. First Mortgage	5	\$15,450.00	Gain	\$300.00	
500,000.	Atlantic Coast Line Ry. First Consolidated Mortgage	4	390,981.00	Loss	64,019.00	
2,000.	Central Pacific Ry. Thirty-Year guaranteed	3½	1,817.50	Gain	37.50	
1,000,000.	Chicago, Burlington & Quincy R. R. General Mortgage	4	791,590.00	Loss	143,410.00	
6,000.	Denver & Rio Grande R.R. First Consolidated Mortgage	4	4,890.00	Loss	210.00	
9,504.	Euclid Heights property mortgages, liquidated in full by payment during year, of		9,504.00			
250,000.	Kansas City Southern Ry. First Mortgage	3	143,564.00	Loss	29,873.50	
1,000,000.	Lake Shore & Michigan Southern Ry. Debenture	4	818,130.00	Loss	101,870.00	
2,000.	Long Island R.R. Refunding Mortgage	4	1,785.00	Loss	15.00	
6,000.	Louisville & Nashville R.R. Unified Mortgage	4	5,790.00	Gain	210.00	
33,000.	Magnolia Petroleum Co. First Mortgage	6	33,000.00			
2,198,000.	Missouri Pacific Ry. Co. Collateral Trust 4% Bonds exchanged for preferred stock of reorganized company, as shown in next table, at market value of		1,219,890.00	Loss	98,910.00	
36,000.	New York Central Lines Equipment Trust	4½	36,000.00	Gain	345.85	
94,000.	New York City Three-Year Revenue	6	94,000.00			331

## EXHIBIT P—Continued

## SECURITIES SOLD, REDEEMED, AND EXCHANGED—Continued

	NAME	INTEREST RATE	PROCEEDS		
\$250,000.	Northern Pacific Ry. General Lien .....	8	\$137,500.00	Loss	\$25,000.00
51,925.	Ohio Fuel Supply Co. Debenture.....	6	51,925.00		
520,000.	Pere Marquette Ry. Consolidated Mortgage 4% Bonds exchanged for preferred stock of reorganized company, as shown in next table, at market value of \$313,248.00 and cash amounting to \$14,352.00.....				
100,000.	Southern Pacific Branch Ry. First Mortgage .....	6	128,625.00	Gain	6,484.80
1,000,000.	Union Pacific R.R. Refunding Mortgage.....	4	742,337.00	Loss	158,413.00
45,000.	Wabash R.R. Omaha Division First Mortgage.....	3½	38,856.25	Gain	4,106.25
434,000.	Wheeling & Lake Erie R.R. First Consolidated Mortgage.....	4	351,017.50	Gain	3,817.50
50	Shares Borne-Sorynser Co.....		23,042.76	Gain	8,292.76
220	Shares Chehalis & Pacific Land Co. Dividends of \$4.00 per share in liquidation, credited to cost of stock .....				
619	Shares Colonial Oil Co. Dividend of \$50.00 per share in liquidation, added to Reserve .....		880.00		
300	Shares Cumberland Pipe Line Co.....		30,950.00	Gain	30,950.00
842	Shares Galena Signal Oil Co. Common.....		39,903.20	Gain	18,303.20
1,900	Shares H. H. Kohlsaat Co. in bankruptcy. Eliminated from assets and valuation charged against Reserve.....		146,122.99	Loss	13,856.85
138	Shares National Fuel Gas Co.....		86,409.23	Loss	95,000.00
300	Shares National Lead Co. Preferred.....		33,853.39	Gain	8,406.73
6,567 46	Shares Ohio Fuel Supply Co.....		313,545.76	Gain	2,653.39
					84,778.09

