The
Rockefeller Foundation

Annual Report

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1915

The Rockefeller Foundation
61 Broadway, New York

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THE ROCKEFELLER FOUNDATION

Report for the Year 1915

To the Members of the Rockefeller Foundation:

I have the honor to transmit to you herewith a report on the activities of the Rockefeller Foundation and on its financial operations for the year 1915.

The membership of the Foundation remained unchanged during the year, the following members having been reelected at the annual meeting of January, 1915, for a term of three years:

Harry Pratt Judson, of Chicago, Ill.,
Simon Flexner, of New York, N. Y.,
Starr Jocelyn Murphy, of Montclair, N. J.

Appended hereto are the detailed reports of the Secretary and the Treasurer of the Rockefeller Foundation, the Director General of the International Health Commission, the Director of the China Medical Board, and the Chairman of the War Relief Commission.

JOHN D. ROCKEFELLER, JR.,
President.

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THE ROCKEFELLER FOUNDATION

Report of the Secretary

To the President of the Rockefeller Foundation:

SIR:

I have the honor to submit herewith my report as Secretary of the Rockefeller Foundation for the year 1915.

Respectfully yours,

JEROME D. GREENE,
Secretary.

THE ROCKEFELLER FOUNDATION

OFFICERS, MEMBERS AND COMMITTEES

1915

President

JOHN DAVISON ROCKEFELLER, JR.

Secretary

JEROME DAVIS GREENE

Treasurer

LOUIS GUERINEAU MYERS

Comptroller

ROBERT HORNER KIRK

Assistant Treasurer

LEFFERTS MASON DASHIELL

Executive Committee

John Davison Rockefeller, Jr., *Chairman*

Simon Flexner
Jerome Davis Greene
Starr Jocelyn Murphy
Wickliffe Rose

Finance Committee

John Davison Rockefeller, Jr., *Chairman*

Starr Jocelyn Murphy
Jerome Davis Greene

Nominating Committee

Charles William Eliot
Alonzo Barton Hepburn
Wickliffe Rose

Members [1]

To serve until the annual meeting of 1918

Harry Pratt Judson
Simon Flexner
Starr Jocelyn Murphy

To serve until the annual meeting of 1917

Charles William Eliot
Jerome Davis Greene
Wickliffe Rose
Alonzo Barton Hepburn
Charles Otto Heydt

To serve until the annual meeting of 1916

John Davison Rockefeller
John Davison Rockefeller, Jr.
Frederick Taylor Gates

[1] On January 26, 1916, the following additional members were elected: Martin Antoine Ryerson, to serve until the annual meeting of 1919, and Harry Emerson Fosdick and Frederick Strauss, to serve until the annual meeting of 1918.

THE ROCKEFELLER FOUNDATION

DEATH OF MRS. JOHN D. ROCKEFELLER

By the death of Mrs. John D. Rockefeller (Laura S. Rockefeller), which occurred at Tarrytown, New York, on March 12, 1915, the Rockefeller Foundation lost one of its honored Founders, for Mrs. Rockefeller's gift of June 7, 1913, was practically simultaneous with her husband's first direct gift to the Foundation after its incorporation; and her confidence in it as the guardian of trusts that were dear to her was shown by three more gifts during the same year. After her death, her executors, acting within the discretion given them by her will, and in accordance with her known wishes, allotted to the Rockefeller Foundation from the residuary estate a fifth large gift for the general purposes of the Foundation, thus constituting an unrestricted fund which, whether preserved as endowment or applied outright to beneficent purposes, will commemorate the gentle and kindly spirit of the giver.

FUNDS RECEIVED

The donations to the Rockefeller Foundation amounted on January 1, 1915, to $100,073,000, of which $100,025,000 represented gifts from Mr. John D. Rockefeller and $48,000 gifts from Mrs. Rockefeller. These funds were increased during the year by a gift from Mr. Rockefeller

of $12,000 par value consolidated 5 per cent. gold bonds of the Canada Southern Railway Company,[1] the income of which is to be paid at the discretion of the Foundation to the Baptist Home for the Aged of New York City, and by a gift from the executors of Mrs. Rockefeller of securities valued, with accrued interest, at $340,873, making the total donations received by the Foundation since its establishment $100,425,873.[2]

EXPENDITURES

The expenditures of the Foundation through its own organizations and by gifts or pledges to other agencies during the year 1915 (excluding expenditures on account of pledges made in former years) may be summarized as follows:

Administration	$66,542.48	
Equipment, Library, etc.	30,354.33	
International Health Board	441,301.23	
China Medical Board	157,623.40	
War Relief	582,339.58	
Investigation of Industrial Relations	19,509.77	
Scientific Studies of Governmental Problems	50,000.00	
Gifts and Pledges to Unaffiliated Agencies for objects designated by the Foundation	1,173,212.50	$2,520,883.29

[1] This gift was supplementary to a gift of $25,000 made on December 15, 1914, for the same purpose and in the same securities.

[2] See Appendix—Letters of Gift. Page 349.

Gifts for objects designated by the Founder in accordance with his letter of gift of March 6, 1914.....	1,341,561.11
	$3,862,444.40

ACTIVITIES OF THE YEAR

The activities of the Foundation have been divided during the past year, as before, into two main branches. The first comprises the work carried on by the Foundation through its own subsidiary organizations or agents, namely,

The International Health Commission,
The China Medical Board,
The War Relief Commission,[1]
The Director of the Investigation of Industrial Relations.

The second branch of the Foundation's activities consists of its gifts to other agencies, a list of which will be found in the Treasurer's Report.[2] Under this heading are also included certain gifts for charitable objects designated by Mr. John D. Rockefeller in accordance with the terms of his letter of gift of March 6, 1914, such objects being invariably approved by the Trustees or the Executive Committee as being consistent with the corporate purposes of the Foundation.

[1] Under this heading are included certain contributions to war relief through unaffiliated agencies.

[2] Page 313.

OFFICES OF THE FOUNDATION

On January 6, 1915, the offices of the Foundation were established on the twenty-seventh floor of the Adams Building, 61 Broadway, New York City, nearly the whole floor having been secured for the use of the Foundation and the General Education Board. In April the headquarters of the International Health Commission were moved from Washington to the space assigned to them in the offices of the Foundation, and the administrative facilities of the two organizations were consolidated.

The rapid growth of the foreign work of the International Health Commission, necessitating an increase in the facilities for bookkeeping, correspondence, purchasing, etc., soon made it evident that the business side of the Foundation's organization should be expanded to meet the new needs. Accordingly, the office of Comptroller was created and the services of an engineer, Mr. Robert H. Kirk, were secured in that capacity. By vote of the Committee, acting with the advice of Messrs. Price, Waterhouse & Company, Chartered Accountants, the Comptroller was charged with the duty of keeping the detailed accounts of the appropriations and disbursements of the Foundation, leaving to the Treasurer the custody of the securities and the drawing of checks upon duly authorized vouchers, with only the bookkeeping incident

to these latter operations. By these changes the Treasurer and Assistant Treasurer have been given more time to assist the Finance Committee by presenting the information needed in the care of investments; and, in accordance with approved usage, the function of keeping the books has been separated from that of collecting and paying out the income. At the same time, the Comptroller is of assistance to the executives in supplying the bookkeeping information that is currently needed, while he also furnishes a check upon their expenditures by keeping track of the limits set by budgets or other authorizations.

INTERNATIONAL HEALTH COMMISSION

The Annual Report of the Director General of the International Health Commission makes an impressive exhibition of the extensive activities of the Commission in the relief and control of hookworm disease in the United States and foreign countries. During the year 1915 the work was actually in progress in Antigua, British Guiana, Dutch Guiana, Grenada, St. Lucia, St. Vincent and Trinidad in the West Indies; in Costa Rica, Guatemala, Nicaragua and Panama in Central America; and in Egypt and Ceylon. In addition plans were made and a budget adopted for the extension of the work to Salvador, British Honduras and the Seychelles Islands. In the Federated Malay States

a special commission was at work to determine the rôle of hookworm disease and malaria as factors in the marked debility of the population. In Hunan, China, an investigation into the prevalence of hookworm disease was carried on. An investigation of medical education and public health in Brazil was determined upon. Plans were formulated and budgets adopted for experiments in the relief and control of malaria in two of the Southern states, Mississippi and Arkansas, the object being to ascertain whether methods of intensive attack analogous to those which have been successful in the suppression of hookworm disease might be applied to the control of malaria, a disease which, taking the world as a whole, is probably the heaviest handicap on the welfare and economic efficiency of the human race.

In coöperation with the government of the Philippine Islands, arrangements have been made for the equipment of a hospital ship to serve as a travelling dispensary in the islands of the Sulu Archipelago, with the object, first, of bringing medical relief to a population which entirely lacks such resources; second, of making the inhabitants of these islands more amenable to civilizing influences, a result which previous experience with some of the wildest tribes in the Philippine Islands has shown to be possible; and third, of developing a kind of medical service which, if successful in the Sulu Archi-

pelago, might not only be taken over by governmental agencies in the Philippine Islands, but also be capable of almost unlimited extension among the innumerable islands of the East Indies and the South Pacific.

Under the inspiration of the success which has attended the efforts of the United States to eradicate yellow fever from Cuba and Panama, a work the indirect result of which has been to protect the southern United States and Central America from the danger of recurrent epidemics, the International Health Commission decided to study the feasibility of eradicating the disease from the remaining endemic foci. A Commission was accordingly appointed to ascertain the number and location of these foci and to inquire into the possibility of ridding them of infection. The Commission, consisting of a number of trained sanitarians experienced in yellow fever work, under the chairmanship of General William C. Gorgas, Surgeon General of the United States Army and a member of the International Health Commission, did not begin its labors until after the period covered by the present report.

The significance of the extensive and varied activities of the International Health Commission is to be found not in any expectation that the organization and funds at its disposal can complete the task of controlling or eradicating the formidable diseases to which its attention

has been given, but rather in certain characteristic policies to which the success attending the previous work of the Commission may be attributed. The first of these policies is that of working through governmental agencies, both state and local, and in coöperation with the medical profession, public schools and other social agencies; in other words, through those agencies which the people regard as their own and on which the ultimate responsibility must inevitably rest. The second is that of relying upon popular education and on stimulating the interest of the common people rather than upon official exhortation or legislation to enforce the therapeutic and hygienic measures essential to the public health. The third, which is a more recent development of the experience of the International Health Commission, has been that of demonstrating in a limited area in each country the feasibility of bringing the disease in question under complete control, by the intensive coöperation of all the agencies concerned. By showing that it is possible to clean up a limited area, an object lesson is given, the benefit of which is capable of indefinite extension. The fourth policy is that of laying constant emphasis on the necessity of keeping the cost of the work down to a point so low that the feasibility of maintaining the work out of the available public and private resources will become ultimately even if not at first apparent. A

philanthropic agency amply endowed might go into a community and by lavish expenditure benefit a certain number of individuals; but if such benefit were conferred at a cost beyond the reach of similar communities throughout the country, the results would be of slight value as compared with those achieved by a policy of intelligent economy. The resources of the largest private endowments are insignificant in amount as compared with the aggregate cost of the community's physical and social betterment. The highest service that private endowments can render is therefore to furnish by invention, initiative and experiment, a demonstration the effect of which may be to determine, to a very large extent, the direction in which the infinitely greater resources of the community shall be applied.

In the case of hookworm disease and yellow fever, the technique of control has been established upon a reasonably satisfactory basis. What is chiefly needed is the extension of methods already known and successfully applied. In the case of malaria, while methods of treatment and control can be effectively applied under ideal conditions, it is still necessary to discover whether the various known measures, such as quinine treatment, screening and drainage operations, can be effectively employed, separately or in combination, at a cost which will not be prohibitive in those communities which suffer most from the disease.

The testimony of the Immigration Department of Trinidad, that the economic efficiency of the laboring population in the area in which the work of the International Health Commission was carried on has been increased in one year by more than twenty per cent, measured in hours of effective labor, would indicate that the known economic results of such public health work would justify increased expenditures. It must be remembered, however, that the expectation of economic, as well as physical benefit is one which makes large demands on the faith of a disease-ridden people, and that a scale of expenditure which might eventually justify itself might, as a matter of fact, be prohibitive at the outset. It is at this point that a private agency is able to do its greatest service.

Not the least valuable results of the work of the International Health Commission are to be found in its effect on other diseases incident to unsanitary and unhygienic living. The sanitary improvements that are brought about by the hookworm campaign tend to diminish typhoid fever and other intestinal diseases. Moreover, a public health administration that has been organized or re-animated to deal effectively with hookworm disease has in that very process become a more efficient protector of the community against all other diseases susceptible of control.

The report of the Director General properly

lays stress upon the policies and aims which are the subject of the foregoing observations. It is, however, a source of profound gratification that the personal ministrations of those who have coöperated with the Rockefeller Sanitary Commission and its successor, the International Health Commission, in actual contact with hookworm disease in the field, have reached 1,462,726 individuals who have been microscopically examined, of whom 534,215, or 36.5 per cent, have been found infected. To have improved the health and increased the economic efficiency of a large proportion of those found to be infected is a service which amply justifies the money and effort expended, to say nothing of the more far-reaching and permanent results which will follow from this achievement regarded as a demonstration.

MEDICAL WORK IN CHINA

The Annual Report for 1914 gave an account of the inquiries made by the China Medical Commission of the Rockefeller Foundation in regard to the needs of medical education and public health in China, and recorded the establishment of the China Medical Board for the purpose of carrying out the recommendations of the Commission. The first Annual Report of the Director of the China Medical Board is appended to this report.

As the plans of the Foundation for work in China were based upon the medical work already

carried on by the missionary societies of the United States and Great Britain, and were actuated by a desire for the most sympathetic coöperation with these societies, the President of the Foundation addressed to them, under date of March 15, 1915, a circular letter giving an official assurance of this desire. The letter stated that, in carrying out its plans, the Foundation might find it desirable:

> "1. To assist Missionary Societies to strengthen their medical schools and hospitals by providing equipment and other facilities and by making annual grants, as may be found expedient, for the support of physicians and nurses selected by the respective Missionary Boards, subject only to the Foundation's approval of the professional qualifications of the appointees.
>
> "2. With the consent of the Missionary Boards, to reorganize and expand existing medical schools, with their hospitals, and to support these, wholly or in part, from its own funds.
>
> "3. To aid other medical schools that are not strictly missionary.
>
> "4. To establish, equip and support new medical schools and hospitals. In choosing its agents, physicians and nurses for independent schools or hospitals, the Foundation will select only persons of sound sense and high character, who are sympathetic with the missionary spirit and motive, who are thoroughly qualified for their work professionally, and who will dedicate themselves to medical ministration in China. Beyond these qualifications, the Foundation cannot properly impose tests of a denominational or doctrinal nature, such as are deemed desirable by Missionary Boards for their own medical missionaries or agents."

The Foundation has been gratified by the cordial reception given to these expressions of its intentions, and still more by the coöperation which has marked the inauguration of its work during the past year.

Among the recommendations made by the China Medical Commission were the following:

> "First, that the first medical educational work organized should be in the city of Peking and that it be in connection with the Union Medical College, if suitable arrangements can be made.
>
> "Second, that on account of the population, wealth and convenience of location of the city of Shanghai, the second medical work of the Foundation be established in that city."

In accordance with these recommendations, the China Medical Board has devoted much of its attention to developing medical education in Peking and Shanghai. In addition, it has coöperated with many missionary societies by assisting them in their work in other parts of China, with the result that the Board has made contributions to hospitals in ten out of the eighteen provinces. Thus far, little has been done in southern and western China.

During the year 1915 there were various negotiations ending in the transfer of the Union Medical College from the control of the six missionary societies which had previously been responsible for it to a board of thirteen trustees incorporated under the laws of the State of New York as the "Peking Union Medical Col-

lege." Of this board of trustees seven members are appointed by the China Medical Board, and one each by the following missionary societies: London Missionary Society, Society for the Propagation of the Gospel in Foreign Parts, The Medical Missionary Association of London, Board of Foreign Missions of the Methodist Episcopal Church, Board of Foreign Missions of the Presbyterian Church in the United States of America, and American Board of Commissioners for Foreign Missions.

The situation in Shanghai was somewhat different from that in Peking. For the past five years the Harvard Medical School of China had been at work there, coöperating, since 1913, with the hospital of the Red Cross Society of China. In addition, there was the medical department of the St. John's University, conducted in coöperation with the Christian Association of the University of Pennsylvania; and at Nanking, only six hours away, the University of Nanking supported a medical school of its own. Plainly this situation was not in harmony with an ideal combination of medical resources which should serve the entire lower Yangtze valley.

At its meeting on January 28, however, the Board considered a letter from Dr. Robert C. Beebe, Secretary of the China Medical Missionary Association, transmitting the following resolution passed unanimously at a meeting of

representatives of St. John's University, University of Pennsylvania Medical School, University of Nanking and the Harvard Medical School of China:

> "Inasmuch as the China Medical Board of the Rockefeller Foundation has in view the establishment of a medical school in Shanghai which shall work in cordial and sympathetic coöperation with missionary societies, and in which it is desired to merge existing medical schools, the representatives of St. John's University and Pennsylvania Medical School of the University of Nanking, and of the Harvard Medical School of China, in a joint meeting, held in Shanghai, Thursday, November 4, 1915, extend a cordial invitation to the China Medical Board to establish in Shanghai a Medical School which shall be conducted by a board of trustees upon which would be represented the governing bodies of the coöperating schools."

Acting upon this invitation, the China Medical Board is developing plans for the establishment of a new medical school in Shanghai in which the goodwill of all the coöperating agencies will be joined.

In order that the Foundation might be guided by the best advice in regard to the technical questions of policy and personnel involved in the carrying out of its general program, a new Commission was sent to China in the summer of 1915. Its membership consisted of Dr. Wallace Buttrick, Secretary of the General Education Board and Director of the China Medical Board; Dr. William H. Welch, Professor of Pathology in Johns Hopkins University, and

Dr. Simon Flexner, Director of the Laboratories of the Rockefeller Institute for Medical Research. During the five months of their absence from this country, the members of the Commission visited medical schools and hospitals in Tokyo and Kyoto, Japan; Seoul, Korea, and the following places in China: Mukden, Peking, Tientsin, Tsinanfu, Hankow, Wuchang, Changsha, Nanking, Shanghai, Soochow, Hangchow, Hongkong and Canton. While the conclusions of this Commission were in harmony with the general plan of work tentatively adopted upon the recommendations of the Commission of 1914, much valuable light was obtained on the more concrete aspects of the work to be done, and a more adequate estimate of the magnitude and the difficulties of the task was made possible. In general, the policy of the China Medical Board may be said to be that of making possible, at the earliest possible date, the assumption by the Chinese themselves of the task of carrying the advantages of modern medicine, both therapeutic and preventive, to the masses of China. In other words, the highest and best function for the Board, as for all foreign agencies for the material and spiritual betterment of China, is that of training leaders, so that the ultimate task shall fall on the Chinese themselves. Not only is it impossible to conceive that an undertaking of such colossal proportions could be accomplished with-

out the development and mobilization of the resources of China to that end, but it is also essential to the success and the permanence of any such work that it shall be done by the people themselves, for themselves, rather than by any outside agency, however large its resources or beneficent its aims.

It is a corollary of the proposition that China must work out its own salvation under its own leaders, that the training of those leaders should be the best that the world affords. The work to be done through the two great schools in Peking and Shanghai will challenge men of the highest character and scientific attainments, thoroughly imbued with a missionary spirit; and the best will be none too good. At a time when the medical schools of this country are having difficulty in finding adequately trained men for professorships in the various departments of medicine, the discovery and enlistment of capable men for service in China is by no means a simple matter. There is reason to believe, however, that the growing demand for well-trained men as teachers of medicine both at home and abroad is attracting a larger number of men to medical teaching as a profession, and it may well prove that the responsibilities which this country has assumed in China will have a stimulating effect at home, to the great advantage of medical education generally.