500	Shares Pressed Steel Car Co. Preferred.....	\$52,291.67	Gain	\$7,416.67
65	Shares Swan & Finch Co.....	7,270.57	Loss	5,520.21
105	Shares Union Tank Line Co.....	9,959.78	Gain	2,609.78
300	Shares U. S. Rubber Co. First Preferred .....	33,252.50	Gain	2,883.10
500	Shares The Western Maryland Ry. Preferred Stock exchanged for preferred stock of reorganized com- pany as shown in next table, at unchanged valua- tion.....	28,000.00		
<b>TOTALS</b>		<b>\$6,084,734.10</b>	<b>Net Loss</b>	<b>\$554,501.94</b>

TREASURER'S REPORT

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## EXHIBIT P—Continued

## TRANSACTIONS RELATING TO INVESTED FUNDS—Continued

## SECURITIES BOUGHT AND RECEIVED THROUGH EXCHANGE

	NAME	INTEREST RATE	PRICE PER CENT	TOTAL COST
\$1,000,000.	Bethlehem Steel Co. Two-Year Secured Gold Notes .....	5	98.25	\$982,500.00
500,000.	Wheeling & Lake Erie R.R. Equipment Trust Series "B" .....	5	99.75	498,750.00
1,000.	Shares Cumberland Pipe Line Co.....		100.	100,000.00
21,980.	Shares Missouri Pacific R.R. Voting Trust Certificates for Convertible Preferred Stock, received in exchange for Missouri Pacific Ry. Collateral Trust 4% Bonds under plan of reorganization. Valued at current quotation on day of receipt ..		55.50	1,219,890.00
2,513 <sup>44</sup> / <sub>75</sub>	Shares Ohio Fuel Supply Co. (Par \$25.00).....		100.	62,837.00
5,740 <sup>12</sup> / <sub>75</sub>	Shares Pere Marquette Ry. Preferred Stock, received in exchange for Pere Marquette R.R. Consolidated Mortgage 4% Bonds under plan of reorganization. Valued at about the current market quotation on day of receipt.....		54.565	313,248.00
500	Shares Western Maryland Ry. Second Preferred Stock, received in exchange for The Western Maryland Ry. Preferred Stock under plan of reorganization. Valuation of old shares given to new.		46.	23,000.00
<b>TOTAL</b> .....				<b>\$3,200,225.00</b>

SECURITIES RECEIVED AS GIFTS

Received from Mr. John D. Rockefeller:

10 Shares American Ship Building Co. Common at \$35.00 per share . . . . .	\$350.00
29,718 Shares Standard Oil Co. (Indiana) at \$867.00 per share . . . . .	25,766,506.00
<b>TOTAL . . . . .</b>	<b>\$25,765,856.00</b>

SECURITIES GIVEN TO THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH ON ACCOUNT OF FOUNDATION'S APPROPRIATION OF \$2,000,000

\$762,000. Lake Shore & Michigan Southern Ry. Debenture . . . . .	4	\$701,040.00
1,298,000. Magnolia Petroleum Co. First Mortgage . . . . .	6	1,298,000.00
<b>TOTAL . . . . .</b>		<b>\$1,999,040.00</b>

## EXHIBIT Q

## SCHEDULE OF SECURITIES IN GENERAL FUNDS ON DECEMBER 31, 1917, REPRESENTING BOTH PRINCIPAL AND INCOME TEMPORARILY INVESTED

## BONDS

THE ROCKEFELLER FOUNDATION

NAME	INTEREST RATE PER CENT.	DATE OF MATURITY	AMOUNT	PRICE PER CENT.	CASE PRICE
American Agricultural Chemical Co. First Mortgage Convertible.....	5	Oct. 1928	\$485,000	101.	\$489,850.00
American Telephone & Telegraph Co. Thirty-Year Collateral Trust.....	5	Dec. 1946	100,000	97.75	97,750.00
Anglo-French External Loan.....	5	Oct. 15'20	600,000	96.0862	576,517.20
Armour & Co. Real Estate First Mortgage .....	4½	June 1939	1,000,000	93.25	932,500.00
Ashland Power Co. First Mortgage.....	5	Mar. 1928	8,000	100.	8,000.00
Atlantic & Birmingham Ry. First Mortgage.....	5	Jan. 1934	677,000	90.	609,300.00
Baltimore & Ohio R.R. Refunding and General Mortgage.....	5	Dec. 1995	650,000	99.75	648,875.00
Bethlehem Steel Co. Two-Year Secured Notes .....	5	Feb. 15'19	1,000,000	98.25	982,500.00
Chicago & Alton R.R. Refunding Mortgage .....	3	Oct. 1949	551,000	65.	358,150.00
Chicago & Alton Ry. First Lien .....	3½	Jul. 1950	854,000	53.	452,620.00
Chicago City & Connecting Railways Collateral Trust.....	5	Jan. 1927	1,305,000	85.	1,109,250.00
Chicago & Eastern Illinois R.R. Refunding and Improvement Mortgage.....	4	July 1955	300,000	63.	189,000.00
Chicago, Milwaukee & St. Paul Ry. General Mortgage Series "A" .....	4	May 1989	30,000	97.	29,100.00
Chicago, Milwaukee & St. Paul Ry. General Mortgage Series "C" .....	4½	May 1989	500,000	103.	515,000.00

Chicago, Milwaukee & St. Paul Ry. Debenture . . . . .	4	July 1934	\$450,000	88.2838	\$397,277.50
Chicago, Milwaukee & St. Paul Ry. General and Refunding Mortgage Series "A" . . . . .	4½	Jan. 2014	500,000	91.0625	455,312.50
Chicago & North Western Ry. Extension . . . . .	4	Aug. 15'26	50,000	95.	47,500.00
Chicago & North Western Ry. Sinking Fund Debenture . . . . .	5	May 1933	80,000	102.	81,600.00
Chicago Railways Co. First Mortgage . . . . .	5	Feb. 1927	500,000	97.	486,000.00
Cleveland, Cincinnati, Chicago & St. Louis Ry. St. Louis Division, Collateral Trust . . . . .	4	Nov. 1990	73,000	90.	65,700.00
Cleveland, Cincinnati, Chicago & St. Louis Ry. General Mortgage . . . . .	4	June 1993	700,000	83.893	587,250.00
Cleveland Short Line First Mortgage . . . . .	4½	Apr. 1961	500,000	95.	475,000.00
Colorado Industrial Co. First Mortgage . . . . .	5	Aug. 1984	2,000,000	80.	1,600,000.00
Consolidated Gas Co. (New York) Convertible Debenture . . . . .	6	Feb. 1920	500,000	110.	550,000.00
Dominion of Canada, Government of, Fifteen-Year . . . . .	5	Apr. 1931	500,000	94.565	472,825.00
Erie R.R. General Mortgage Convertible Fifty-Year Series "B" . . . . .	4	Apr. 1953	1,065,000	74.7175	795,742.30
Illinois Central R.R. Refunding Mortgage . . . . .	4	Nov. 1955	300,000	87.	261,000.00
Interborough Rapid Transit Co. First Mortgage . . . . .	5	Jan. 1966	1,750,000	96.8571	1,695,000.00
International Mercantile Marine Co. First and Collateral Trust Sinking Fund . . . . .	6	Oct. 1941	2,848,290	97.5	2,777,082.75
Lake Erie & Western R.R. Second Mortgage . . . . .	5	July 1941	100,000	100.	100,000.00
Lake Shore & Michigan Southern Ry. First Mortgage . . . . .	3½	June 1997	926,000	87.	805,620.00
Lake Shore & Michigan Southern Ry. Debenture . . . . .	4	May 1931	1,673,000	92.	1,539,160.00
Magnolia Petroleum Co. First Mortgage . . . . .	6	Jan. 1937	1,809,000	100.	1,809,000.00
Missouri, Kansas & Texas Ry. General Mortgage Sinking Fund . . . . .	4½	Jan. 1930	1,325,000	84.	1,113,000.00
Morris & Essex R.R. First and Refunding Mortgage . . . . .	3½	Dec. 2000	175,000	82.75	144,812.50