INVESTIGATION OF INDUSTRIAL RELATIONS

The investigation of industrial relations has been continued during the past year by Mr. W. L. Mackenzie King. Mr. King had been engaged for some time upon bibliographical work in an attempt to chart the field of industrial relations in a manner that would give more intelligent direction to such intensive studies as he might later pursue. Early in the year, however, he decided to utilize the industrial disturbance in Colorado as a means of coming in close contact with the complicated factors of industrial unrest.

Shortly after his arrival, an application was made to the Rockefeller Foundation, with the approval of the Governor, for aid in relieving the great distress that existed in the mining regions of Colorado as a result of unemployment growing out of the recent industrial disturbance. The Foundation took advantage of Mr. King's presence in Colorado to secure his coöperation and advice in dealing with this matter. An appropriation of $100,000 was made to be expended under the direction of the State Committee on Unemployment and Relief, and a plan was devised by the Committee in collaboration with Mr. King, whereby a large amount of labor was utilized in building roads and other public works, payment being made in the form of orders on local dealers for the ordinary necessities of life. The entire sum ap-

propriated was thus expended to advantage and went far to relieve a condition of great suffering and hardship.

Responding to an invitation from the Colorado Fuel and Iron Company, Mr. King then gave the benefit of his knowledge and experience to the officers and employees of the company in perfecting a plan of industrial representation, whereby employees were to be represented, along with company officials, on joint committees and at district conferences and other meetings. Provision was made by the plan for quick and easy access on the part of the employees, through their representatives or in person, to officers of the company with respect to grievances; arrangements were set up for the prevention and settlement of industrial disputes by voluntary conciliation and arbitration; social and industrial betterment policies were adopted and definite terms and conditions of employment were secured.

While not claiming for this plan any finality as an adjustment of the relations of capital and labor, it is not too much to say that it has lessened many of the occasions for misunderstanding, has proved a means of adjusting grievances and has created a degree of good will, which warrants the hope of further progress.

Mr. King resumed his studies at Ottawa after the adoption of the plan of industrial representation in Colorado, and hopes within a few

months to have an outline of industrial relations in such a form as to provide an effective basis of preliminary consultation with authorities in the various aspects of the labor problem.

MENTAL HYGIENE

As fields for practical work in mental hygiene become more clearly defined it is apparent that in this important department of public health opportunities for new and extremely useful kinds of humanitarian service can be found. At the same time participation in such work will provide a means through which many social and economic problems depending wholly or in part upon mental factors can be better understood and more effectively dealt with. In the report of the Foundation for 1913–14 it was stated that the most promising avenue for promoting mental hygiene seemed to be offered by the National Committee for Mental Hygiene, an organization which had already done fruitful work in this field. Accordingly, the services of Dr. Thomas W. Salmon, who was appointed a member of the staff of the Foundation, were placed at the disposal of the National Committee for two years. That organization had prepared the way for actual surveys of the provisions existing for the public care and treatment of the insane and feeble-minded in the different States, by a careful study of methods of administration and supervision and of the

legal provisions which govern the treatment of mental diseases and mental defects. The practicability of conducting such surveys and the effects upon standards of care and treatment which might be expected to result from them had already been demonstrated by studies undertaken by the National Committee in Wisconsin and South Carolina and by affiliated State societies in Connecticut and Pennsylvania. In the hope that the extension of such surveys to a number of States would go far toward permitting the insane to share more equitably in the great advances which have characterized the treatment of all classes of the sick during recent years, an appropriation was made which will enable the National Committee to complete surveys in at least sixteen States before the close of 1916. Already surveys have been completed or are under way in Arkansas, Louisiana, Tennessee and Texas and plans are being made to inaugurate others early in 1916 in California, Illinois, Missouri, Indiana, North Carolina, North Dakota, Rhode Island and the District of Columbia. Invitations have been received from other States and arrangements will be made as rapidly as possible to begin additional surveys. Such invitations come from governors, State boards of control or supervision, universities, State societies for mental hygiene and other organizations interested especially in the welfare of the insane and the

mentally defective or in the general advancement of medicine or philanthropy. At the outset some doubt was felt whether the examination by an entirely unofficial agency of such an admittedly governmental function as the care of the insane would always be welcome. It has been particularly gratifying, therefore, to see how quickly the advantages to be gained from a critical but constructive study of this problem by impartial and expert psychiatrists have been recognized and how eagerly such surveys are being sought. The obligation of entrusting this work only to the best qualified men obtainable has been fully recognized by the National Committee and all the resources of that organization—in information, advice and expert guidance—will be placed at their disposal. These surveys will, in every instance, take into consideration not only the institutional phases of the treatment of mental diseases and mental deficiency but the community phases upon which, as it is coming to be seen, depend in a marked degree our hopes of dealing with the really staggering problem of mental diseases more successfully in the future than we have done in the past. The studies already undertaken have brought to light nothing so pathetic as the survival of almshouse care of the insane in this age of enlightenment. It is becoming evident that this most painful phase of American community life is making its last stand be-

hind popular ignorance of its existence, or of its actual characteristics; and it does not seem too sanguine to hope that the entire elimination of almshouse care of the insane will be one of the happy results of these surveys when they have been made in all the States.

Although work in behalf of the insane was the first task in mental hygiene to be undertaken by the Rockefeller Foundation, opportunities for aiding in the important general movement to deal more effectively with mental deficiency have received careful study during the year. Numerous opportunities to aid in this movement have been presented, but it has been felt that more favorable points of attack exist than most of those which are being brought to the attention of the Foundation. To determine some methods of approach which will give access to fundamental factors seems to be the most useful service which can be rendered at the present time.

PROMOTION OF GOVERNMENTAL RESEARCH

As has been remarked above, the aggregate amount of money which the community is spending for the welfare of its members through public and private agencies is so prodigious that the resources of any single individual or agency are relatively insignificant. If, however, comparatively small funds are used to promote the discovery or application of sound

principles, ideas, or methods in such manner as to affect favorably the use made of the general resources, the return upon the investment in terms of human welfare may become very great. In no field of activity has this truth become more apparent than in that of governmental efficiency. Governmental expenditure lacks the checks and safeguards which the ordinary conduct of business affords through competition and the necessity of making a profit. While many of the functions of government are not susceptible of test and measurement by mercantile standards, there is a wide field of governmental business management within which the ordinary tests of economy and efficiency may be applied. The construction and maintenance of public works, methods of administration and accounting, and many of the processes of purchase and sale are reducible to a strictly business basis and should be so reduced in the public interest no less than in that of the taxpayer as such.

The New York Bureau of Municipal Research has been the recognized pioneer in this field of public service, and the fruits of its work are discernible not only in the improvement of the business administration of the City of New York but also in the creation of similar bureaus of research in many different cities as well as the Institute for Government Research recently incorporated in the District of Columbia.

The progress of the municipal research movement in the United States has been marked by two distinct kinds of service. The first, on which the most emphasis has hitherto been laid, has been that of coöperating with government officials in the setting up of better methods of accounting and business administration. The spirit and method of this work should be as far removed as possible from what is commonly known as "muckraking." While it may happen that the study of actual conditions will reveal gross inefficiency or even corruption, the dominant motive is not, or should not be, that of making personal attacks or sensational revelations, but rather that of effecting improvement. The second kind of service is that of making scientific studies of the processes of governmental administration with a view to discovering or inventing the best methods and of standardizing them in such a way as to make them available for general use. The Foundation has made substantial appropriations during the past year for both kinds of service. It has contributed to the funds of the New York Bureau of Municipal Research for carrying on the regular work in the government of New York City and for studies in the government of the State of New York. In addition to these contributions, the Foundation has appropriated $50,000 for the promotion of certain fundamental scientific studies, the results of which

are expected to benefit governmental administration generally, whether national, state or local. Among these studies the following are the most important:

(1) Methods of Budget Making and Financial Administration: (2) Standards and Practices Evolved for the Improvement of the Civil Service; (3) Provisions for Pensions and Retirement Allowances; (4) Methods of Public Accounting; (5) Highway Legislation.

These studies have been conducted by Dr. Frederick A. Cleveland, the Director of the New York Bureau of Municipal Research, under the general supervision of a special committee appointed by the Rockefeller Foundation. The publication of the results of several of these studies is expected during the ensuing year.

WAR RELIEF

The Rockefeller Foundation continued during the past year to appropriate funds for the relief of suffering caused by the war. The appended report of the War Relief Commission describes in detail the various activities of the Commission and the appropriations made upon their recommendation. It will be noted that the attention of the Foundation has been centred chiefly on the relief of non-combatants, especially those who by race or nationality have been only secondarily if at all involved in the main antagonisms of which the war is the deplorable

expression. While it is true that international law attributes the quality of neutrality to the succor of those wounded in battle, and that such service is both permissible and admirable, it has seemed to the Trustees of the Rockefeller Foundation that an agency which centered its attention on measures of civilian relief sanctioned by the belligerent nations of both groups, would be in a position to perform the most effective service for the millions of non-combatants whose sufferings have constituted one of the most terrible as they have been perhaps the least definitely anticipated results of the war. The relief of the civilian inhabitants of Belgium, Poland, Serbia, and the Ottoman Empire by American agencies has been conditioned very largely upon their coöperation with the governments of both the Central Powers and the Allies; and all that these American agencies have been able to do has met but a fraction of the need.

There is, indeed, one branch of relief work aided by the Foundation which is for the benefit of combatants, but this too is one which commands the sympathy of both belligerent groups, namely, the work of the International Committee of Young Men's Christian Associations in the military and prison camps of the contending nations. The task here has been to arrest and counteract the demoralizing tendencies of enforced idleness in camp which threaten to

prove among the most far-reaching of all the malign influences of the war. This important work has been well managed, has won the confidence of the governments concerned and promises to make one of the most creditable pages in the record of American relief work.

Early in the past year the Commission for Relief in Belgium perfected its organization in the United States for the purchase and transportation of supplies for Belgium, and the Foundation appropriately relinquished these functions which it had temporarily assumed in the emergency existing during the first months of the war. In response to a special appeal to the American public the Foundation made a contribution of $200,000 to the Commission for Relief in Belgium for the purchase of materials to be made into clothing for Belgians, by Belgian labor. The Foundation also assisted the Commission by providing for a few months in Rotterdam an organization for the assorting and re-shipping of the vast quantities of clothing that had been contributed from various parts of the world. For the relief of the large numbers of Belgian refugees in Holland the Foundation organized sewing classes employing several thousand women, and provided materials and machines adequate for the manufacture of clothing then sorely needed by the refugees. This work was administered with the cordial coöperation of the Government of the Netherlands and

was later carried on under its direct auspices. In England the Foundation continued its contribution toward the support of professors from Belgian universities in order to enable them to continue their studies.

The American Red Cross, with the coöperation of the Foundation and that of medical agencies sent from Great Britain, France, and Russia, undertook during the spring and summer of 1915 the formidable task of combating an epidemic of typhus fever in Serbia. Dr. Richard P. Strong, who headed the American Red Cross mission, became the director of an international board organized under the authority of the Serbian government, and important administrative, medical, and police measures, calculated to discover the incidence of the disease and to stop its spread, were promptly taken. The subsidence of the epidemic was doubtless materially accelerated by these measures, and, what promised to be of even greater importance, the local authorities and the common people were prepared to defend themselves more effectively against subsequent outbreaks. After the epidemic was at an end the Rockefeller Foundation appropriated the funds necessary to continue the work of sanitation for a period of six months, but this work was interrupted in October, 1915, by the occupation of Serbia by the Central Powers. Fortunately Mr. Stuart, the engineer in charge, was permitted by the new military authorities to

direct his energies to relief work, and though laboring under great diffculties due to the exigencies of the military situation, he was able to make good use of the funds placed at his disposal by the American Red Cross and the Rockefeller Foundation.

The report of the War Relief Commission indicates that great importance has been attached by the Foundation to the relief of suffering in the Ottoman Empire and in the adjacent portions of Russia and Persia to which hundreds of thousands of Armenian and Syrian refugees had fled. In all these areas the need has been of a sort that could be met in large measure by the local use of funds, first for the purchase of food, clothing, and shelter, and later for the provision of live stock, seed, and farming implements. Fortunately, both in Turkey and in the neighboring territories, trustworthy American agents having the respect of the authorities were on the spot and the funds provided have been applied in a manner justifying the confidence of contributors to the American Committee for Armenian and Syrian Relief, through which most of the Foundation gifts have been made.

In Poland it has unhappily proved impossible for outside relief agencies to organize and direct their efforts on a scale commensurate with the enormous need. Much has been done by the American public through various committees, and especially through the American Jewish

Relief Committee, so far as gifts of money could be made effective, to mitigate the terrors of famine and exile, but the one outstanding need of some neutral agency to import food and clothing under suitable guarantees so as to make possible the feeding of whole communities numbering millions of people, as in Belgium, has not yet been met in spite of the prolonged efforts that have been made. Meanwhile, hundreds of thousands of men, women, and children have perished.

Through the Rockefeller Institute for Medical Research the Foundation has continued its support of the surgical laboratory maintained in connection with a military hospital at Compiègne under the direction of Dr. Alexis Carrel. The purpose of this laboratory has been to improve existing methods of treating wounds, especially those which are infected, with a view to saving life and limb and accelerating the process of healing. Results of undoubted significance have already been obtained with the collaboration of Dr. Henry D. Dakin who has dealt with the important chemical aspects of the problem, and these results have been made generally available by publication.

In concluding his report on the activities of the War Relief Commission the Chairman acknowledges its indebtedness to the Department of State, its representatives abroad and the many governmental officials and private indi-

viduals concerned with relief measures in the countries visited upon whose uniform courtesy and helpfulness the work of the Commission has at all times depended.

APPENDED REPORTS

Fuller details of the work of the Rockefeller Foundation during the past year may be found in the accompanying reports of the subsidiary organizations, namely, the International Health Commission, the China Medical Board, and the War Relief Commission. In the Treasurer's Report will be found the usual summaries of the financial operations of the Foundation and a complete list of gifts and pledges made during the year.

JEROME D. GREENE,
Secretary.

INTERNATIONAL HEALTH COMMISSION

Report of the Director General

INTERNATIONAL HEALTH COMMISSION

Report of the Director General

To the President of the Rockefeller Foundation:

Sir:

I have the honor to submit herewith my report as Director General of the International Health Commission for the period January 1, 1915, to December 31, 1915.

Respectfully yours,

WICKLIFFE ROSE,
Director General.

INTERNATIONAL HEALTH COMMISSION

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* Members of the Executive Committee.

I. GENERAL SUMMARY

The resolutions creating the International Health Commission assigned to it two tasks: to coöperate with the United States and other countries in measures for the relief and control of uncinariasis, or hookworm disease, as opportunity offers; and so far as practicable to follow up the treatment and cure of this disease with the development of agencies for the promotion of public sanitation and the spread of the knowledge of scientific medicine. Up to 1915 the Commission had confined its efforts almost wholly to the relief and control of hookworm disease; during the year just ended this work has been extended and certain new lines of activity have been undertaken.

In the United States measures against hookworm disease were carried out during the year in coöperation with the states of Alabama, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia; in other countries in coöperation with Government in Antigua, British Guiana, Dutch Guiana, Grenada, St. Lucia, St. Vincent, and Trinidad, in the West Indies; in Costa Rica, Guatemala, Nicaragua, and Panama, in Central America; and in Egypt and the Federated Malay States, in the Orient; arrange-

ments have been made for inaugurating the work in the Seychelles Islands and in Salvador; an infection survey is being made in British Honduras to determine whether the work of relief and control should be undertaken there; and an investigation of the prevalence of the infection among the agricultural population of Hunan, China, is being carried out under the direction of Dr. Hume, of the Yale Medical School of Changsha. The Commission is prepared to aid in extending this work to other countries as conditions invite.

In the Federated Malay States hookworm infection is known to be prevalent, but to arrive at a just estimate of its importance as a disabling disease has been made extremely difficult by the prevalence of a severe form of malaria and the mingling of a number of different nationalities. A scientific commission has been appointed and is now on the ground carrying out an investigation to determine whether the effects of hookworm disease in that country are sufficiently serious to justify systematic effort for its relief and control.

Preliminary arrangements have been made for a survey to determine the feasibility of undertaking at this time the eradication of yellow fever, and for experiments to test the practicability of controlling malaria. Attention has been given to the collection of information relating to medical education and to agencies for

the control of disease in many countries. In coöperation with Government in the Philippine Islands a hospital ship is being provided for the inhabitants of the Sulu Archipelago. More detailed information concerning each of these activities is given in succeeding pages.

I

MEASURES AGAINST HOOKWORM DISEASE

During the year the International Health Commission has coöperated with ten Southern states and with thirteen foreign countries in work for the relief and control of hookworm disease. The director of the work in each of these states and countries has prepared a detailed report, usually at the end of each quarter, of the work under his supervision, and by the courtesy of the several state and national departments of health, the Commission has been kept in intimate touch with what was being done in each field of operation. In summarizing and reporting the methods and progress of the work in all these countries it is not intended to imply that the work is being done by the Commission. The Commission does not undertake on its own account the relief and control of hookworm disease in any country. If the work is to be successful the state or country in which the infection exists must assume the burden of responsibility. The Commission has had the

privilege of sharing in the work by making small contributions toward its maintenance and by lending a few well-trained men to aid in its organization, but in some countries even the larger share of the financial burden is borne, and in all cases most of the men are supplied, by the countries themselves. In the Southern States the Commission is now contributing about one-third of the amount required to maintain the work. The most important and most encouraging feature of the undertaking is the initiative and responsibility assumed by national, state, and local authorities.

The control of hookworm disease is an undertaking of enormous magnitude, and can be accomplished only by permanent agencies working over a long period of time. The disease is found in practically all countries which lie in the tropical and sub-tropical zones, extending from parallel 36 degrees north to parallel 30 degrees south. More than one-half of the population of the globe live in this area. The prevalence of the infection and the severity of its effects as a disabling disease vary greatly from country to country and from locality to locality within a given country. In some countries the percentage of persons infected is high, while the disease is relatively mild in form; in other regions these conditions are reversed. In general it may be said that where racial immunity does not enter as a determining factor, the disease assumes its

most virulent form in those countries in which it is also the most wide-spread. Of 1,458,483 persons taken at random and microscopically examined during the period from January 1, 1910, to December 31, 1915, in countries where the work has been in progress, 531,749, or 36.5 per cent, have been found infected. In these countries the infection ranged from a minimum of 27.3 per cent to a maximum of 83.6 per cent of the population examined. In Ceylon, where the work is just getting under way, microscopic examination shows that more than 96 per cent of the entire population on certain large rubber estates are infected, and, as would be expected where the percentage of infection runs so high, the results in the form of anemia and impaired working efficiency are in many cases extremely severe.

In no country is the death rate ascribed directly to hookworm disease particularly high; this disease is never spectacular, like yellow fever or plague or pernicious malaria. It is the greater menace because it works subtly. 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 to weaken the race by sapping its vitality. Persons harboring this infection are more susceptible to such diseases as malaria, typhoid fever, pneumonia, and tuberculosis, which prey upon

lowered vitality. But even more important than this indirect contribution to the death roll are the cumulative results,—physical, intellectual, economic, and moral,—which are handed down from generation to generation through long periods of time.

The disease is caused by a small parasitic worm (Uncinaria, or hookworm) which attaches itself to the inner lining of the intestine and there sucks and poisons the blood of its victim. Thousands of these parasites may live in the intestine of a single person; in one case by authentic count more than 6,000 hookworms were passed by a patient as a result of treatment. The females are remarkably prolific egg-producers. So long as they remain in the intestine these eggs do not hatch, but when passed from the bowels and deposited on the ground under proper conditions of air, heat, and moisture, they hatch within the brief space of from twenty-four to forty hours. The young hookworms, which are too small to be seen with the naked eye, may live on and near the surface of the ground for many months. So long as they remain in the soil they remain microscopic in size. They enter the human host by boring through the skin of the bare feet or hands or other portions of the body which are brought into contact with soil in which they exist, and pass into the circulating blood. Finally they reach the small intestine, where they attain the adult stage, proceed to prey

upon their host, and begin anew the life-cycle here outlined.

Measures for the control of hookworm disease spring directly from the life-history of the parasite, and theoretically are definite and simple. The disease may be controlled by putting a stop to soil contamination. The parasite does not multiply in the body of its human host; every hookworm in the intestine entered the body from the outside and came from polluted soil, where this infective form hatches and thrives. With proper disposal of human excrement to prevent contamination of the soil the hookworm would become extinct. In practical operation, however, this resolves itself into a sanitary problem of the first magnitude. Regulations designed to prevent soil pollution cannot be made effective by sheer compulsion; they must remain in large measure ineffective until the people have been shown the dangers involved and have been brought to the point of helpful coöperation.

Theoretically, the disease may be brought under control by curing the infected persons. Every embryo in the soil was hatched from an egg which came from the intestine of an infected person. If all carriers were cured and kept cured for a year the soil within this time would become sterile and the parasite would be extinct. In practice it is extremely difficult when dealing with large populations to carry this measure to

completeness. Experience has demonstrated, however, that by treatment of infected persons a large measure of control may be achieved.

In the work to which the Commission gives aid these two measures are combined. The examination and treatment of infected persons is well worth while even if considered merely as a means of relieving suffering and inefficiency. As a control measure it is indispensable, in that it affords the most effective means of educating the people and thus making it possible to carry into effect the sanitary measures upon which Government must depend for the final control of the disease.

Working Arrangement with Governments

In most of the countries where the Commission shares in work for the relief and control of hookworm disease, the plan of operations provides for two staffs: the one toward the maintenance of which the Commission contributes devotes itself to the work of examining, treating, and educating the people; the other, which is maintained by Government, devotes itself to bringing into operation and maintaining the necessary sanitary measures to prevent re-infection. This has proved highly satisfactory as a working arrangement. The two staffs work in complete harmony under the general supervision of the department of health as two parts of one working machine, but there is a distinct

advantage in their operating and being recognized by the people as separate organizations. The one is essentially a temporary organization, the other is permanent. By being recognized as separate, the former finds it possible to secure the utmost good-will of the people, upon whose coöperation its work of examining, treating, and teaching depends, and to have this coöperation without the prejudice sometimes arising from the work of the sanitary officers, who must occasionally cause resentment by their efforts to compel the people to improve the sanitary conditions of their premises. The temporary organization, because of its having the undisturbed confidence and good-will of the people, finds it possible while examining and treating them to educate them to a definite understanding of the sanitary needs, and thereby to make it possible for the sanitary organization to carry out its work with a minimum of compulsion. This working arrangement has the additional advantage of providing 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 results thus far in the direction of developing sanitary organizations, trained to do at least one bit of definite work, have more than justified expectations.

Working Methods

Working methods are varied somewhat to suit local conditions, but in all countries the end being sought is the same; and in all countries the people are being examined, treated, and taught, and effort is being made to bring into operation such permanent system of sanitation as will in the end bring the disease under complete control. In the progress of the work there have developed two distinct methods of attack by which the control measures are applied. The one is known as the dispensary plan, and the other, which has come as a later development, as the intensive plan. In the one case 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, the whole work, including sanitation, is limited for a given time to a small area, and has the advantage of greater thoroughness in every detail.

Work by the Dispensary Plan

The dispensary plan of attack for the relief and control of hookworm disease was first employed on a large scale in Porto Rico by the Porto Rico Anemia Commission; and there it demonstrated its usefulness in bringing prompt relief to something more than 300,000 sufferers and in giving to the people of that island and of

other countries a demonstration so convincing that its influence is still effective in the work now in progress around the globe. Where this plan is followed, dispensaries visit at regular intervals the towns and villages most convenient to the people and offer free examination and free treatment to all who apply. The essentials of a dispensary staff are a physician who has been definitely trained in all details of the work, and a corps of assistants—usually lay assistants—who have been trained to proficiency as microscopists in examining fecal specimens for intestinal parasites. The staff is equipped with microscopes, specimen containers, hemoglobinometers, the necessary drugs, record forms, camera, lantern and slides, charts, leaflets, and a fund of exhibit material for effective educational work. The dispensary as a working agency does not undertake to examine the whole population, but only those who apply; it dispenses the necessary drugs to those who desire treatment, but does not administer treatment under direct supervision; it cannot follow up its first treatments with continued re-examination and re-treatment until cure has been demonstrated; and it does not remain in one place long enough to effect conspicuous results in sanitation which it may measure and record as definitely accomplished.

But experience has shown that the dispensary is a most effective means of bringing speedy re-

lief to a large number of people distributed over wide areas, and that it is equally effective as an agency for educating the people *en masse* and creating a sustaining public sentiment which makes possible the more intensive type of work which may follow. By the dispensary plan of work, within little more than three years practically the whole infected area of eleven Southern states was covered; the press, the schools, the practicing physicians were enlisted; treatment was given by the dispensaries and practicing physicians to about 750,000 persons; and 20,000,000 people were educated as to the importance of the disease and the methods of its relief and control.

Some work of this type has been done during 1915 in the states of Alabama, Georgia, Kentucky, Tennessee, and Texas in the United States; in Grenada, St. Lucia, and Trinidad in the West Indies; and in Costa Rica, Guatemala, Nicaragua, and Panama in Central America. The official working forces operating under this plan have microscopically examined during the period from January 1, 1910, to December 31, 1915, 1,390,040 persons; have found 501,094, or 36 per cent of these, to be infected; and have given treatment to 565,080 persons.[1] (For results in detail see Tables III and IV, pages 82 and 83.)

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[1] Some persons were treated on clinical diagnosis.

Work by the Intensive Plan

The fight against hookworm disease in the mines of Hungary and of Switzerland tends to show that its complete control within a given area is a possible achievement. Under the intensive plan of work, as it is being carried out in the United States and in other countries, effort is made to approximate, as nearly as practicable, complete control of the disease within the area of operations. The plan was first tried out in part on Knott's Island in eastern North Carolina, and later was put to the test in more thorough detail in the Peter's Hall district, British Guiana. The success of this experiment, as carried out in British Guiana and in some of the states, demonstrated the feasibility of the undertaking and established the intensive plan of work as the prevailing type. Work of this type has been in progress during the year in the states of Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia; in the Colonies of Antigua, British Guiana, Dutch Guiana, St. Lucia, St. Vincent, and Trinidad; and in most of the other countries, where the dispensary plan has been followed, the work has been growing more and more intensive in character.

Experience during the year has demonstrated that the intensive plan of work is feasible under a great variety of conditions, and strongly suggests its applicability under all conditions, irre-

spective of race, creed, occupation, environment, distribution of population, or degree of infection. Successful work has been done in areas where as many as five different languages are spoken, and where East Indians, Negroes, Chinese, Portuguese, and creoles of English, French, and Spanish blood, with a great variety of mixed breeds, make up the population. The distribution of population has varied from the densely inhabited villages of British Guiana and Trinidad to the scattered and almost inaccessible rural homes of St. Vincent, where in one instance, with a donkey to ride, only two homes could be visited in a day. One medical officer in charge states it as his conviction that the intensive plan can be made to work in any territory where people and hookworm infection are to be found. The determining factor would seem to be whether the need of control justifies the cost. But even in St. Vincent, with its sparse population and difficulties of travel, the per capita cost has not been prohibitive.

The territorial unit of operations under this plan may be a county, or it may be a small, well-defined community containing from 1,000 to 15,000 people. For purposes of convenience and efficiency in practical administration, the larger unit area is divided into a number of small districts, and to each of these districts is assigned one field worker who is held responsible for results within this area. 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 and microscopic examination of each patient until cure is effected. While this work is in progress the people are taught, by illustrated lectures, by leaflets and charts, and by personal, concrete instruction in a house-to-house visit, the essentials of hookworm disease and its control.

The plan of work as conducted in those countries in which the local government is undertaking on an adequate basis to prevent reinfection, has the advantage of being definite and thorough and of giving one a sense of accomplishment closely approximating completeness. The director of the work does not have to guess at the prevalence of infection in a given community. He sends a nurse with specimen containers to every home, gets a specimen from each individual, has these specimens examined under the microscope by a competent staff, and by this examination locates the carriers of infection. The treatment of the infected is equally definite. The medical officer has in thymol a specific for the parasite. He sends a nurse to the home of each infected person to

administer the treatment, and follows the successive treatments with microscopic re-examinations until a cure has been demonstrated. The sanitary work is as thorough as that of examination and treatment. The sanitary problem of the community is determined by a house-to-house survey of latrine conditions, and the object in sanitation has been accomplished when every house has been provided with adequate latrine accommodations and when a system of inspection has been established to guarantee their proper use.

The sanitary work, which must be kept under a system of permanent inspection, is carried out by permanent government agencies. Where no sanitary organization exists the intensive work enables Government to undertake a definite sanitary task on the basis of an insignificant outlay and to develop its sanitary organization gradually, as the work is extended from community to community and as the people are educated to the point of giving willing and intelligent coöperation. The thoroughness and permanency of the sanitary work give one a sense of results that is lasting.

In most communities, as the reports show, the staff does not succeed in examining the total population, nor does it succeed in curing all of those who are infected. This was done on Knott's Island and it could be done in other communities. But there is a point beyond

which it is not feasible to carry the work of examination and treatment. In Trinidad, 91.5 per cent of the total population of the areas in which intensive work was conducted were examined, and 90.8 per cent of the infected were put under treatment; of these, 14.6 per cent removed from the area before treatment was completed, and 74.7 per cent were known to be cured. In British Guiana, 94.4 per cent of the population within the areas of operation were examined; of these, 62.3 per cent were infected; 90.6 per cent of the infected were treated; and 84.3 per cent of those under treatment were cured. In St. Vincent, 99.9 per cent of the people within the areas were examined; 94.9 per cent of the infected were treated; and 84.9 per cent were cured. It may be reasonably expected that the slight amount of infection left in the community will be eliminated by means of sanitation. (See Table VI, page 86.)

The economic value of systematic work for the relief and control of hookworm disease is indicated in a report issued by the Immigration Department of Trinidad, in which it is stated that where the indentured laborers on estates have been treated for the disease, their efficiency, measured in hours of labor performed, has increased from 20 to 30 per cent. The Department also reports that on one estate, sanitary reform and treatment of persons have reduced by two-thirds the number of patients admitted

to the estate hospital. Similar results are exhibited at the Orphanage and Industrial School at Tunapuna, where the number of admissions to the hospital dropped to one-third immediately following the elimination of hookworm infection, and where during the last two months of the year only three patients were admitted to the hospital, as against a monthly average of forty admissions for the previous four years.

The Latrine Problem

Soil pollution is largely responsible for the spread of typhoid fever, diarrhœa, dysentery, intestinal parasites, and similar diseases. It is entirely responsible for the transmission of hookworm infection and is therefore directly connected with the work.

Soil pollution seldom occurs in cities and towns where there are modern water-closets available for the entire population. Many rural communities do not have latrines, which means that human excrement is deposited on the ground, and through flies, insects, or direct contact, infected material finds its way into the bodies of other human beings. This is responsible for thousands upon thousands of cases of illness and death each year. Curing persons of hookworm infection is of little value unless steps are taken to prevent their re-infection. The extent and seriousness of the problem may be seen from the following figures. A sanitary survey was made

in 770 counties in eleven states with a view to ascertaining the conditions at the homes which are responsible for the prevalence of hookworm infection. In this survey 287,606 farm houses were examined, and of these 142,230 were found to have no latrine of any kind. This means that at nearly half of the homes soil pollution invariably prevailed. At a very large number of the homes reported as having latrines, they were of the open-back type which does not prevent soil pollution. At only six-tenths of one per cent of the homes were the provisions for the prevention of soil contamination reported by the state authorities as satisfactory.

In the intensive community work which is now being carried out in the United States and in other countries, chief emphasis is being given to improvement in sanitation. The people are being taught the dangers of soil pollution and are being urged to install some type of latrine as a preventive measure. The lesson is driven home by insistent repetition in a house-to-house canvass; and local carpenters are employed to assist in construction. As a result of this effort latrines are being installed in large numbers. (See Tables IX and X, pages 91 and 92.) In many communities such provision has been made at every home while the work was in progress; and in other communities where this feature of the work is left uncompleted, it is continued by local effort as a result of the momentum which

has been given it. It seems not unreasonable to expect that the systematic effort which these states and countries are now making to control hookworm disease and other enteric diseases will continue until sanitary conditions at rural homes are satisfactory.

But from the success of the present effort in inducing the people to provide and to use some form of sanitary arrangement to prevent contamination of the soil arises a new problem which cannot be ignored; namely, the problem of the relative efficiency or inefficiency of the various types of latrines that are being installed. In view of the fact that practical measures are being adopted and that state and national departments of health are committing themselves to policies to be carried out on a large scale, the so-called "latrine problem" becomes a matter of serious concern. The International Health Commission is not prepared to advise as to the type of latrine to be installed. The local department of health in each state and country is responsible to the people for all sanitary measures carried out under its direction, and must therefore use its own judgment as to the type of latrine which it recommends. In the community work which is now under way in the United States there is considerable diversity of views and of policies. The Kentucky State Board of Health, for example, is committed to the so-called Kentucky type of privy (a con-

crete septic tank), and this alone is being installed in the community work in that state. In Louisiana both the L. R. S. type (barrel privy designed by Lumsden, Roberts, and Stiles) and the Kentucky type are being installed. In other states, as in Virginia and Mississippi, the state departments of health recommend a variety of types, including the Kentucky, the box, the barrel, the pail, and the pit, the type adopted being determined by the conditions which prevail in the communities where the work is done. In these states the pit latrine is the one most frequently installed.

Each of these latrines has its advantages and disadvantages; but in the light of present knowledge one is not prepared to say of any of them that it meets all the requirements of the situation. The Kentucky privy and the barrel privy under properly controlled conditions embody the principles of the septic tank. Their cost is a hindrance to their general use in rural communities under present conditions in these states. Careful study of those that are in operation should be made to ascertain whether the effluent is safe under the conditions of family and community use. The pail under controlled conditions, with incineration of its contents, is safe; but in practical experience in rural communities it is found that it frequently becomes offensive and falls into disuse; that it is extremely difficult to keep the boxes fly-proof and

to have the pails properly cared for. When the pails are emptied the content is buried in the soil, thus involving a series of conditions and possible consequences which call for careful investigation in the field under the conditions of actual experience. The pit privy which is being installed in large numbers in some of the states has the advantage of being inexpensive, simple in construction, and almost automatic in operation. It is coming into use on a large scale mainly for the reason that it is found to be feasible, that the people can be induced to install it, and to use it. So far as hookworm infection is concerned, it seems to be reasonably efficient. But it involves a large accumulation of excreta under ground, with whatever this condition implies as to dangers of water contamination by seepage and underground drainage.

Here, then, is the problem: to find a satisfactory method for the disposal of sewage at the farm home; one which the people in rural communities may 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. The intensive community work now under way is being impelled and guided by the conviction that out of the growing volume and variety of experience which is being gained, there will emerge by gradual evolution a form of adjustment that will be satis-

factory. But in order to hasten this development and to avoid serious error in the meantime, this whole experience should be subjected to critical examination. In what has already been done there is sufficient volume and variety of experience to afford a satisfactory basis for a critical study of the advantages and disadvantages or relative efficiency of the various methods employed for the disposal of sewage at the rural home. The state departments of health are eager to have this study made, and offer cooperation in carrying it out; the Commission is prepared to coöperate by supplying the necessary funds for the work; working plans are being matured; the results of the many scientific studies that have been made of different phases of the problem are being summarized, and it is hoped that the investigation may be under way within the coming year. The work, if undertaken, will need to extend over a long period of time and to cover a considerable area of field work in order to test experience under all seasons and under a sufficient variety of conditions. The aim will be to subject present procedures to scientific examination with a view to pointing the way, if possible, to a method for the disposal of sewage at the country home that will be safe and that will be workable under prevailing conditions.

Hookworm Disease Exhibit at San Francisco

Early in the year 1915, the International Health Commission installed an exhibit on uncinariasis in the Palace of Education at the Panama-Pacific International Exposition, which was held at San Francisco from February 20 to December 4, 1915. The most valuable and most impressive feature of the exhibit was a series of glass and wax models prepared by experts of first-rate ability. A series of eleven models in glass exhibited on a scale highly magnified the anatomical structure and life-history of the parasite. The artist had spent months in study with the microscope and succeeded in reproducing microscopic detail by means of colored glass on a scale which the layman could see and understand.

A series of twelve models in wax and in plaster and wax exhibited in most lifelike and impressive form the effects of uncinariasis on its victim. The artist and his staff of artisans went to the Southern States, where they worked in the heart of an infected region amid surroundings which made it possible to reproduce details true to life. Afflicted boys were brought in and casts—in many cases complete body casts—were made from these subjects.

A series of large transparencies; a series of framed photographic enlargements; and about 100 photographs conveniently mounted on rotating wings, showing individuals and families

afflicted with the disease, dispensaries in operation for the treatment of the people, and the physical improvement of individuals and of families after cure, served to portray in accurate and convincing form the conditions as found in heavily infected regions in the Southern States, and the work which is being done for the relief and control of the disease. The same story was told by means of a stereomotorgraph, electrically operated, which automatically threw on a screen a series of colored slides, each bearing its own legend. And these were supplemented by charts, maps, and exhibits in three dimensions. Two attendants who had had large experience in the work in Kentucky had charge of the exhibit throughout the nine months of the Exposition; they gave lectures, distributed literature, and operated a laboratory where persons were examined and the technique of microscopic diagnosis was illustrated.

The attendance from the first day was unusually large, making it necessary to double the space originally provided. The exhibit was well received and was awarded a grand prize. At the close of the San Francisco Exposition the exhibit was removed intact to Washington and installed in the Army Medical Museum, where it is open to the public as a permanent exhibit.

Collection of Information on Uncinariasis

The Commission is engaged in collecting information on the subject of uncinariasis, or hookworm disease, in all countries. It is especially interested in the geographical distribution of the disease, the degree of infection in the infected areas, and the methods which are being employed for its relief and control. Considerable information has already been brought together and made available by classification and index. This information is being collected primarily for the guidance of the Commission; it is desired, nevertheless, that the information may be available to all persons who are interested in this subject. The bibliography is far from complete, but such information as has been collected is at the service of persons who may be interested in any particular phase of the subject. Information has been supplied, for example, to corporations which are interested in the control of uncinariasis in mines. The Commission would be glad to establish relations with persons and organizations that may be working in this field in any part of the world, with a view to the exchange of information and of bibliographical or other available material.

II

MEASURES AGAINST YELLOW FEVER

Prior to the work of Reed and the Army Commission in Havana, yellow fever was regarded

as one of the great plagues. For more than 200 years the tropical and sub-tropical regions of America had been subject to devastating epidemics of the infection, while serious outbreaks had occurred as far north as Philadelphia and Boston, and as far away from the endemic centers as Spain, France, England, and Italy.