**EXHIBIT Q—Continued**  
**SCHEDULE OF SECURITIES—Continued**  
**BONDS**

THE ROCKEFELLER FOUNDATION

NAME	INTEREST RATE PER CENT.	DATE OF MATURITY	AMOUNT	PRICE PER CENT.	CASH PRICE
Mutual Fuel Gas Co. First Mortgage.....	5	Nov. 1947	\$250,000	100.	\$250,000.00
National Railways of Mexico, Prior Lien Fifty-Year Sinking Fund with January, 1915, and subsequent coupons attached.....	4½	July 1957 Jan. 1917	50,000 1,125	59. 59.	29,500.00 663.75
Secured 6% Notes for coupon due January 1, 1914, Guaranty Trust Co. Receipts for July 1, 1914, coupon.....				1,125 59.	663.75
New Orleans, Texas & Mexico Ry. Non-Cumulative Income Series "A".....	5	Oct. 1935	180,000	42.	75,600.00
New York Central Lines Equipment Trust of 1913.....	4½	Jan. '18-'28	396,000	99.039	392,196.66
New York Central & Hudson River R.R. Thirty-Year Debenture.....	4	May 1934	330,000	88.45	291,885.00
New York, Chicago & St. Louis R.R. First Mortgage.....	4	Oct. 1937	35,000	95.	33,250.00
New York, Chicago & St. Louis R.R. Debenture.....	4	May 1931	1,303,000	87.	1,133,610.00
New York City Corporate Stock.....	4½	Mar. 1964	100,000	94.5	94,500.00
New York Connecting R.R. First Mortgage.....	4½	Aug. 1953	500,000	95.69073	478,453.65
Northern Pacific Ry. Refunding and Improvement Mortgage.....	4½	July 2047	390,000	91.577	357,150.00
Pennsylvania R.R. Consolidated Mortgage Sterling.....	4	May 1948	£2,400	99.	11,880.00
Pennsylvania R.R. General Mortgage.....	4½	June 1965	\$1,500,000	98.25	1,473,750.00
Philadelphia Co. Convertible Debenture.....	5	May 1922	1,000,000	97.	970,000.00
Philadelphia Co. Convertible Debenture.....	5	Aug. 1919	500,000	95.	475,000.00

Pittsburg, Cincinnati, Chicago & St. Louis Ry. Consolidated Mortgage Series "I".....	4½	Aug. 1963	\$500,000	103.	\$515,000.00
Province of Quebec Five-Year.....	5	Apr. 1920	500,000	99.75	498,750.00
Reading Co.—Philadelphia & Reading Coal & Iron Co. General Mortgage.....	4	Jan. 1997	500,000	94.25	471,250.00
Rutland R.R. First Consolidated Mortgage.....	4½	July 1941	25,000	90.	22,500.00
St. Louis & San Francisco Ry. Prior Lien Series "A".....	4	July 1950	1,500,000	72.75	1,091,250.00
St. Louis & San Francisco Ry. Adjustment Mortgage.....	6	July 1955	500,000	81.975	409,875.00
Seaboard Air Line Ry. Adjustment Mortgage.....	5	Oct. 1949	455,000	77.	350,350.00
Southern Pacific R.R. First and Refunding Mortgage.....	4	Jan. 1955	100,000	86.	86,000.00
Sunday Creek Co. Collateral Trust.....	5	July 1944	81,000	78.	63,180.00
United Kingdom of Great Britain & Ireland Two-Year Secured Loan.....	5	Sept. 1918	700,000	99.4375	696,062.50
United Kingdom of Great Britain & Ireland Three-Year Notes.....	5½	Nov. 1919	350,000	99.125	346,937.50
United Kingdom of Great Britain & Ireland Five-Year Notes.....	5½	Nov. 1921	350,000	98.375	344,812.50
Wabash R.R. Second Mortgage.....	5	Feb. 1939	120,000	97.8	117,360.00
Washington Ry. & Electric Co. Consolidated Mortgage.....	4	Dec. 1951	450,000	83.5	375,750.00
Western Maryland R.R. First Mortgage.....	4	Oct. 1952	1,032,000	78.8913	814,158.76
Wheeling & Lake Erie R.R. Lake Erie Division First Mortgage.....	5	Oct. 1926	140,000	100.	140,000.00
Wheeling & Lake Erie R.R. Equipment Trust Series "B".....	5	Apr. '18-'27	500,000	99.75	498,750.00
<b>TOTAL BONDS.....</b>					<b>\$36,165,382.82</b>