During this period appalling epidemics swept repeatedly over the West Indies, Central America, and the Southern United States, decimating populations, paralyzing industry and trade, and holding the people of these regions in a state of perpetual dread. It is estimated, for example, that the epidemic which visited the Mississippi valley in 1878 caused 13,000 deaths and an economic loss of more than $100,000,000 resulting from paralysis of business, and each succeeding summer brought with it the possibility of a repetition of the experience.

The discovery of Reed and his Yellow Fever Commission has made the control of the infection possible. So far as the United States is concerned the fangs of yellow fever have been drawn. Its eradication from Havana removed the chief source of danger. Cases may continue to appear from time to time on the Southern coast, but since the control of the recent epidemic in New Orleans the people of the States have lost their dread of yellow fever as a scourge. In the countries south of the United States, however, it is still the source of constant anxiety. The

coast of Brazil, the Amazon valley, the Caribbean region, and the west coast of South America from Peru to Mazatlan, Mexico, are subject to invasion at all seasons. Throughout this region yellow fever is the subject of constant vigilance on the part of quarantine officers, and is a serious handicap to commerce and to the general economic development of these countries.

Great anxiety is felt throughout the East on account of the possibility of the introduction of yellow fever into that region as a result of the opening of the Panama Canal. The Canal has wrought radical changes in trade relations. Countries and ports between which there had been little or no exchange have been brought into close relation. Pest-holes of infection that have been relatively harmless because of their isolation are now on or near the world's highway of commerce and travel. As early as 1903 Manson called attention to the grave risk of conveying infection to the Far East as a result of the opening of the Canal. Dr. James, of the Indian Medical Service, who was employed by his Government to make a thorough investigation of the subject, reports that the menace is sufficiently great to call for a permanent quarantine force to be maintained in Panama, Hong Kong, or Singapore at the expense of the English colonies in the East, and recommends to the Indian Government a systematic attack on the Stegomyia mosquito. It is recognized by sanitarians

that if the infection should once be introduced into the Orient, with its dense population of non-immunes, the ill resulting from it would be incalculable.

Sanitarians hold that the endemic foci are the seed-beds of infection, and that if these seed-beds be destroyed the disease will disappear from all other points. Fortunately, these seed-beds are few in number. There are probably not more than five or six endemic foci all told, so that the problem of eradicating yellow fever reduces itself to the problem of stamping it out at these five or six points. The work done by General Gorgas at Havana and Panama, and by Oswaldo Cruz at Rio Janeiro, has demonstrated that the disease can be exterminated in such endemic centers and has given ground for the belief that its complete eradication is a feasible undertaking.

Acting on this belief by sanitarians that the eradication of yellow fever is feasible, the International Health Commission has undertaken to carry out a preliminary investigation to determine how far conditions warrant and invite further definite activity in this direction. After months of delay due to war conditions, the membership of a Yellow Fever Commission has been practically completed, and it is expected that this Commission, with General Gorgas at its head, will visit the infected regions during the coming year for the purpose of determining

the doubtful endemic centers, and of ascertaining what measures may be necessary and feasible for the eradication of the infection in those communities on which the responsibility for the presence and spread of yellow fever is found to rest.

III

MEASURES AGAINST MALARIA

Because of its wide geographical distribution, its extreme prevalence over vast tropical and sub-tropical regions, where in places it is responsible for more sickness and death than all other diseases combined, and because of its obvious effects in the form of direct financial loss, impaired economic efficiency, and retarded physical and mental development, malaria is to be regarded as presenting the most serious medical and sanitary problem with which we have to contend. It strongly resembles hookworm disease in its wide distribution and in the fact that it is an anemia-producing disease most prevalent among children, and therefore preying upon the race most heavily during the period of physical and mental growth.

This general consideration led the Commission to take up the subject of malaria early in July of the current year, with a view to ascertaining whether the control of this disease might offer a field of service with promise of definite and far-reaching results. The inquiry

covered such phases of the subject as the geographical distribution of malaria, the degree of infection in certain localities in various parts of the world, the significance of malaria as a disabling disease, the principles underlying all control measures, and the methods and results of a large number of systematic efforts that have been made under widely different conditions for its control.

Theoretically, the control of malaria is relatively simple, but as a practical undertaking it has been found extremely difficult. In view of the important interests at stake, however, the International Health Commission is undertaking to carry out an experiment with a view to ascertaining what degree of control may be achieved in our temperate climate within the limits of reasonable expenditure and under the conditions which prevail in typical farming communities in the Southern States. Arrangements have been made to carry out two sets of experiments: one to test the practicability of malaria control by detecting the carriers and freeing them of the parasites; and the other to test the practicability of malaria control by means of a combination of control measures. In neither case is the extermination of mosquitoes by major drainage operations to be undertaken.

The first of these experiments is to be carried out in Bolivar county, Mississippi, under the

administration of the Mississippi Department of Health, with Dr. W. S. Leathers as Administrative Director, and Dr. C. C. Bass, of Tulane University Medical School, as Scientific Director. The field force and the microscopists have been selected and are now receiving their technical training in the laboratory of Tulane University Medical School under Dr. Bass. The second experiment is to be carried out in Arkansas in coöperation with the U. S. Public Health Service, with Dr. R. H. von Ezdorf in charge. The field force is being made up, the budget has been approved, and it is expected that work in the field will be under way by the middle of March or the first of April.

The work undertaken is frankly an experiment; the practical difficulties to be encountered are serious; the future development of the work therefore must depend upon the results of the present undertaking.

IV

MEDICAL COMMISSION TO BRAZIL

In view of its interest in the promotion of public sanitation and the spread of the knowledge of scientific medicine, the International Health Commission is undertaking, for guidance in its present and future work, to secure information on medical conditions in many countries. From British colonies, and from many other countries which have been

visited by representatives of the Commission, considerable information has already been secured concerning medical and public health agencies, and it is expected that these preliminary studies will be followed by more detailed investigation to be carried out on the ground. As a beginning in this direction arrangements have been made to send a special commission to Brazil to study and report on medical conditions and progress in that country. This commission is expected to sail about the middle of January, 1916. Its studies are to cover the ground of medical education, hospitals, dispensaries, prevalent diseases, public health agencies, and sanitary progress. The Government of Brazil extends hearty welcome to the commission and generously offers every facility for the prosecution of its work.

V

HOSPITAL SHIP FOR THE SULU ARCHIPELAGO

For more than two hundred years efforts have been made, principally through the use of military force, to bring the Moros and near-related tribes who inhabit the Sulu Archipelago under the influence of civilization. The military forces of Spain were unable to accomplish this, and similar efforts made by the United States have not met with much greater success. The Sulu Archipelago, composing the southern group of

the Philippines, comprises a large number of small islands. These are inhabited by about 200,000 persons of the Mohammedan faith who lead a nomadic or semi-nomadic life. The Moros since their entry into history have been a people apart. They were the famous Malay pirates that terrorized the Malay seas and devastated the Philippine Islands to the north. Religious hatred and war-like proclivities have separated the Moros politically and socially from the great mass of the Filipinos, who fear them. The Moro is a man of good physique, quick mind, and of active habits, but he has been so alienated from the rest of the world that the benefits of civilization have never reached him. Preliminary investigation shows that the medical needs of these people are great. They suffer from malnutrition and from diseases fostered by filth and negligence. The common diseases are skin diseases in their worst forms, malaria, hookworm disease, dysentery, and some of the other preventable infections.

The Ifugaos, Kalingaos, Igorots, and other human-head-hunting tribes of northern Luzon, were brought to ways of peace largely by the contact established through medical relief. Similar work has been recently undertaken among the Moros, who live in the larger islands of Mindanao and Jolo, and it is believed that this effort will meet with the same success which has attended the pacification work of the tribes of

Luzon. It is already possible for the doctor and nurse to go in safety to many places which it has been extremely dangerous for the soldier to approach. Experience has shown that even the wildest of the Moros that have resisted all other means of contact may be appealed to through hospital relief. The medical work done in Mindanao is paving the way for establishing industrial and regular schools, and indicates that these people, when properly approached, show a receptive attitude toward civilizing influences.

The establishment of dispensaries at different places in the Sulu Archipelago similar to those in Mindanao and Jolo is not practicable because they would reach only a very small fraction of the inhabitants, who are scattered over a large number of small islands. But these people can be reached by a hospital ship. They are gregarious; they live along the littoral, and the markets where the people congregate at least weekly bring the whole population to the coast. To meet the situation a hospital ship is being provided. The hospital ship will be expected to go from island to island, meeting the people at established points, bringing medical relief to the afflicted, training midwives, giving general instruction to the people, and guiding and stimulating them to self-help. It is expected that this hospital ship will serve as an agency for the promotion of peace and order, that it will help to establish friendly relations between the Fili-

pinos and their Moro neighbors, and that it will serve as an entering wedge for permanent civilizing influences. The International Health Commission has entered into a coöperative arrangement with the Philippine Government for the equipment of such a ship and for its maintenance for a period of five years. It is expected that by the end of this period the ship will have demonstrated its usefulness and that the work will be continued on the basis of Government and local support.

II. SUMMARY OF ACTIVITIES AND RESULTS BY STATES AND COUNTRIES

ALL COUNTRIES

In the states and countries where measures against hookworm disease have been in progress, 1,458,483 persons were microscopically examined by the official working staff during the period from January 1, 1910, to December 31, 1915, and 593,383 persons were treated. The results by both the dispensary and intensive plans of work are included in these figures. In addition to the persons examined and treated by the working force, however, large numbers were examined and treated by practicing physicians, by hospitals, and by other agencies. Reports received from practicing physicians in the Southern States, for example, showed that during the period from January 1, 1910, to December 31, 1915, 260,746 persons had been treated by them for hookworm disease.

Table I exhibits the total number of persons microscopically examined and given first treatment by the working force in all countries up to December 31, 1915. The results accom-

plished during 1915 and prior to 1915 are shown separately.

TABLE I: *All Countries—Dispensary and Intensive Work Combined: Number of Persons Microscopically Examined and Given First Treatment from January 1, 1910, to December 31, 1915.*

With Comparison of Results During 1915 and Prior to 1915.

	Up to December 31, 1915	During 1915	Prior to 1915
1. Microscopically Examined....	1,458,483	333,201	1,125,282
2. Given First Treatment.....	593,383	135,279	458,104

In Table II, figures in detail by states and countries are presented to show the results of examination and treatment during the year 1915. The table includes the combined results for both the dispensary and intensive methods of work. (See Table II, page 81.)

Examination and Treatment: Dispensary Method

In the work of examination and treatment by the dispensary method, 1,390,040 persons were microscopic..., examined and 565,080 were given first treatment in the period from January 1, 1910, to December 31, 1915.

Table III presents these figures in tabular form, and offers a comparison of the results during 1915 and prior to 1915. (See Table III, page 82.)

TABLE II: *All Countries—Dispensary and Intensive Work Combined: Number of Persons Microscopically Examined and Given First Treatment During 1915, by Countries.*

States and Countries	Microscopically Examined	Given First Treatment
Total	**333,201**	**135,279**
Southern States	150,306	41,859
West Indies	61,514	34,487
Central America	114,005	53,909
The East	7,376	5,024
Southern States:		
Alabama	4,508	1,499
Arkansas	.....	.....
Georgia	64,462	21,585
Kentucky	25,679	6,274
Louisiana	.....	.....
Mississippi	4,852	1,599
North Carolina	3,405	802
South Carolina	5,487	1,488
Tennessee	18,595	3,185
Texas	19,578	5,084
Virginia	3,740	343
West Indies:		
British Guiana	21,070	11,903
Grenada	17,079	10,364
St. Lucia	7,924	4,106
St. Vincent	3,822	1,590
Trinidad	11,619	6,524
Central America:		
Costa Rica	57,979	23,597
Guatemala	25,587	13,783
Nicaragua	5,429	1,611
Panama	25,010	14,918
The East:		
Egypt	7,376	5,024

TABLE III: *All Countries—Dispensary Work: Number of Persons Microscopically Examined and Given First Treatment from January 1, 1910, to December 31, 1915.*

With Comparison of Results During 1915 and Prior to 1915.

	Up to December 31, 1915	During 1915	Prior to 1915
1. Microscopically Examined...	1,390,040	273,953	1,116,087
2. Given First Treatment.....	565,080	109,240	455,840

In Table IV the figures exhibit in detail, by states and countries, the number of persons examined, found infected, and given first treatment in work by the dispensary method during 1915. For Grenada and Costa Rica the percentage of the persons examined who were found infected, and the percentage of infected persons who were given first treatment, have been omitted because the figures for the results of examination in these countries relate to the number of specimens, instead of to the number of persons, examined. In Grenada, furthermore, and in Egypt, treatment was administered on clinical diagnosis to some persons who had not been examined and found positive with the microscope. The percentage figures for the total and sub-totals by geographical divisions are also affected by these considerations.

TABLE IV: *All Countries—Dispensary Work: Number of Persons Examined, Found Infected, and Given First Treatment During 1915, by Countries.*

States and Countries	Number of Persons			Percentage of Persons	
	Examined	Found Infected	Given First Treatment	Found Infected	Given First Treatment
Total	**273,953**	**125,462**	**109,240**	....	.....
Southern United States.	129,817	37,758	37,051	29.1	98.1
West Indies	22,755	14,128	13,256	....	.....
Central America	114,005	69,412	53,909	....	.....
The East	7,376	4,164	5,024	56.2	.....
Southern United States:					
Alabama	4,508	1,499	1,499	33.3	100.0
Georgia	64,462	21,914	21,585	34.0	98.5
Kentucky	23,846	5,814	5,814	24.4	100.0
Tennessee	17,423	3,135	3,069	18.0	97.9
Texas	19,578	5,396	5,084	27.6	94.2
West Indies:					
Grenada	17,079	10,380	10,364	....	.....
Trinidad	5,676	3,748	2,892	65.9	77.2
Central America:					
Costa Rica	57,979	34,840	23,597	....	.....
Guatemala	25,587	15,001	13,783	58.6	91.9
Nicaragua	5,429	2,681	1,611	49.4	60.1
Panama	25,010	16,890	14,918	67.5	88.3
The East:					
Egypt	7,376	4,164	5,024	56.2	.....

Examination and Treatment: Intensive Method

For all of the countries where intensive work has been conducted from the inauguration of work by that plan on March 12, 1914, up to December 31, 1915, the total number of

persons microscopically examined, found infected, given first treatment, and cured is exhibited in Table V. It will be seen that in all of the areas where work by this plan has been conducted, there resided 86,958 persons. Of these, 68,443, or 78.7 per cent, were microscopically examined; and 30,655, or 44.6 per cent of those examined, were found infected. First treatment was administered to 28,303, or 92.3 per cent of those found infected; and 17,863, or 63.1 per cent of those receiving first treatment, were shown by microscopic re-examination to have been cured. A comparison of the results during 1915 with those during 1914 is offered in the table.

TABLE V: *All Countries—Intensive Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured from March 12, 1914, to December 31, 1915.*

With Comparison of Results During 1915 and During 1914.

	Up to December 31, 1915		During 1915		During 1914	
	No.	P.C.	No.	P.C.	No.	P.C.
1. Census.....	86,958	....	74,653	....	12,305	....
2. Examined.....	68,443	78.7	59,248	79.4	9,195	74.7
3. Found Infected.	30,655	44.6	28,237	47.7	2,418	26.3
4. Given First Treatment...	28,303	92.3	26,039	92.2	2,264	93.6
5. Cured.....	17,863	63.1	17,210	66.1	653	28.8

The detailed results of examination and treatment by the intensive method during 1915 are exhibited in Table VI. In this table the figures for the West Indies give a more reliable index to the effectiveness of work by the intensive plan in the relief and cure of sufferers than do the figures for the Southern States, where the staff devoted its main energies to securing sanitary improvement. (See Table VI, page 86.)

In all of the areas where work was conducted in the West Indies during 1915, 23,247 persons were found infected. Table VI shows that 16,278 were cured. This represents 70.0 per cent of the total infected. In addition, 2,249, or 9.7 per cent of the infected persons, removed from the areas while the work was in progress, leaving in the areas uncured at the close of work, 4,720 infected persons, or 20.3 per cent of the total. Of these, 2,574 refused either to accept first treatment or to continue treatment until cured, 822 could not be treated for medical reasons, and 1,324 were under treatment but had not been treated a sufficient number of times for a cure to be effected when the work in the areas was ended.

Table VII presents a brief summary showing the total number of infected persons remaining uncured in the areas where intensive work was conducted in the West Indies during 1915. (See Table VII, page 87.)

TABLE VI: *All Countries—Intensive Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured During 1915, by Countries.*

States and Countries	Population	Number of Persons				Percentage of Persons			
		Examined	Found Infected	Given First Treatment	Cured	Examined	Found Infected	Given First Treatment	Cured
Total	**74,653**	**59,248**	**28,237**	**26,039**	**17,210**	**79.4**	**47.7**	**92.2**	**66.1**
Southern United States	33,858	20,489	4,990	4,808	932	60.5	24.4	96.4	19.4
West Indies	40,795	38,759	23,247	21,231	16,278	95.0	60.0	91.3	76.7
Southern United States:									
Kentucky	1,987	1,833	460	460	316	92.2	25.1	100.0	68.7
Mississippi	8,028	4,852	1,611	1,599	53	60.4	33.2	99.3	3.3
North Carolina	5,056	3,405	898	802	228	67.3	26.4	89.3	28.4
South Carolina	6,790	5,487	1,561	1,488	231	80.8	28.4	95.3	15.5
Tennessee	3,316	1,172	116	116	20	35.3	9.9	100.0	17.2
Virginia	8,681	3,740	344	343	84	43.1	9.2	99.7	24.5
West Indies:									
British Guiana	22,323	21,070	13,135	11,903	10,039	94.4	62.3	90.6	84.3
St. Lucia	8,149	7,924	4,436	4,106	2,177	97.2	56.0	92.6	53.0
St. Vincent	3,825	3,822	1,676	1,590	1,350	99.9	43.9	94.9	84.9
Trinidad	6,498	5,943	4,000	3,632	2,712	91.5	67.3	90.8	74.7

TABLE VII: *West Indies—Intensive Work: Number of Infected Persons Remaining in Areas Uncured at Close of Work, During 1915.*

	No.	P. C.
1. Infected with Uncinariasis	23,247	....
2. Cured	16,278	70.0
3. Removed from Areas	2,249	9.7
4. Remaining in Areas Uncured	4,720	20.3
(a) Refused 2,574		
(b) Medical Reasons 822		
(c) Under Treatment 1,324		

TABLE VIII: *West Indies—Intensive Work: Detailed Results of Examination and Treatment During 1915.*

	Number of Persons
1. Census	**40,795**
2. Examined	**38,759**
3. Found Infected	**23,247**
4. Given First Treatment	**21,231**
5. Not Given First Treatment	2,016
(a) Removed	841
(b) Died	6
(c) Refused	403
(d) Medical Reasons	766
6. Cured	**16,278**
7. Given First Treatment but Not Cured	4,953
(a) Refused	2,171
(b) Medical Reasons	56
(c) Removed	1,382
(d) Died	20
(e) Under Treatment	1,324

Figures for the West Indian colonies showing in detail the results of examination and treatment in the areas where work was conducted by the intensive method during 1915 are exhibited in Table VIII. (See Table VIII, page 87.)

The figures given in the foregoing tables for the number of persons remaining in the areas uncured at the close of work are based in all cases upon the number of persons definitely known to have been infected. The actual number of persons remaining uncured will probably be greater in every instance than the tables show, for two reasons: first, a certain proportion of the persons who, for various reasons, were not examined were doubtless infected; and secondly, allowance must be made for errors and faulty technique in the microscopic examination of specimens. All of the tables in this report are confined to figures definitely known; estimated figures in all cases have been excluded.

In figuring the percentage of persons remaining in the areas uncured at the close of work, the original number of infected cases, and not the total population of the areas, is taken as the base. If figures for the total population were used as the basis of calculation, the percentage of uncured persons remaining in the areas would be considerably lower. In order to arrive at the percentage of uncured persons based upon the population, however, it is necessary to take into consideration a number of estimated factors.

The number of persons cured is based upon the number of persons previously infected in whose feces no ova could be detected on the last examination. In considering these figures two things should be borne in mind: first, in a large number of cases, re-examinations for demonstrating whether a cure has been effected are lacking; and secondly, allowance must be made for the possibility of error in examining specimens. In some cases a patient may be infected, but a careful search may fail to reveal ova in his stool. The number of such cases will depend upon the thoroughness of the microscopic technique, but in any event will be relatively small and will apply only to those persons who are lightly infected.

The terms "Not Treated for Medical Reasons" and "Not Cured for Medical Reasons," as used in the tables exhibiting the detailed results of work by the intensive method, relate to very old or emaciated persons, pregnant women, or sufferers from acute heart or kidney disease, typhoid fever, malaria, dysentery, or diarrhoea. To administer treatment for hookworm disease to these persons might cause serious complications and possibly death. Consequently the treatment is spoken of as withheld for medical reasons.

Persons who have taken one or more treatments for hookworm disease, but have abandoned treatment before being cured, are classed as "Refused" in the tables exhibiting detailed

results. The persons who refuse treatment may be divided into two groups: those who refuse to accept even the first treatment, and those who accept one or more treatments but do not continue treatment until cured. Persons who die within the areas of operation while the work is in progress are included in the heading "Removed from Area." In no case on record was the death of any of these persons connected with the administration of treatment for hookworm disease.

Sanitary Improvement

In all of the states and countries where intensive work has been conducted, efforts to secure sanitary improvement have been given due attention. This feature of the work has received particular emphasis in the Southern States, and the results accomplished there are more adequately discussed in later pages. In Guatemala and Costa Rica, too, though the work has followed the dispensary plan, the working staff has devoted much of its time to securing the installation and maintenance of satisfactory latrines. Elsewhere the work has been largely educational or persuasive in character, and the results have not been such as could be definitely measured and recorded.

In the countries, besides Guatemala,[1] where

[1] In Guatemala the results have been reported on a basis somewhat different from the other countries. They are discussed separately in the section of this chapter devoted to that country (see pages 174–176).

definite progress has been made in the improvement of sanitary conditions, 24,956 homes were inspected during the period from March 12, 1914, to December 31, 1915. Of these, only 8,128, or 32.6 per cent, were found to have latrines on the first inspection, as compared with 13,909, or 55.7 per cent, on the last. The actual number of new latrines installed was 5,781, reducing the percentage of homes without latrines from 67.4 to 44.3.

These results are exhibited in Table IX, in which a comparison is offered of the results during 1915 and prior to 1915.

TABLE IX: *All Countries—Sanitary Improvement from March 12, 1914, to December 31, 1915.*

With Comparison of Results During 1915 and Prior to 1915

	Up to December 31, 1915		During 1915		Prior to 1915	
	No.	P.C.	No.	P.C.	No.	P.C.
1. Homes Inspected.....	24,956	....	22,699	....	2,257	....
2. Homes With Latrines:						
(a) First Inspection..	8,128	32.6	7,001	30.8	1,127	49.9
(b) Last Inspection..	13,909	55.7	11,921	52.5	1,988	88.1
3. Homes Without Latrines:						
(a) First Inspection..	16,828	67.4	15,698	69.2	1,130	50.1
(b) Last Inspection..	11,047	44.3	10,778	47.5	269	11.9

Figures showing by states and countries the results of sanitary improvement during 1915 are presented in Table X.

TABLE X: *All Countries—Sanitary Improvement During 1915, by Countries.*

States and Countries	Number of Homes Inspected	Number of Homes				Percentage of Homes			
		With Latrines		Without Latrines		With Latrines		Without Latrines	
		First Inspection	Last Inspection	First Inspection	Last Inspection	First Inspection	Last Inspection	First Inspection	Last Inspection
Total	**22,699**	**7,001**	**11,921**	**15,698**	**10,778**	**30.8**	**52.5**	**69.2**	**47.5**
Southern United States	7,136	3,504	5,327	3,632	1,809	49.1	74.6	50.9	25.4
West Indies	7,302	2,630	4,471	4,672	2,831	36.0	61.2	64.0	38.8
Central America	8,261	867	2,123	7,394	6,138	10.5	25.7	89.5	74.3
Southern United States:									
Kentucky	353	139	353	214	.....	39.4	100.0	60.6	....
Mississippi	1,571	417	1,015	1,154	556	26.5	64.6	73.5	35.4
North Carolina	1,059	619	932	440	127	58.5	88.0	41.5	12.0
South Carolina	1,661	812	1,192	849	469	48.9	71.8	51.1	28.2
Tennessee	690	150	399	540	291	21.7	57.8	78.3	42.2
Virginia	1,802	1,367	1,436	435	366	75.9	79.7	24.1	20.3
West Indies:									
British Guiana	6,147	2,524	3,918	3,623	2,229	41.1	63.7	58.9	36.3
St. Lucia	419	20	119	399	300	4.8	28.4	95.2	71.6
St. Vincent	736	86	434	650	302	11.7	59.0	88.3	41.0
Central America:									
Costa Rica	8,261	867	2,123	7,394	6,138	10.5	25.7	89.5	74.3

SOUTHERN STATES

During 1915, the state boards of health in ten Southern states conducted measures for the relief and control of hookworm disease. In three of the states—Alabama, Georgia, and Texas—work was conducted by the dispensary plan only; in five—Louisiana, Mississippi, North Carolina, South Carolina, and Virginia—by the intensive plan only; and in two—Kentucky and Tennessee—by both the dispensary and intensive plans. The work was in progress continuously during the year in the states of Kentucky, Mississippi, South Carolina, Tennessee, and Virginia. Table 1 shows, for both the dispensary and intensive plans of work, the length of time operations were in progress in each state during 1915. (See Table 1, page 94.)

Examination and Treatment: Dispensary Method

Prior to 1915, operations by the dispensary method had been conducted by all of these states and by Arkansas. This work succeeded in reaching almost all of the heavily infected counties in these states, so that at the beginning of 1915 there remained only a few counties still to be visited by dispensaries. These counties were located in the states of Alabama, Kentucky, Tennessee, and Texas. During 1915 the work was extended to them. Table 2 shows, by states, the extent of operations conducted by

TABLE 1: *Southern States—Extent of Operations During 1915, by States.*

State	Dispensary Work		Intensive Work	
	From	To	From	To
Alabama	January 1, 1915	April 30, 1915	.....	.....
Georgia	January 1, 1915	June 30, 1915	.....	.....
Kentucky	May 15, 1915	November 18, 1915	January 1, 1915	December 31, 1915
Louisiana*	.....	.....	August 23, 1915	December 31, 1915
Mississippi	.....	.....	January 1, 1915	December 31, 1915
North Carolina	.....	.....	January 1, 1915	April 30, 1915
South Carolina	.....	.....	January 1, 1915	December 31, 1915
Tennessee	January 1, 1915	June 30, 1915	July 1, 1915	December 31, 1915
Texas	January 1, 1915	June 30, 1915	.....	.....
Virginia	.....	.....	January 1, 1915	December 31, 1915

* Operations on the intensive plan were begun in Louisiana on August 13, 1915, but up to December 31, 1915, work in no geographical area had been completed. For this reason figures for this State are omitted from the tables showing the results accomplished during 1915.

the dispensary plan up to December 31, 1915, and offers a comparison of the number of counties having dispensary work completed during 1915 and prior to 1915.

TABLE 2: *Southern States—Dispensary Work: Number of Counties Having Dispensary Work Completed from January 1, 1910, to December 31, 1915, by States.*

With Comparison of Results During 1915 and Prior to 1915.

States	Number of Counties in State	Number of Counties Having Dispensary Work Completed		
		Up to December 31, 1915	During 1915	Prior to 1915
Total	**1,142**	**700**	**122**	**578**
Alabama	67	60	7	53
Arkansas	75	43	...	43
Georgia	148	134	68	66
Kentucky	120	39	7	32
Louisiana	64	49	...	49
Mississippi	79	76	...	76
North Carolina	100	99	...	99
South Carolina	44	41	...	41
Tennessee	96	61	18	43
Texas	249	67	22	45
Virginia	100	31	...	31

In the dispensary work conducted up to December 31, 1915, 1,217,483 persons were microscopically examined, of whom 396,725, or 32.6 per cent, were found to be infected. First treatment was administered to 477,427 persons, 80,702 in excess of those found infected. This excess of persons treated over those found infected is due to the fact that in the early work a great many patients who had not

been examined with the microscope were given treatment on clinical diagnosis. Table 3 exhibits figures showing the total number of persons microscopically examined, found infected, and given first treatment in all of the dispensary work conducted in the Southern States from January 1, 1910, up to December 31, 1915.

TABLE 3: *Southern States—Dispensary Work: Number of Persons Examined, Found Infected, and Given First Treatment from January 1, 1910, to December 31, 1915.*

With Comparison of Results During 1915 and Prior to 1915.

	Up to December 31, 1915		During 1915		Prior to 1915	
	No.	P.C.	No.	P.C.	No.	P.C.
1. Examined.....	1,217,483	....	129,817	....	1,087,666	....
2. Found Infected.	396,725	32.6	37,758	29.1	358,967	33.0
3. Given First Treatment...	477,427	....	37,051	98.1	440,376	....

During the year 1915, the number of persons examined was 129,817, of whom 37,758, or 29.1 per cent, were found infected. First treatment was administered to 37,051, or 98.1 per cent of those found infected. The results by states for the year 1915 are exhibited in Table 4. (See Table 4, page 97.)

Lectures and Addresses

During the progress of the dispensary work, considerable effort was devoted to lectures, to

TABLE 4: *Southern States—Dispensary Work: Number of Persons Examined, Found Infected, and Given First Treatment During 1915, by States.*

States	Number of Persons			Percentage of Persons	
	Examined	Found Infected	Given First Treatment	Found Infected	Given First Treatment
Total	**129,817**	**37,758**	**37,051**	**29.1**	**98.1**
Alabama	4,508	1,499	1,499	33.3	100.0
Georgia	64,462	21,914	21,585	34.0	98.5
Kentucky	23,846	5,814	5,814	24.4	100.0
Tennessee	17,423	3,135	3,069	18.0	97.9
Texas	19,578	5,396	5,084	27.6	94.2

TABLE 5: *Southern States—Dispensary Work: Number of Lectures Delivered from January 1, 1910, to December 31, 1915, with Attendance.*

With Comparison of Results for 1915 and Prior to 1915.

	Up to December 31, 1915	During 1915	Prior to 1915
Total Lectures	**29,396**	**3,935**	**25,461**
Public	18,474	2,378	16,096
School	9,621	1,344	8,277
Special	1,301	213	1,088
Attendance at Lectures	**2,404,230**	**245,102**	**2,159,128**
Public	1,796,018	134,840	1,661,178
School	506,911	89,882	417,029
Special	101,301	20,380	80,921

TABLE 6: *Southern States—Dispensary Work: Number of Lectures Delivered During 1915, with Attendance, by States.*

States	Number of Lectures				Attendance at Lectures			
	Total	Public	School	Special	Total	Public	School	Special
Total	**3,935**	**2,378**	**1,344**	**213**	**245,102**	**134,840**	**89,882**	**20,380**
Alabama	256	194	59	3	20,950	17,623	3,230	97
Georgia	2,375	1,428	906	41	124,236	68,979	52,919	2,338
Kentucky	515	275	139	101	38,197	19,998	6,106	12,093
Tennessee	265	193	60	12	20,844	13,455	6,639	750
Texas	524	288	180	56	40,875	14,785	20,988	5,102

the distribution of literature, and to educational activities in general. Table 5 indicates that up to December 31, 1915, 29,396 lectures on hookworm disease and related topics had been delivered to a combined audience estimated at 2,404,-230 persons. Of these lectures, 18,474 were for the public, 9,621 for school children, and 1,301 for specially selected audiences. Table 5 offers figures showing the number of lectures delivered up to December 31, 1915, with a comparison of the number delivered during 1915 and prior to 1915. (See Table 5, page 97.)

The number of lectures delivered during 1915 is reported by states in Table 6. (See Table 6, page 98.)

Distribution of Literature

Table 7 shows the number of pieces of literature distributed up to December 31, 1915, and compares the number distributed during 1915 with the number prior to 1915.

TABLE 7: *Southern States—Dispensary Work: Number of Pieces of Literature Distributed from January 1, 1910, to December 31, 1915.*

With Comparison of Results for 1915 and Prior to 1915.

	Up to December 31, 1915	During 1915	Prior to 1915
Total	**3,878,712**	**161,282**	**3,717,430**
Number of Letters Mailed	429,727	30,739	398,988
Number of Pieces of Literature Distributed	3,448,985	130,543	3,318,442

Figures for the number of pieces of literature distributed during 1915, by states, are presented in Table 8.

TABLE 8: *Southern States—Dispensary Work: Number of Pieces of Literature Distributed During 1915, by States.*

States	Total	No. of Letters Mailed	No. of Pieces of Literature Distributed
Total	**161,282**	**30,739**	**130,543**
Alabama	10,700	700	10,000
Georgia	81,752	18,092	63,660
Kentucky	31,241	6,241	25,000
Tennessee	19,850	1,850	18,000
Texas	17,739	3,856	13,883

Examination and Treatment: Intensive Method

During 1914 the intensive plan had been tried out in certain states which had been earliest in completing the dispensary work; in that year, work by this plan had been completed in twelve communities, three located in the state of Louisiana, six in North Carolina, two in South Carolina, and one in Virginia. With the completion of dispensary work during 1915 in the heavily infected counties of the other states, came the final transition from the dispensary to the intensive plan of work. In the year 1915, work by the intensive plan was completed in fifty-nine additional communities, making the total number of communities in which work had

been completed up to December 31, 1915, seventy-one. Table 9 shows, by states, the number of communities completed during 1915 and during 1914.

TABLE 9: *Southern States—Intensive Community Work: Number of Communities Completed from May 1, 1914, to December 31, 1915.*

With Comparison of Results During 1915 and During 1914.

States	Number of Communities Completed		
	Up to December 31, 1915	During 1915	During 1914
Total	**71**	**59**	**12**
Kentucky	3	3	..
Louisiana	3	..	3
Mississippi	14	14	.
North Carolina	14	8	6
South Carolina	14	12	2
Tennessee	6	6	..
Virginia	17	16	1

The chief aim of the intensive work as conducted by these states has been to see that adequate sanitary accommodations are provided for rural homes. Upon the curative side of the work no particular stress has been laid, because in almost all of the communities the infection existing when the intensive work was undertaken was found to be light, due no doubt to the efforts of the practicing physicians and in part to the dispensary work, with its accompanying educational activities, which had been previously conducted.

In the seventy-one communities in which work was completed up to December 31, 1915, there resided 46,163 persons. Of these, 29,684, or 64.3 per cent, were microscopically examined; and 7,408, or 25.0 per cent, were found to be infected. First treatment was administered to 7,072 persons, or 95.5 per cent of those infected; and 1,585, or 22.4 per cent of those receiving first treatment, were shown by microscopic re-examination to have been cured.

Table 10 presents this information in tabular form and offers a comparison of the results during 1915 with those during 1914.

TABLE 10: *Southern States—Intensive Community Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured, from May 1, 1914, to December 31, 1915.*

With Comparison of Results During 1915 and During 1914.

	Up to December 31, 1915		During 1915		During 1914	
	No.	P.C.	No.	P. C.	No.	P. C.
1. Census.....	46,163	....	33,858	....	12,305	....
2. Examined.....	29,684	64.3	20,489	60.5	9,195	74.7
3. Found Infected.	7,408	25.0	4,990	24.4	2,418	26.3
4. Given First Treatment...	7,072	95.5	4,808	96.4	2,264	93.6
5. Cured.....	1,585	22.4	932	19.4	653	28.8

A detailed summary of the results accomplished during the year 1915, by states, is given in Table 11.

TABLE 11: *Southern States—Intensive Community Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured During 1915, by States.*

States	Number of Persons					Percentage of Persons			
	Census	Examined	Found Infected	Given First Treatment	Cured	Examined	Found Infected	Given First Treatment	Cured
Total	**33,858**	**20,489**	**4,990**	**4,808**	**932**	**60.5**	**24.4**	**96.4**	**19.4**
Kentucky	1,987	1,833	460	460	316	92.2	25.1	100.0	68.7
Mississippi	8,028	4,852	1,611	1,599	53	60.4	33.2	99.3	3.3
North Carolina	5,056	3,405	898	802	228	67.3	26.4	89.3	28.4
South Carolina	6,790	5,487	1,561	1,488	231	80.8	28.4	95.3	15.5
Tennessee	3,316	1,172	116	116	20	35.3	9.9	100.0	17.2
Virginia	8,681	3,740	344	343	84	43.1	9.2	99.7	24.5

Sanitary Improvement

In the work directed toward the improvement of sanitation, upon which chief emphasis is laid in the intensive work conducted in the Southern States, the progress made up to December 31, 1915, in having latrines provided at the farm homes is exhibited in Table 12. In the seventy-one communities in which the work was conducted there were 9,393 homes. On the first inspection of the premises, it was found that only 4,631, or 49.3 per cent, were provided with latrines of any kind, and many of these were entirely inadequate for preventing soil pollution. On the last inspection, latrines were found at

TABLE 12: *Southern States—Intensive Community Work: Sanitary Improvement from May 1, 1914, to December 31, 1915.*

With Comparison of Results During 1915 and During 1914.

	Number			Percentage		
	Up to December 31, 1915	During 1915	During 1914	Up to December 31, 1915	During 1915	During 1914
Homes Inspected.....	9,393	7,136	2,257	....	....	....
Homes With Latrines:						
On First Inspection..	4,631	3,504	1,127	49.3	49.1	50.0
On Last Inspection..	7,315	5,327	1,988	77.9	74.6	88.1
Homes Without Latrines:						
On First Inspection..	4,762	3,632	1,130	50.7	50.9	50.1
On Last Inspection..	2,078	1,809	269	22.1	25.4	11.9

7,315 homes, showing an increase in the percentages of homes with latrines from 49.3 to 77.9. The number of new latrines erected was 2,684, reducing the percentage of homes without latrines from 50.7 to 22.1. (See Table 12, page 104.)

In Table 13 figures are presented showing, by states, the progress made during 1915 in having latrines provided at the farm homes. (See Table 13, page 106.)