**EXHIBIT Q—Continued**  
**SCHEDULE OF SECURITIES—Continued**  
**STOCKS**

THE ROCKEFELLER FOUNDATION

NAME	DIVIDEND RATE PER CENT.	NUMBER OF SHARES	PRICE PER CENT.	CASH PRICE
American Ship Building Co. Preferred.....	7	9,303	85.	\$790,755.00
American Ship Building Co. Common.....	7	14,982	85.	524,370.00
Atchison, Topeka & Santa Fe Ry. Preferred.....	5	5,000	98.25	491,250.00
Atchison, Topeka & Santa Fe Ry. Common.....	6	21,100	95.2563	2,009,908.33
Borne-Seymser Co.....	20	300	295.	88,500.00
The Buckeye Pipe Line Co. (Par \$50).....	16	49,693	160.	7,950,880.00
Central National Bank of Cleveland Capital.....	10	500	159.2222	79,611.10
Chehalis & Pacific Land Co. Capital.....		220	45.45	10,000.00
Chesebrough Manufacturing Co. Consolidated.....	14	2,070	223.333	462,300.00
Chicago City & Connecting Ry. Participation Certificates Preferred.....	1½	17,530	69.1875	1,212,856.88
Chicago City & Connecting Ry. Participation Certificates Common.....		10,518	30.	315,540.00
Cleveland Arcade Co. Capital.....	8	2,500	98.6222	246,555.56
Cleveland Trust Co. Capital.....	10	286	238.195	68,123.77
The Colonial Oil Co. (150% paid on account dissolution).....		619		
Colorado & Southern Ry. First Preferred.....	4	7,000	54.	378,000.00
Consolidated Gas Co. of N. Y. Capital.....	7	20,000	127.50	2,550,000.00
The Continental Oil Co.....	12	7,000	190.	1,330,000.00
Wm. Cramp & Sons Ship & Engine Building Co. Capital.....	3	648	15.	9,720.00
The Crescent Pipe Line Co. (Par \$50).....	6	14,120	60.	847,200.00

Cumberland Pipe Line Co.	10	3,000	81.333	\$244,000.00
Erie R.R. First Preferred.		21,400	45.8306	980,773.76
Eureka Pipe Line Co.	24	12,357	361.3331	4,464,995.59
Galena Signal Oil Co. Preferred.	8	4,193	140.	587,024.13
Galena Signal Oil Co. Common.	12	20,000	189.999	3,799,996.28
Great Lakes Towing Co. Preferred.	7	1,527	88.7361	135,500.05
Great Lakes Towing Co. Common.		1,200	12.	14,400.00
Indiana Pipe Line Co. (Par \$50).	20	24,845	125.111	3,108,386.28
International Agricultural Corporation Preferred.		6,545	30.	196,350.00
International Agricultural Corporation Common.		8,175	5.	40,875.00
Manhattan Ry. Capital.	7	10,000	128.775	1,287,750.00
Missouri Pacific R.R. Voting Trust Certificates for Convertible Preferred.		21,980	55.	1,219,890.00
National Lead Co. Preferred.	7	1,100	104.	114,400.00
National Lead Co. Common.	4	29,400	50.	1,470,000.00
National Transit Co. (Par \$12.50).	8	126,481	28.5	3,604,708.60
New Orleans, Texas & Mexico Ry. Capital.		1,125	16.	18,000.00
New York, Chicago & St. Louis R.R. Second Preferred.	4	400	78.70	31,480.00
New York, Chicago & St. Louis R.R. Common.		100	55.	5,500.00
New York Transit Co.	24	12,392	300.	3,717,600.00
Northern Pacific Ry. Common.	7	700	91.7625	64,233.75
Northern Pipe Line Co.	10	9,000	110.	990,000.00
Otis Steel Co. Preferred.	7	140	90.	12,600.00
Otis Steel Co. Common.	10	329	20.	6,680.00
Pere Marquette Ry. Preferred.		5,740.8	54.56	313,248.00
Provident Loan Certificates (Par \$5,000).	6	40	100.	200,000.00
Seaboard Air Line Ry. Preferred.		4,300	54.	232,200.00
Seaboard Air Line Ry. Common.		3,400	21.	71,400.00
Sheffield Farms Co. Incorporated Preferred.	6	150	99.4	14,910.00