In neither table, however, do the figures convey an adequate impression of the real extent to which the sanitation of these communities has been improved. In addition to the new latrines erected, many that were of a crude type have been improved and made adequate for preventing soil pollution. Nor do the figures take into account the number of new latrines erected or old ones improved at schools, churches, and other public and private buildings not classified as homes; nor the improvement made at homes located outside the limits of the particular communities in which the work was conducted. It has been found everywhere that the influence of the work radiates into the surrounding territory and that many latrines are installed at homes not included within the community survey, and many persons examined and treated who reside outside of the community. It has been found also that many families which were unable, from one cause or another, to install or improve latrines at their homes while the work

TABLE 13: *Southern States—Intensive Community Work: Sanitary Improvement During 1915, by States.*

States	Number of Homes Inspected	Number of Homes: With Latrines: First Inspection	Number of Homes: With Latrines: Last Inspection	Number of Homes: Without Latrines: First Inspection	Number of Homes: Without Latrines: Last Inspection	Percentage of Homes: With Latrines: First Inspection	Percentage of Homes: With Latrines: Last Inspection	Percentage of Homes: Without Latrines: First Inspection	Percentage of Homes: Without Latrines: Last Inspection
Total	**7,136**	**3,504**	**5,327**	**3,632**	**1,809**	**49.1**	**74.6**	**50.9**	**25.4**
Kentucky	353	139	353	214	....	39.4	100.0	60.6	.....
Mississippi	1,571	417	1,015	1,154	556	26.5	64.6	73.5	35.4
North Carolina	1,059	619	932	440	127	58.5	88.0	41.5	12.0
South Carolina	1,661	812	1,192	849	469	48.9	71.8	51.1	28.2
Tennessee	690	150	399	540	291	21.7	57.8	78.3	42.2
Virginia	1,802	1,367	1,436	435	366	75.9	79.7	24.1	20.3

was going on, make the necessary improvement after the work has been completed. Of incidental results such as these, the figures in the tables take no account.

The by-products of the work, one may venture to think, are even more important than the control of hookworm disease. While being taught how to control this one disease the people are also instructed in the prevention of typhoid, and are shown that in putting a stop to soil pollution to prevent hookworm disease they are at the same time preventing the spread of typhoid and other enteric diseases. Incidentally they are also shown the dangers of the fly in spreading typhoid and of the mosquito in spreading malaria; and as a result of this community work they become active in screening against flies and mosquitoes, although the primary effort has centered not on the screening but on the building of latrines. In teaching the people by demonstration how to control this one disease, an object lesson is given in the control of disease. Already this work has identified itself strongly with the movement for improvement in rural hygiene and sanitation, and as the outcome one may foresee the whole-time county health officer directing local agencies for the control of disease at the farm homes as disease is now being controlled in the larger towns and cities.

ANTIGUA

A preliminary survey for determining the prevalence and effects of hookworm disease in Antigua was conducted by Dr. Eric Marshall from August 1, 1914, to November 27, 1914. This investigation showed that in certain districts a large percentage of the people were infected, that the disease was the cause of much sickness, and that under certain conditions it might become a menace to the health of the whole Island. Its distribution led to the belief that it could be readily dealt with by work of an intensive nature. Arrangements were made for beginning work, and Dr. P. W. Covington, who had been appointed Director, began active measures against the disease on September 15, 1915.

The intensive plan of work was selected for preliminary operations. To assist the Director, a staff composed of two microscopists, three nurses and assistant nurses, a varying number of supernumerary nurses, and a caretaker, was appointed.

Examination and Treatment

Up to December 31, 1915, operations had been confined to the York Valley District. In this area, roughly two miles in diameter, were included ten villages, with a combined population of 1,956 persons, of whom almost all are negroes.

Work in this area had not been completed up to December 31, 1915, but 1,921 persons, or 98.2 per cent of the inhabitants, had been examined. Of these, 524, or 27.3 per cent, were found infected; and 432, or 82.4 per cent of those infected, were given first treatment. By microscopic re-examination following treatment, 284 persons (65.7 per cent of those treated) were found to have been cured. These details are shown more clearly in Table 1.

TABLE 1: *Antigua—Intensive Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured from September 15, 1915, to December 31, 1915.*

	No.	P. C.
1. Census	1,956	....
2. Examined	1,921	98.2
3. Found Infected	524	27.3
4. Given First Treatment	432	82.4
5. Cured	284	65.7

Since one of the aims of intensive work is to leave in the area as few uncured persons as possible as foci of infection, Table 2 gives information in detail showing how many of the persons found infected could not be treated for medical reasons, how many removed, and how many were still under treatment. This table is summarized briefly in the following statement, which indicates how many of the infected per-

sons remained in the area uncured on December 31, 1915:

	No.	P.C.
1. Infected	**524**	....
2. Cured	284	54.2
3. Removed from area	24	4.6
4. Remaining in area uncured	216	41.2
Not cured for medical reasons	35	
Still to be treated	181	

TABLE 2: *Antigua—Intensive Work: Detailed Results of Examination and Treatment from September 15, 1915, to December 31, 1915.*

	No.	P. C.
1. Census	**1,956**	....
2. Examined	**1,921**	**98.2**
3. Found Infected	**524**	**27.3**
4. Given First Treatment	**432**	**82.4**
5. Not Given First Treatment:	92	17.6
(a) Removed	15	....
(b) Died	3	....
(c) Medical reasons	25	....
(d) To be treated	49	....
6. Cured	**284**	**65.7**
7. Given First Treatment But Not Cured:	148	34.3
(a) Removed	6	....
(b) Died	0	....
(c) Medical reasons	10	....
(d) Under treatment	132	....

Educational Work

When the work was undertaken in the York Valley District an inaugural meeting was held at which His Excellency, the Acting Governor

of Antigua, presided. A number of addresses illustrated by lantern slides, telling in detail the story of the disease, were delivered at this meeting. In the work up to December 31, 1915, sixteen lectures were delivered and approximately 2,000 circulars distributed. Included among the lectures were a number of illustrated talks delivered at the schoolhouses throughout the area.

Sanitary Improvement

The nurses in visiting the homes to take the census, make a note of the sanitary conditions found. In the York Valley District, out of 413 homes, only ten were found to be provided with satisfactory latrines. Measures of sanitary improvement, such as draining and clearing the ground of undergrowth around the villages and erecting suitable latrines to prevent further soil pollution, are in the hands of the Government of Antigua. Sanitary inspectors have been appointed to enforce the installation and proper maintenance of suitable latrines, but no definite results had been accomplished up to December 31, 1915. There was, however, every evidence that activities would soon be under way.

BRITISH GUIANA

Operations against hookworm disease in British Guiana are in charge of Dr. F. E. Field, the Supervising Medical Officer, who acts under the direction of the Surgeon General. The Government Medical Officers of the districts in which work has been conducted have given much advice and assistance.

Preliminary operations were undertaken in the Peter's Hall district, lying on the east bank of the Demerara river just south of Georgetown. Active work was begun on March 12, 1914, and continued until March 31, 1915. Meanwhile, on January 9, 1915, operations were begun in the Belle Vue district, lying on the west bank of the Demerara river opposite the Peter's Hall district. Work in this second area had been practically completed by September 15, 1915. Work in a third area was then begun but had not been completed by December 31, 1915; hence, the figures in this report are confined to the results accomplished in the Peter's Hall and Belle Vue districts.

For the sake of convenience in operation, both the Peter's Hall and Belle Vue districts were sub divided into three areas termed A, B, and C. In mapping out the areas consideration was given to natural boundaries, and effort was made so far as possible to divide the districts into areas having approximately the same number of inhabitants.

The Peter's Hall district is about eight miles long and from one to three miles wide. It has villages and sugar plantations on both sides of one long road. There are few isolated houses. The work was confined to the free population, numbering 10,380 persons of the East Indian, colored, black, Portuguese, and Chinese races. Indentured laborers on sugar plantations were excluded because they were being effectively treated by the Government Medical Officer at the expense of the plantation owners. The staff engaged in the Peter's Hall district consisted of the supervising medical officer, two clerks, twelve nurses and twenty-four assistant nurses, three microscopists, and three caretakers.

The Belle Vue district is about fourteen miles long, with villages and sugar plantations on both sides of a public road. At a point near the center of this road another road about eight miles in length, with villages and plantations on both sides, branches off from it. As in the Peter's Hall district, the work was confined to the free population living in villages. This population numbered 11,943, including negroes, East Indians, persons of mixed blood, Chinese, and Europeans. In the Belle Vue district the staff, in addition to the supervising medical officer, consisted of four clerks, four microscopists, eleven nurses and twenty-three assistant nurses, and three caretakers. Headquarters for the supervising medical officer, the clerks, and three

of the microscopists were established in the center of the district; a fourth microscopist was stationed in the extreme southern part; and smaller dispensaries attended by nurses and their assistants, with a microscopist whenever occasion demanded, were located in the principal villages.

Lying at a lower level than the high tides of the Demerara river on which it is located; abounding in dense vegetation; completely inundated during the rainy season and in certain sections during the greater part of the year, the Belle Vue district offers conditions ideal for the perpetuation of hookworm disease, fevers, and other maladies. It was selected because it was one of the most unsanitary districts in the colony, almost unrivaled in its high death rate, and a constant menace to the city of Georgetown because malaria, hookworm disease, and dysentery had long flourished in it.

Examination and Treatment

The combined village population of the Peter's Hall and Belle Vue districts was 22,323. Of these, 21,070, or 94.4 per cent, were microscopically examined; and 13,135, or 62.3 per cent, were found infected. First treatment was administered to 11,903, or 90.6 per cent of the infected persons; and 10,039, or 84.3 per cent of those receiving first treatment, were kept

under treatment until cured. Table 1 presents these figures itemized for each district.

TABLE 1: *British Guiana—Intensive Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured from March 12, 1914, to December 31, 1915, by Areas.*

	Number of Persons			Percentage of Persons		
	Total	Peter's Hall District	Belle Vue District	Total	Peter's Hall District	Belle Vue District
1. Census.....	22,323	10,380	11,943	....	....	....
2. Examined.....	21,070	9,537	11,533	94.4	91.9	96.6
3. Found Infected....	13,135	5,590	7,545	62.3	58.6	65.4
4. Given First Treatment.....	11,903	5,160	6,743	90.6	92.3	89.4
5. Cured.....	10,039	4,109	5,930	84.3	79.6	87.9

It will be seen that the percentage of infection was higher in the Belle Vue than in the Peter's Hall district, being 65.4 per cent as compared with 58.6 per cent. In the number and percentage of infected persons cured, the work in the Belle Vue district exceeded that in the Peter's Hall: in the former, the staff succeeded in curing 87.9 per cent of the infected persons; in the latter, 79.6 per cent.

In the two districts combined there were 1,682 infected persons, or 12.8 per cent of the total infected, who could not be cured for various

reasons: in the Peter's Hall district the infected persons remaining uncured represented 13.7 per cent of the total infected persons; in the Belle Vue district, 12.2 per cent. The largest single group of these 1,682 infected persons were the 911 persons who were under treatment but had not been treated a sufficient number of times before the close of the work for a cure to be effected. The health of practically all of these persons was undoubtedly much benefited as a result of treatment; in many, perhaps, only the microscopic demonstration of cure was lacking. There were also 498 infected persons who could not be cured for medical reasons and 273 who refused either to accept first treatment or to continue treatment until cured. Figures showing the number of persons remaining uncured in

TABLE 2: *British Guiana—Intensive Work: Number of Persons Remaining Uncured in Areas Worked from March 12, 1914, to December 31, 1915.*

	Total		Peter's Hall District		Belle Vue District	
	No.	P.C.	No.	P.C.	No.	P.C.
1. Infected.....	13,135	....	5,590	....	7,545	....
2. Cured.....	10,039	76.4	4,109	73.5	5,930	78.6
3. Removed.....	1,414	10.8	717	12.8	697	9.2
4. Remaining in Area Uncured:	1,682	12.8	764	13.7	918	12.2
(a) Not cured for medical reasons..	498	....	160	....	338	....
(b) Refused.....	273	....	120	....	153	....
(c) Under treatment.....	911	....	484	....	427	....

each area at the close of the work are given in Table 2 (see Table 2, page 116); more detailed information as to the results of examination and treatment will be found in Table 3.

TABLE 3: *British Guiana—Intensive Work: Detailed Results of Examination and Treatment from March 12, 1914, to December 31, 1915, by Areas.*

	Number of Persons		
	Total	Peter's Hall District	Belle Vue District
1. Census	**22,323**	**10,380**	**11,943**
2. Not Located	1,253	843	410
3. Examined	**21,070**	**9,537**	**11,533**
4. Found Infected	**13,135**	**5,590**	**7,545**
5. Given First Treatment	**11,903**	**5,160**	**6,743**
6. Not Given First Treatment	1,232	430	802
(a) Removed	678	248	430
(b) Refused	56	22	34
(c) Medical Reasons	498	160	338
7. Cured	**10,039**	**4,109**	**5,930**
8. Given First Treatment But Not Cured	1,864	1,051	813
(a) Removed	723	462	261
(b) Refused	217	98	119
(c) Died	13	7	6
(d) Under Treatment	911	484	427

Educational Work

Before work was begun in either area an inaugural meeting was held to acquaint the people with its purpose and scope. His Excellency the Governor, the prelates, the Surgeon General,

members of the legislature, the clergy, local medical officers, and leading members of the village communities were in attendance. Other public meetings have also been held from time to time, and special lectures have been delivered to school-teachers and school-children, and to persons of other classes. An idea of the extent of the educational work conducted in both areas may be gained from Table 4, which indicates that a total of 42 lectures, attended by 9,911 persons, was delivered in both districts.

TABLE 4: *British Guiana—Intensive Work: Number of Lectures Delivered from March 12, 1914, to December 31, 1915, with Attendance.*

	Total	Peter's Hall District	Belle Vue District
Total Lectures	**42**	**26**	**16**
Public	25	17	8
School	11	4	7
Special	6	5	1
Attendance at Lectures	**9,911**	**5,270**	**4,641**
Public	4,862	1,638	3,224
School	1,434	692	742
Special	3,615	2,940	675

In addition to this, many informal house-to-house talks and demonstrations with the microscope were given as the work progressed. Pamphlets and posters setting forth the symptoms of the disease, the ease with which it can be cured, and the beneficial results of treatment were distributed throughout the villages. These

pamphlets and posters were printed in English and Hindi; and served not only to further a knowledge of the disease but also to secure the coöperation of the people in the work being done for its relief and control.

Table 5 shows the number of pieces of literature distributed in each district.

TABLE 5: *British Guiana—Intensive Work: Number of Pieces of Literature Distributed from March 12, 1914, to December 31, 1915, by Areas.*

	Total	Peter's Hall District	Belle Vue District
Total	**12,007**	**6,082**	**5,925**
Pamphlets	10,338	4,506	5,832
Posters	1,649	1,556	93
Not Classified	20	20	....

Sanitary Improvement

To secure the necessary improvement in sanitation the Government maintains a staff of native sanitary inspectors trained in the sanitary institute at Georgetown. These subordinate inspectors work under the direct supervision of a Chief Sanitary Inspector brought out from England. The staff engaged in sanitary improvement is entirely distinct from that engaged in examination and treatment, but both are under the direction of the Surgeon General. Laws are in existence requiring the erection of suitable latrines, but so far as possible the

voluntary coöperation of the people is relied upon for sanitary improvement.

Table 6 indicates that of the 6,147 homes inspected in the two districts where work was conducted, on the first inspection only 2,524, or 41.1 per cent, were found to be provided with latrines, whereas on the last inspection 3,918 homes, or 63.7 per cent of the total, had been provided. This means that during the progress of the work 1,394 new latrines were erected, and the sanitary work is still under way. (See Table 6, page 121.)

The table, however, does not show the actual extent of sanitary work conducted. In addition to the homes at which new latrines were erected, many other homes already provided with latrines were required to improve them to conform to the type adopted as standard. Main and interlot drains also were cleaned out; vats and barrels screened; dense overhanging bush and unnecessary vegetation cleared away; many unsanitary buildings removed; bakehouses and provision shops cleaned and re-constructed; accumulations of rubbish removed; and ventilation improved. In one district the villagers were so enthusiastic about the work and realized so well the benefits to be derived from it that they levied upon themselves an additional tax to pay for a special sanitary inspector.

As signifying the beneficial results following work for the relief and control of hookworm

TABLE 6: *British Guiana—Intensive Work: Sanitary Improvement from March 12, 1914, to December 31, 1915, by Areas.*

District	Number of Homes Inspected	Number of Homes				Percentage of Homes			
		With Latrines		Without Latrines		With Latrines		Without Latrines	
		First Inspection	Last Inspection	First Inspection	Last Inspection	First Inspection	Last Inspection	First Inspection	Last Inspection
Total	**6,147**	**2,524**	**3,918**	**3,623**	**2,229**	**41.1**	**63.7**	**58.9**	**36.3**
Peter's Hall District	2,638	853	1,757	1,785	881	32.3	66.6	67.7	33.4
Belle Vue District	3,509	1,671	2,161	1,838	1,348	47.6	61.6	52.4	38.4

disease, the Surgeon General writes: "It may be of interest to know that from the Peter's Hall and Belle Vue districts, where the work has been conducted, the number of persons seeking medical relief at the public hospital at Georgetown has been much reduced, whereas from the city and from the country districts where the work has not been conducted the number has increased."

DUTCH GUIANA

Late in December, 1914, the Commission's Director for the West Indies on invitation visited Dutch Guiana and discussed with the Surgeon General and other members of the Colonial Medical Staff, plans for conducting measures against hookworm disease. Many estates and hospitals were inspected; clinical examination made of several hundred people; and every evidence found of a high rate of infection. The Colonial Government thereupon invited the Commission to aid in combating the disease, and in April, 1915, signified its readiness to have the work begin. Dr. W. H. Kibler was accordingly appointed Medical Officer in Charge of the work. He arrived at Paramaribo on October 2, and began active work on October 15, 1915.

The intensive method was selected for preliminary operations. A staff of one clerk, two microscopists, two nurses and two assistant nurses, and a caretaker was engaged to assist the director. The nurses and microscopists had received preliminary training in the military hospital at Paramaribo, making it possible to begin work without training these employees.

The Marienburg estate, located on the Commewyne river about ten miles from Paramaribo, was selected as the first district in which work

should be undertaken. This estate is the largest in the colony. It has a population of 2,380 persons, of whom 1,005 are Javanese, 894 East Indians, and 448 blacks. Both free and indentured labor is employed. The inhabited district on this estate covers less than one square mile.

The estate management has shown every courtesy to the director and other members of the staff, and has rendered valuable assistance in carrying on the work. An office and laboratory for the director was provided free of charge in the estate hospital, and living quarters for all members of the force were furnished at small cost. The estate has also furnished, for a greater part of the time, a man to assist the nurses in giving treatment.

Active work was begun on October 15 and was still in progress on December 31, 1915.

Examination and Treatment

Table 1 gives the total population of the Marienburg estate as 2,380 persons. Of these, 2,322, or 97.6 per cent, had been examined up to December 31, 1915; and 1,942, or 83.6 per cent of those examined, were found to be infected. First treatment had been administered to 1,809 persons—93.2 per cent of those infected; and 492, or 27.2 per cent of those receiving first treatment, had been cured.

TABLE 1: *Dutch Guiana—Intensive Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured from October 15, 1915, to December 31, 1915.*

	Marienburg Estate	
	No.	P. C.
1. Census	2,380	....
2. Examined	2,322	97.6
3. Found Infected	1,942	83.6
4. Given First Treatment	1,809	93.2
5. Cured	492	27.2

In considering these figures it should be borne in mind that the work had not been completed by December 31, 1915. The number of infected persons remaining uncured will, of course, be reduced as the work progresses.

Educational Work

Before the work was undertaken, three preliminary meetings were held for interesting the people; a fourth was held after the work was under way. Two of the meetings were for the East Indians, one for the Javanese, and one for the negroes. All were well attended, the attendance at the four being 2,500 persons. Three of the lectures were illustrated by lantern slides. At one of the meetings the Governor, the Surgeon General, and a number of prominent citizens of Paramaribo were in attendance.

Sanitary Improvement

As the work of examination and treatment progresses, the estate management is bringing about the necessary sanitary improvement. In a survey conducted at the beginning of the work it was found that of 201 houses located on the estate, 143, or 71.1 per cent, were emptying their sewage into trenches, some of which had water in them only during the rainy season and others only during the period when the sugar factory was running. The remaining 58 homes, or 28.8 per cent of the total, had no provision for sewage disposal and were contaminating the soil. Up to December 31, 1915, seven new latrines had been built to provide accommodations for 27 houses, so that by December 31, 1915, the number of houses without latrines had been reduced to 34, or 16.9 per cent of the total, and the number disposing of their sewage into trenches to 140, or 69.7 per cent of the total. Sanitary work in the area is still in progress.

GRENADA

Operations against hookworm disease in Grenada are in charge of Dr. Angus Macdonald, who works under the direction of the Surgeon General, with the assistance of a local Advisory Committee. Besides the medical officer in charge, the staff consists of the assistant medical officer, one clerk, five microscopists, and a varying number of nurses and assistant nurses.

The work may be said to be conducted by the dispensary plan. At first the widely scattered population and the agricultural pursuits of the people seemed to make it quite out of the question to attempt the thoroughgoing house-to-house visitation and treatment which characterizes the intensive method. Lately it has been found possible, by reducing the size of the areas, to approach more nearly the intensive plan of work. But the technique of microscopic examination still differs from that usually employed in intensive work, the nurses do not oversee the actual taking of the medicine in the homes of the patients, and considerable latitude is left for the patient to exercise his own judgment. For these reasons the Grenada work is classified throughout this report as being rather of the dispensary than of the intensive type.

Active measures were begun on December 1, 1914, with the central office located at St. George's and branch laboratories at Mt. Moritz,

Guoyave, Birch Grove, and St. Dominic's, to which people were invited to come for free diagnosis and treatment. This plan of work was followed until February, 1915, when it was decided to restrict the field of operations to two areas: the first, known as the Mt. Moritz area, embracing about 7,000 acres in the parish of St. George's; and the second, known as the St. David's area, embracing about 12,000 acres in the parish of St. David's. Work in these two districts continued to engage the attention of the staff until July, 1915, when work was begun in another area located in the parish of St. Andrew's, contiguous on its southern boundary with the area previously worked in St. David's. The St. Andrew's area covers about 6,000 acres. The population to be handled was purposely limited to about 2,000, so that a closer approach to the intensive method might be made than was found possible in the other districts. Work in the St. Andrew's area was still in progress on December 31, 1915. In each of the old areas the work was not closed abruptly when operations were begun in a new area; instead, considerable effort was made to continue the treatment of all persons in these areas who had not yet been cured.

These three areas combined embrace approximately one-third of the total area of the island and about one-sixth of the population. In the Mt. Moritz and St. David's districts there are

few estates of any size—the people are mainly renters and small holders; but in the St. Andrew's area large estates give labor to the bulk of the people, most of whom live on the hills above the estates. For the Mt. Moritz area the head office at St. George's was the headquarters; and for the St. David's area the Government Rest House in St. David's. In November, premises were secured for the staff at a central point in St. Andrew's parish and headquarters were established there for the work in that area.

Each area was sub divided into districts, in each of which a school or barn served as a convenient center for receiving patients, examining them personally, collecting their specimens, and giving them treatment. In general, house-to-house examination and distribution of medicine has not been carried out. The visits of the medical officers to the homes have been mainly educational or for purposes of general investigation.

Examination and Treatment

The results of the work of examination and treatment are exhibited in Table 1. The total population dealt with up to December 31, 1915, was 16,001. The actual number of persons examined is not known, as the early records kept for the work of examination at the head office and in the Mt. Moritz and St. David's

areas related to the number of specimens and not to the number of persons. The number of specimens microscopically examined was 18,584, of which 11,194, or 60.2 per cent, were found positive. First treatment was administered to 11,522 persons—328 in excess of the number of specimens found positive. In the early days of the work the acknowledged possibility of faulty diagnosis and the investigation of the action of drugs on other parasitic conditions made it seem advisable to treat many who were recorded as not infected. The actual number of persons treated to a cure as demonstrated by microscopic examination was 3,346, or 29.9 per cent of those who received first treatment. Figures in detail for each area are given in the table. (See Table 1, page 131.)

The cocoa-growing districts, with their continuous shade and almost persistent moisture, are the chief centers of infection. A comparison of the percentage of infection found in the Mt. Moritz area, wherein the cultivation is largely open, with that found in the St. David's and St. Andrew's areas, where dense cocoa cultivation prevails, shows that in the first area only 45 persons of every 100 were infected, whereas in the other two areas the average was 67. Of the last two areas, the percentage of infection in St. David's was higher than in St. Andrew's, being 72 as compared with 59 per cent.

TABLE 1: *Grenada—Dispensary Work: Number of Specimens Examined and Found Positive, and Number of Persons Given First Treatment and Cured, from December 1, 1914, to December 31, 1915, by Areas.*

	Total		Mount Moritz		Saint David's		Saint Andrew's		Saint Andrew's Office		Head Office	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
1. Persons Enumerated in Census.....	16,001	....	4,065	....	6,425	....	2,000	....	85	....	3,426	....
2. Specimens Microscopically Examined.....	18,584	....	4,170	....	6,446	....	4,628	....	85	....	3,255	....
3. Specimens Positive.....	11,194	60.2	1,890	45.3	4,652	72.2	2,732	59.0	69	81.2	1,851	56.9
4. Persons Given First Treatment.....	11,522	....	1,897	....	5,259	....	1,602	....	69	....	2,695	....
5. Persons Cured.....	3,346	....	1,156	....	759	....	509	....	..	....	922	....

Educational Work

Illustrated lectures and demonstrations under the microscope were delivered regularly throughout the areas, and the schools were widely used for general publicity work. In the Mt. Moritz and St. David's areas teachers were employed as part-time assistants. They took the census, distributed medicine, and showed much interest in the educational features of the work. Literature has also been freely distributed and as often as possible has been read to the people. In this way the educational activities have been kept persistently in the foreground.

Table 2 gives an idea of the extent and nature of educational work conducted by means of lectures, and shows the number of persons who were in attendance.

TABLE 2: *Grenada—Dispensary Work: Number of Lectures Delivered from December 1, 1914, to December 31, 1915, with Attendance.*

	No.
Lectures to schools, estates, and teachers.....	89
Attendance on lectures to schools, estates, and teachers	26,700
Lectures at locations.....	(Daily)
Attendance on lectures at locations.....	38,422

Sanitary Improvement

The Government attends to the sanitary improvement. In the work conducted in the parishes of St. George's and St. David's only one san-

itary inspector, working under the direction of the Colonial Surgeon, looked after the sanitary necessities of approximately 10,000 people. Since work was begun in the St. Andrew's area, however, three additional sanitary inspectors have been appointed to carry out general sanitary work, and especially to instruct the people in legal requirements for disposing of human excrement.

In all areas where work has been conducted, the people have shown a ready response and an almost universal disposition to provide themselves with latrines, but in many cases, lacking the practical guidance that might be had from a few well-constructed latrines located at convenient centers, have built latrines that are not adequate for preventing soil pollution during all seasons of the year. The Government is deeply interested in this question and has recently enacted laws and regulations governing the disposal of human excrement. It may therefore be expected that latrines conforming more nearly to the type recommended by the local Advisory Committee will soon be installed throughout the Island.

ST. LUCIA

Operations against hookworm disease in St. Lucia are in charge of Dr. Stanley Branch, who serves under the general direction of an Advisory Committee appointed by the Island Government. Dr. Branch began active work on November 20, 1914, and up to December 31, 1914, conducted a preliminary investigation into the distribution and prevalence of the infection. In this investigation, 750 persons taken at random were examined, and 512, or 68.3 per cent, were found to be infected.

Beginning January 1, 1915, work was conducted along the general lines of the intensive method as followed in other West Indian colonies. In the St. Lucia work, however, there were two important points of difference: before work was begun, no inaugural meeting attended by Government officials and prominent citizens was held for the purpose of interesting the people and gaining their coöperation; nor, when treatment was administered, were the nurses required to oversee the actual taking of the medicine in every case.

A staff of two microscopists, three nurses, three assistant nurses, and a clerk was engaged to assist the director. Headquarters were established in the town of Castries, but the nurses and microscopists lived and worked in the areas where the work was conducted.

The Cul-de-Sac Valley was selected for preliminary operations. In this area work was conducted from January 1 to June 30, when work was begun in another area, located in the Castries Valley. Here work was in progress until December 31, 1915.

The Cul-de-Sac Valley is almost entirely rural. Dense masses of tropical vegetation grow throughout the area, and on the flatter lands there is extensive cultivation of cane intermixed with crops of cocoa and limes. A large sugar company maintains a factory here. Ciceron is the only village; elsewhere, the houses are so scattered that it has taken hours to visit five or six homes on horseback and get back to the nearest road.

The Castries Valley area is naturally divided into two portions: one wholly urban, the other suburban; with the suburban area further divided into ten different localities. The population in the Castries Valley is much more compact and therefore easier to handle. More than one-half of the people live within the town of Castries itself.

Examination and Treatment

In the two areas where work was conducted up to December 31, 1915, there was a population of 8,149 persons. Of these, 7,924, or 97.2 per cent, were examined; and 4,436, or 56.0 per cent of those examined, were found to be infected. First treatment was administered to 4,106, or 92.6

per cent of the infected persons; and 2,177, or 53.0 per cent of those given first treatment, were shown by microscopic re-examination to have been cured. Table 1 exhibits these figures in detail for each area.

TABLE 1: *St. Lucia—Intensive Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured from January 1, 1915, to December 31, 1915, by Areas.*

	Number of Persons			Percentage of Persons		
	Total	Castries Valley	Cul-de-Sac Valley	Total	Castries Valley	Cul-de-Sac Valley
1. Census.....	8,149	4,648	3,501	....	....	....
2. Examined.....	7,924	4,501	3,423	97.2	96.8	97.8
3. Found Infected....	4,436	1,598	2,838	56.0	35.5	82.9
4. Given First Treatment.....	4,106	1,488	2,618	92.6	93.1	92.2
5. Cured.....	2,177	1,119	1,058	53.0	75.2	40.4

The results of the work during the second half of the year were considerably better than during the first, as a comparison of figures for the two areas will show. In the area worked during the first half of the year, only 37.3 per cent of the infected persons were cured (see Table 2, page 137), while in that worked during the second half, 70.0 per cent were cured.

Statistics show that of the 1,647 infected persons who remained uncured in the first area,

220 were persons who refused to accept the first treatment, while 1,427 were persons who accepted the first treatment but did not continue treatment until cured. Of the 1,427 who received one or more treatments, 1,004, or 70.4 per cent, received less than three treatments; while 423, or 29.6 per cent, received three or more treatments. The failure to cure the majority of these 1,427 persons was not due to direct abandonment of treatment by them, but rather to the fact that six months did not prove to be a period of time sufficiently long to overcome their procrastinating habits. In a large number of cases, re-examination, if it could have been made, would doubtless have shown that cures had been effected.

Table 2 presents a brief summary showing the number of infected persons who remained uncured in each area at the close of work:

TABLE 2: *St. Lucia—Intensive Work: Number of Persons Remaining Uncured in Areas Worked from January 1, 1915, to December 31, 1915.*

	Total		Castries Valley		Cul-de-Sac Valley	
	No.	P.C.	No.	P.C.	No.	P.C.
1. Infected	4,436	....	1,598	....	2,838	....
2. Cured	2,177	49.1	1,119	70.0	1,058	37.3
3. Removed	303	6.8	170	10.6	133	4.7
4. Remaining in Area Uncured	1,956	44.1	309	19.3	1,647	58.0
(a) Not cured for medical reasons	27	....	27	....	....	....
(b) Refused treatment	1,735	....	88	....	1,647	....
(c) Under treatment.	194	....	194	....	....	....

Table 3 presents figures in detail covering the work of examination and treatment, and gives the supporting figures upon which Tables 1 and 2 are based. (See Table 3, page 139.)

Educational Work

The central office at Castries serves as headquarters for educational work. This office is open to the public during working hours, and people come from all parts of the Island for consultation. Individual lectures illustrated with charts and demonstrations of the ova and living embryos under the microscope are given. Lectures and demonstrations have been held in all primary schools in Castries and effort made to gain the sympathetic coöperation of managers and teachers, so that through them the active interest of the school children might be enlisted. A lecture was also delivered to the police force in Castries.

Sanitary Improvement

It has never been the custom in St. Lucia to build latrines or even to make any general use of commodes. The almost invariable practice of the native population is to use earthenware utensils of varying kinds and sizes, the contents of which are either dumped into a covered pail for subsequent disposal or the vessel itself covered with an ill-fitting piece of wood and put aside until, under cover of darkness, its

TABLE 3 : *St. Lucia—Intensive Work: Detailed Results of Examination and Treatment from January 1, 1915, to December 31, 1915, by Areas.*

	Number of Persons		
	Total	Castries Valley	Cul-de-Sac Valley
1. Census	**8,149**	**4,648**	**3,501**
2. Examined	**7,924**	**4,501**	**3,423**
3. Not Examined	225[1]	147	78
(a) Not traced	1	1	.....
(b) Removed	66	66	.....
(c) Died	4	4	.....
(d) Refused	76	76	.....
4. Found Infected	**4,436**	**1,598**	**2,838**
5. Given First Treatment	**4,106**	**1,488**	**2,618**
6. Not Given First Treatment	330	110	220
(a) Removed	49	49	.....
(b) Died	2	2	.....
(c) Refused	261	41	220
(d) Medical reasons	18	18	....
(e) Not located	....	.....	.....
7. Cured	**2,177**	**1,119**	**1,058**
8. Given First Treatment but not Cured	1,929	369	1,560
(a) Not located	....	....	.....
(b) Refused	1,474	47	1,427
(c) Medical reasons	9	9	.....
(d) Removed	249	116	133
(e) Died	3	3	.....
(f) Under treatment	194	194	.....

[1] There is a difference of 78 between the figures reported in this column for "Not Examined" and the addition of the figures reported by the sub-headings "Not Traced," "Removed," "Died," and "Refused." For the Cul-de-Sac Valley the total number of persons "Not Examined" was reported, but this total was not classified by sub-headings as in the Castries Valley.

contents can be thrown away. It has not been found an easy matter to overcome this practice. Even in some cases where the people have been persuaded to install latrines, these are used only as a place into which the vessels may be emptied.

Within the town of Castries water sewerage is impracticable; consequently a system of removal by pails is in use. A sewage barge anchors nightly in the river, and all night long the inhabitants parade to the barge with their receptacles of sewage matter. On the nights of November 2–3 and 3–4, 1915, both fine and clear, the number of receptacles taken to the barge was 438 and 560, respectively—an average of 499 per night. By the census of 1911 the population of Castries was 6,266; the number of inhabited houses, 1,329. Assuming that all of the receptacles were brought from homes within the limits of the town, this means one receptacle to every two and one-half inhabited houses, or one to every twelve and one-half persons, indicating that at only 40 per cent of the homes within the town limits is effort made to secure a satisfactory disposal of the sewage. But there are many householders within or near the outskirts of the town who claim that they also make use of the sewage boat; in the area where work was conducted, twenty-seven families made this claim. If the number of receptacles taken to the boat by these out-of-town families should be deducted

from the average of 499, the number of houses or persons per receptacle within the town limits would be still higher.

Early in September the Board of Health passed a series of regulations to prevent soil pollution. Two nurses were temporarily assigned to make a survey of sanitary conditions in the rural portion of the area and to endeavor to have latrines installed at every home. Beginning January 1, 1916, these nurses will return to their regular duties of treating the infected, and a special inspector will be employed to devote his whole time to the work of sanitary improvement.

Between September 1 and December 31, 1915, each householder was interviewed personally, a copy of the regulations was given or read to him, and effort was made to persuade him to build a latrine. This was the first organized attempt ever made in St. Lucia to cope with soil pollution. The results have been particularly encouraging: the people have taken kindly to the idea, no legal prosecutions have been necessary, and in certain districts new latrines have been erected even before the work of examination and treatment was under way.

Table 4 exhibits the results accomplished in sanitary work up to December 31, 1915. It indicates that among 419 homes in the suburban portion of the area, on the first

inspection only 20, or 4.8 per cent, were provided with adequate means of sewage disposal, as compared with 119, or 28.4 per cent, on the last inspection. In addition to this, latrines were in process of erection at 62 other homes, bringing the number of homes either provided or to be provided with latrines to 181, or 43.2 per cent of the total.

TABLE 4: *St. Lucia—Intensive Work: Sanitary Improvement at Rural Homes from January 1, 1915, to December 31, 1915.*

(Homes Outside of Town of Castries)	No.	P. C.
1. Homes Inspected.....	419	....
2. Homes with Adequate Disposal:		
(a) First Inspection.....	20	4.8
(b) Last Inspection.....	119	28.4
3. Homes without Adequate Disposal:		
(a) First Inspection.....	399	95.2
(b) Last Inspection.....	300	71.6

Table 5 presents a summary of the conditions found at the 419 homes listed in Table 4. It will be seen that among the 399 homes found to be without adequate sewage disposal on the first inspection, 52 were discharging their waste matter into an uncovered cesspool; 65 into a covered cesspool; 180 were depositing it on the surface or into a ravine or gorge; 27 claimed the use of a sewage boat; and 75 were throwing their refuse into the sea on the fore-shore.

TABLE 5: *St. Lucia—Intensive Work: Comparison of Sanitary Conditions at Rural Homes in September, 1915, and in December, 1915.*

Method of Disposal	Condition existing at date of survey in September, 1915. (Homes outside of town of Castries.)	Condition Existing December 31, 1915		
		No Change	Latrines Built	Latrines in process of building; many actually in use.
Homes Inspected	**419**	**258**	**99**	**62**
Satisfactory disposal by burial, latrine accommodation, or undoubted use of the sewage boat	20	20	..	..
Uncovered cesspool	52	23	19	10
Covered cesspool	65	27	21	17
Surface, ravine, river, or gorge.	180	99	51	30
Claiming the use of sewage boat	27	20	4	3
Thrown into the sea on the foreshore	75	69	4	2

A joint commission of representatives of the General Board of Health and of the Castries Town Board has been appointed by the Administrator to recommend the most satisfactory and economical method of disposing of sewage in Castries and in its vicinity. As the work of sanitary reform, backed by legislative authority, proceeds along with the further treatment and education of the people, it may be expected that ultimately the general sanitary conditions of the Island will be greatly improved and soil pollution prevented.

ST. VINCENT

Early in 1914, Dr. C. H. Durrant, the Colonial Surgeon, was appointed to direct measures for the relief and control of hookworm disease in St. Vincent. The work was not begun immediately, however, because the Government could find no successor to relieve Dr. Durrant of his hospital duties. In February, 1915, the Governor of the Windward Islands asked the Commission to appoint a director temporarily in lieu of Dr. Durrant. Dr. W. P. Jacocks was accordingly detailed for the work. He arrived in St. Vincent in April, 1915, and began active work on May 1.

The intensive method of work was adopted and a staff of two microscopists, two nurses, two assistant nurses, and one caretaker was engaged.

Up to December 31, 1915, operations had been completed in two districts: Calliaqua and Belair. Calliaqua, the first district worked, is located three miles from Kingstown, the capital. Its base extends four miles along the seacoast and its legs reach three miles inland, meeting at Belmont. The boundaries (roads, rivers, and the sea) are well defined. Headquarters were established in the town of Calliaqua, on the seacoast. The territory embraced in the area consists of three valleys separated by high and steep ridges. Practically all of the land is under

cultivation. The people live here and there in collections of villages (for example, Choppins and Brighton), but with this exception the homes are very scattered. During the rainy season, from April to December, it was a problem to pass from one home to another when these homes were not on the main road. Besides, many of the people were field laborers who left home early and returned late; to interview them required visits at unreasonable hours, before daybreak or after dark.