EXHIBIT Q—Continued  
SCHEDULE OF SECURITIES—Continued  
STOCKS

NAME	DIVIDEND RATE PER CENT.	NUMBER OF SHARES	PRICE PER CENT.	CASH PRICE
The Solar Refining Co.	10	4,964	185.007	\$918,375.00
Southern Pipe Line Co.	24	24,845	229.5556	5,703,308.88
South West Pennsylvania Pipe Lines	12	8,000	160.	1,280,000.00
Standard Oil Co. (Indiana)	24	29,718	867.	25,765,506.00
The Standard Oil Co. (Kansas)	24	4,966	275.016	1,365,733.13
Standard Oil Co. (Kentucky)	12	14,368	70.2547	1,044,547.23
Standard Oil Co. (Nebraska)	20	2,482	270.	670,140.00
The Standard Oil Co. (Ohio)	16	17,392	210.	3,652,320.00
Superior Savings & Trust Co. Capital	12	300	297.6333	89,860.00
Tilden Iron Mining Co. Capital	5½	1,780	27.35	48,683.46
Union Tank Line Co.	5	24,000	70.	1,680,000.00
U. S. Cast Iron Pipe & Foundry Co. Preferred	5	1,987	44.444	88,310.89
Washington Oil Co. (Par \$10)	40	1,774	30.	53,220.00
Western Maryland Ry. Second Preferred		500	46.	23,000.00
Western Pacific R.R. Corporation Preferred	6	20,195	43.5	878,482.50
Western Pacific R.R. Corporation Common		30,292½	15.25	461,960.62
Wilson Realty Co. Capital		591	100.	59,100.00
Woman's Hotel Co. Capital		300	80.	24,000.00
<b>TOTAL STOCKS</b>				<b>\$90,118,408.69</b>

SUMMARY

Bonds.....	\$36,165,382.82
Stocks.....	90,118,408.69
Total Book Value of Investments Belonging to General Funds, Principal and Income.....	\$126,283,791.51

The foregoing investments are apportioned as follows:

General Fund.....	\$120,765,866.00
General Fund Income.....	4,149,289.66
Estate Laura S. Rockefeller Fund.....	152,738.00
Reserve.....	1,215,912.85
TOTAL.....	<u>\$126,283,791.51</u>

**EXHIBIT R**  
**SCHEDULE OF SECURITIES IN SPECIAL FUNDS ON DECEMBER 31, 1917**  
**JOHN D. ROCKEFELLER FUND**  
**BONDS**

NAME	INTEREST RATE PER CENT.	DATE OF MATURITY	AMOUNT	PRICE PER CENT.	CASH PRICE
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>

**LAURA S. ROCKEFELLER FUNDS**  
**BONDS**

Colorado Industrial Co. First Mortgage.....	5	Aug. 1934	\$50,000	80.	\$40,000.00
Virginia-Carolina Chemical Co. First Mortgage .....	5	Dec. 1923	10,000	93.	9,300.00
<b>TOTAL BONDS.....</b>					<b>\$40,300.00</b>

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