The second area, Belair, adjoins the first. This whole district is inland, the nearest sea-coast being about two miles away. In the Belair district the great majority of the inhabitants live in seven small villages, with a few homes scattered here and there upon the sides of the surrounding hills and mountains.

There is no indentured labor in either district; in both, the people were found to be amenable to suggestion and anxious to coöperate.

Examination and Treatment

In both the Calliaqua and Belair areas particularly gratifying results were obtained in the work of examination and treatment. In the Calliaqua area not one person refused to be examined—a record for the work to date. In the Belair area, only three refused to submit specimens. More than this, only eight persons in the Calliaqua area refused to continue treat-

ment until cured, and in the Belair area only twenty-two.

Out of a total of 3,825 persons living in both areas, 3,822, or 99.9 per cent, were microscopically examined, and 1,676, or 43.9 per cent of those examined, were found to be infected. First treatment was administered to 1,590 persons, 94.9 per cent of those infected; and 1,350 persons, 84.9 per cent of those receiving first treatment, were kept under treatment until cured. Figures for each district are shown in Table 1.

TABLE 1: *St. Vincent—Intensive Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured from May 1, 1915, to December 31, 1915, by Areas.*

	Number of Persons			Percentage of Persons		
	Total	Calliaqua	Belair	Total	Calliaqua	Belair
1. Census.....	3,825	2,544	1,281	....	....	....
2. Examined.....	3,822	2,544	1,278	99.9	100.0	99.8
3. Found Infected...	1,676	801	875	43.9	31.5	68.5
4. Given First Treatment.....	1,590	773	817	94.9	96.5	93.4
5. Cured.....	1,350	627	723	84.9	81.1	88.5

Of the 1,676 persons who were infected, 326, or 19.5 per cent, remained in the areas uncured

at the close of the work. Of these, 219 were persons who had not been treated a sufficient number of times for a cure to be effected; 30 refused to be cured; and 75 could not be treated for medical reasons. Two persons lived in remote places and were unwilling to remain at home for treatment except on Sundays, when all the nurses were busy in the more populous districts; therefore, they could not be treated. The following statement is a brief summary of the

TABLE 2: *St. Vincent—Intensive Work: Detailed Results of Examination and Treatment from May 1, 1915, to December 31, 1915, by Areas.*

	Number of Persons		
	Total	Calliaqua	Belair
1. Census	**3,825**	**2,544**	**1,281**
2. Examined	**3,822**	**2,544**	**1,278**
3. Not Examined	3	....	3
(a) Refused	1	....	1
(b) Removed before examination	2	....	2
4. Found Infected	**1,676**	**801**	**875**
5. Given First Treatment	**1,590**	**773**	**817**
6. Not Given First Treatment	86	28	58
(a) Medical reasons	75	28	47
(b) Refused	9	....	9
(c) Inaccessible	2	....	2
7. Cured	**1,350**	**627**	**723**
8. Given First Treatment but not Cured	240	146	94
(a) Refused	21	8	13
(b) Under Treatment	219	138	81

results of treatment, based upon the figures given in Table 2. (See Table 2, page 147.)

	No.	P. C.
1. Infected	**1,676**	....
2. Cured	1,350	80.5
3. Remaining in area uncured	326	19.5
(a) Under treatment	219	
(b) Not cured for medical reasons	75	
(c) Refused treatment	30	
(d) Inaccessible	2	

Educational Work

Before any work was begun the usual public meetings were held. Table 3 shows the number of school and public lectures delivered in both the Calliaqua and Belair areas, with the total attendance at lectures of both classes:

TABLE 3: *St. Vincent—Intensive Work: Number of Lectures Delivered from May 1, 1915, to December 31, 1915, with Attendance.*

	Total	Calliaqua	Belair
1. Total Lectures	**11**	**7**	**4**
(a) School lectures	7	4	3
(b) Public lectures	4	3	1
2. Attendance at Lectures	**2,062**	**1,287**	**775**
(a) School lectures	862	387	475
(b) Public lectures	1,200	900	300

Sanitary Improvement

The Government of St. Vincent maintains a staff engaged in securing the necessary sanitary improvement. In the two areas where work was

conducted up to December 31, 1915, there were 736 homes. On the first inspection only 86, or 11.7 per cent, were found to be provided with latrines. While the work of examination and treatment was in progress, 348 new latrines were built in these areas, so that on December 31, 1915, when the work of examination and treatment ended, the number of homes provided with latrines was 434, or 59.0 per cent of the total homes. This does not necessarily mean that the remaining 41.0 per cent have no latrine accommodation. In a great many instances, where the families are small, one latrine provides accommodation for two or three families.

Table 4 presents a brief comparison of the number of homes with latrines on the first and last inspections.

TABLE 4: *St. Vincent—Intensive Work: Sanitary Improvement from May 1, 1915, to December 31, 1915, by Areas.*

District	Number of Homes Inspected	Number of Homes				Percentage of Homes			
		With Latrines		Without Latrines		With Latrines		Without Latrines	
		First Inspection	Last Inspection	First Inspection	Last Inspection	First Inspection	Last Inspection	First Inspection	Last Inspection
Total.....	**736**	**86**	**434**	**650**	**302**	**11.7**	**59.0**	**88.3**	**41.0**
Calliaqua.....	518	78	396	440	122	15.1	76.4	84.9	23.6
Belair.....	218	8	38	210	180	3.7	17.4	96.3	82.6

The sanitary work was delayed at the start, and did not keep pace with the work of treatment and cure. It will undoubtedly continue, however, until practically every home has been provided with satisfactory sanitary conveniences.

TRINIDAD

The work for the relief and control of hookworm disease in Trinidad is conducted as a department of the Government Medical Service under the supervision of the Surgeon General. Both the dispensary and intensive plans of work have been followed. Col. J. R. Dodd, M.D., D.P.H., was appointed Medical Officer in Charge June 13, 1914, and served until January 19, 1915. From January 20, 1915, until November 8, 1915, Dr. C. G. H. Campbell, M.B., B.A., was Acting Medical Officer in Charge, assisted from March 6, 1915, to November 8, 1915, by Dr. B. E. Washburn, M.A., M.D. From November 8, 1915, to December 31, 1915, Dr. Washburn has been Medical Officer in Charge.

Preliminary operations were conducted under the dispensary plan, with headquarters at San Fernando and branch laboratories at Couva, Princes Town, and La Brea. Active work under this plan was begun on August 11, 1914, and continued until January 1, 1915, when it was decided to restrict the field of operations and to attempt experimental work under a modification of the intensive plan, in the hope that the experience gained might make feasible a still closer approach to the intensive work in the next areas to be undertaken. For this experimental intensive work the Ste. Madeleine area was selected. This area was located near San Fernando, and

embraced, besides Ste. Madeleine, the six adjoining villages of Jaipal, Coylas, St. Charles, Ne Plus Ultra, Mon Repos, and Cocoye. Work in this area continued from January 15 to May 15, 1915. Besides the acting medical officer in charge and the assistant medical officer, the staff consisted of one clerk, three nurses, two microscopists, and one caretaker. Because the work in this area was not, properly speaking, of the intensive type, it is classified throughout this report as dispensary work.

Examination and Treatment: Dispensary Method

Figures for the dispensary work conducted with headquarters at San Fernando, and for the modified intensive work later conducted at Ste. Madeleine, are presented separately in Table 1. This shows that a total of 10,204 persons were examined, of whom 6,127, or 60.0 per cent, were found to be infected. First treatment was administered to 4,527 persons—73.9 per cent of those infected—and 526, or 11.6 per cent of those receiving first treatment, were shown by microscopic re-examination to have been cured. (See Table 1, page 153.)

Examination and Treatment: Intensive Method

On May 15, 1915, operations under the intensive plan were begun in the village of Tunapuna and its environs. Tunapuna is a village of 6,498 inhabitants, located about nine miles

TABLE 1: *Trinidad—Dispensary Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured from August 11, 1914, to April 30, 1915, by Areas.*

	Number of Persons				Percentage of Persons			
	Total	San Fernando	Ste. Madeleine	Miscellaneous[1]	Total	San Fernando	Ste. Madeleine	Miscellaneous
1. Examined..	10,204	7,368	1,794	1,042	....	....	....	....
2. Found Infected...	6,127	4,528	957	642	60.0	61.5	53.3	61.6
3. Given First Treatment	4,527	3,463	933	131	73.9	76.5	97.5	20.4
4. Cured.....	526	341	172	13	11.6	9.8	18.4	9.9

from Port-of-Spain, the capital. It is the center of a densely populated area, about 60 per cent of the inhabitants being Creoles and 40 per cent East Indians. There are no indentured laborers. The village and surrounding territory were divided into eighteen districts, in thirteen of which the work had been completed by December 31, 1915. The area is bounded on the north by a range of mountains, and on the south by a river. It is about two and a half miles long, and at no point more than a mile

[1] Since the intensive work was begun in the Tunapuna area and the offices at San Fernando and Ste. Madeleine closed, a number of incidental examinations have been made and treatments given to persons residing outside of the Tunapuna area. These incidental examinations and treatments are reported in Table 1 under the head of "Miscellaneous."

in width. Besides Tunapuna, six small villages were included. The staff employed in this area consisted of the medical officer in charge, three clerks, nine nurses, three microscopists, and one caretaker.

In the thirteen districts in which work had been completed up to December 31, 1915, there were, at the beginning of work, 6,498 inhabitants. Of these, 5,943, or 91.5 per cent, were microscopically examined; and 4,000, or 67.3 per cent, were found to be infected. Of the 4,000 persons infected, 3,632, or 90.8 per cent, were given first treatment; and 2,712, or 74.7 per cent of those receiving first treatment, were shown by microscopic re-examination to have been cured.

This information is presented in tabular form in Table 2.

TABLE 2: *Trinidad—Intensive Work: Number of Persons Examined, Found Infected, Given First Treatment, and Cured from May 15, 1915, to December 31, 1915.*

	No.	P. C.
1. Census	6,498	....
2. Examined	5,943	91.5
3. Found Infected	4,000	67.3
4. Given First Treatment	3,632	90.8
5. Cured	2,712	74.7

Of the 4,000 infected persons shown in Table 2, it will be seen that 2,712, or 67.8 per

cent, were cured. It should not be assumed from this that the other 1,288 persons, or 32.3 per cent of those found infected, remained in the Tunapuna area uncured at the close of work. Of these 1,288 infected persons, 530 removed from the area while the work was in progress, leaving only 758 uncured persons in the area at the close of the work. Two hundred twenty-two of these could not be cured for medical reasons, and 536 refused to be treated.

The following summary presents a brief statement showing the number of infected persons remaining in the area uncured.

		No.	P.C.
1.	**Infected**	**4,000**	....
2.	Cured	2,712	67.8
3.	Removed	530	13.3
4.	Remaining in area uncured	758	19.0
	(a) Refused 536		
	(b) Not cured for medical reasons 222		

Table 3 exhibits figures in detail showing the results of examination and treatment. (See Table 3, page 156.)

Educational Work

From an educational standpoint, both the dispensary and the intensive work have been very thorough. In Table 4 a brief summary is presented of the number of lectures delivered in each area, with the average attendance at each. (See Table 4, page 157.)

TABLE 3: *Trinidad—Intensive Work: Detailed Results of Examination and Treatment from May 15, 1915, to December 31, 1915.*

Tunapuna Area	Number of Persons
1. Census	**6,498**
2. Examined	**5,943**
3. Not Examined	555
(a) Not traced	2
(b) Removed	399
(c) Died	11
(d) Refused	143
4. Found Infected	**4,000**
5. Given First Treatment	**3,632**
6. Not Given First Treatment	368
(a) Removed	112
(b) Died	4
(c) Medical reasons	175
(d) Refused	77
7. Cured	**2,712**
8. Given First Treatment But Not Cured	920
(a) Refused	459
(b) Removed	410
(c) Medical reasons	47
(d) Died	4

To acquaint the people still further with the scope and purpose of the work, a booth was engaged at the exhibition of the Agricultural Society of Trinidad and Tobago on February 26, 27, and 28, 1915. Pamphlets and literature were here distributed, diagrams and charts displayed, and specimens of hookworm and other parasitic worms exhibited.

TABLE 4: *Trinidad—Intensive Work: Number of Lectures Delivered from January 1, 1915, to December 31, 1915, with Attendance.*

	Total	Ste. Madeleine	Tunapuna
1. Total Lectures	**45**	**29**	**16**
(a) Public	21	15	6
(b) School	8	5	3
(c) Special	16	9	7
2. Attendance at Lectures	**7,759**	**4,536**	**3,223**
(a) Public	6,400	3,700	2,700
(b) School	1,041	650	391
(c) Special	318	186	132

Sanitary Improvement

The Government on its part undertakes to inaugurate such sanitary changes and improvements as will reduce to a minimum the dangers of re-infection. Laws are in existence for compelling sanitary improvement where necessary, and a sanitary staff working under the direction of the warden is entrusted with the proper enforcement of these laws.

In the Tunapuna district there are 1,146 homes. All but 31 of these, or 97.3 per cent, now have sanitary latrines, and efforts are being made to have latrines erected at the remaining 31 homes. At the Orphanage and Industrial School all the buildings are supplied with latrines of the pail type. These are kept in good

condition and render the inmates safe from infection. In districts such as Tunapuna, where the existing infection is reduced to a minimum and is followed by adequate sanitary precautions, the ultimate complete disappearance of the disease can be prevented only by its being re-introduced from other quarters or by a failure properly to maintain the sanitary precautions which have been established.

COSTA RICA

In the first annual report a brief account is given of the opening of work in Costa Rica, together with a summary of the results accomplished up to December 31, 1914. On November 30, 1914, Dr. Louis Schapiro was appointed Director of the work in Costa Rica, to succeed Dr. Henry R. Carter, Jr. Dr. Schapiro arrived in Costa Rica on December 16, 1914, and at once assumed active direction of the work. The staff consists of an assistant director, a clerk, three field directors, and four microscopists, termed technical assistants. Headquarters are in the city of San Jose.

Regulations establishing the work as an integral part of the Government machinery, under the direction of the Minister of Police, were enacted April 8, 1915. Under these regulations the work is officially designated as the Department of Ankylostomiasis, and all official doctors, governors, chiefs of police, and agents of police throughout the Republic are obliged to support the work not only in all phases relating to examination and treatment, but more especially in matters relating to sanitary improvement. Householders are required to construct latrines satisfactory to the Department of Ankylostomiasis under penalty of fine or imprisonment, and in cases where refusals are met the Government will construct the privies and charge the expense

plus a fine to the owner of the house. The Government will build privies for persons too poor to bear this expense. Members of the staff of the Department of Ankylostomiasis are clothed with police powers to compel compliance with the sanitary regulations. Reports are made monthly to the Secretary of Police.

The dispensary plan is followed, the canton or county being the unit of operations. Three laboratories operate in the field and one at the central office. In each canton, districts convenient to the bulk of the population are selected and laboratories established in them. To these laboratories the people are invited to come for free examination and treatment. The police authorities are advised in advance when a laboratory is to be opened in a new district, and are furnished with census books, in which they record every house and take a census of each inhabitant, including information as to age, sex, race, occupation, and the conditions of sewage disposal at each home. When the laboratory arrives the census is checked by the technical assistants, talks are given in the homes, containers distributed, and arrangements made for a public meeting. On the day following this meeting the laboratory is opened. During the first months the outlying villages are studied and arrangements made for visits to each section on different dates by an ambulant laboratory. Effort is made to visit each home at least once a

month, in order that the progress of latrine construction may be noted and the patients urged to return to the laboratory for examination to determine whether or not they have been cured. Owing to the bad roads into the interior, the districts most distant from the central table-land are worked during the dry season, and those close to the railroads during the wet season. This necessary shifting of laboratories has its drawbacks, in that at times a dispensary must be withdrawn from a district just when the people in this and adjoining districts are awakening to the positive benefit to be derived from the work.

During the school year every pupil in the districts where the laboratories are operating is examined and re-examined until the infected have been cured.

Up to December 31, 1914, operations had been conducted in two cantons located in the extreme northern section of the province of Puntarenas, on the Pacific side of the country. During 1915, the work was extended to include the other six provinces. The names of the provinces and cantons in which work has been conducted are listed in Table 2, page 164. It should not be inferred that the whole area of any of these provinces has been covered, nor that the work in any of them has been completed, but simply that the most favorable points of attack have been selected and a beginning made

from which, in course of time, it may be possible to cover the whole inhabited area of each province.

Examination and Treatment

In districts where work has been conducted, the total population as enumerated by the staff of the Department of Ankylostomiasis is 81,515. The actual number of persons examined up to December 31, 1915, is not known; the figures furnished for results of examination have related to the number of microscopic examinations made and not to the number of persons examined. In some cases three, four, or more specimens may be examined from one person. In certain districts, therefore, the figures for the number of examinations exceed the total population. A record has been kept of the number of persons examined, and as the work in each district is closed this information will be obtained from the books and embodied in the final reports.

Up to December 31, 1915, the total number of specimens examined was 62,391—57,979 during 1915 and 4,412 during 1914. Of these specimens, 38,181, or 61.2 per cent, were found to be positive. First treatment was administered to 26,938 persons, or 33.0 per cent of the total population residing in the districts where work was conducted. Table 1 gives the total figures up to December 31, 1915, showing the results of examination and treatment, with figures for 1914 and 1915 presented separately.

TABLE 1: *Costa Rica—Dispensary Work: Number of Specimens Microscopically Examined and Found Positive, and Number of Persons Given First Treatment, from September 23, 1914, to December 31, 1915.*

With Comparison of Results During 1915 and During 1914.

	Up to December 31, 1915		During 1915		During 1914	
	No.	P.C.	No.	P.C.	No.	P.C.
1. Population	81,515	....	81,515	....	....	....
2. Microscopic examinations made	62,391	....	57,979	....	4,412	....
3. Microscopic examinations positive	38,181	61.2	34,840	60.1	3,341	75.7
4. Persons receiving first treatment	26,938	....	23,597	....	3,341	....

Table 2 itemizes by provinces and cantons the results accomplished during 1915. (See Table 2, page 164.)

Educational Work

An extensive campaign of education has been conducted through the public schools, the press, and personally by members of the Department of Ankylostomiasis, with the assistance of the official doctors. Literature has been issued and widely distributed: simple sheets for the general public, and pamphlets for the school-teachers and Government officials. Public meetings are held in every district where laboratories are established. In all of these districts the official doctor has given one or more lecturers on hook-

TABLE 2: *Costa Rica—Dispensary Work: Number of Specimens Microscopically Examined and Found Positive, and Number of Persons Given First Treatment, During 1915, by Provinces and Cantons.*

Provinces and Cantons	Population	Specimens Examined	Specimens Positive	Persons Given First Treatment
Total	**81,515**	**57,979**	**34,840**	**23,597**
Provinces:				
Alajuela	12,133	10,954	7,539	5,833
Limon	11,483	4,814	2,013	1,554
Cartago	10,439	13,380	9,872	5,243
San Jose	17,534	21,505	9,930	7,122
Heredia	1,199	1,190	180	180
Puntarenas	23,307	5,082	4,536	2,978
Guanacaste	5,420	1,054	770	687
Alajuela:				
Atenas	8,884	7,767	5,238	4,035
Orotina	3,249	3,187	2,301	1,798
Limon:				
City of Limon	7,021	1,907	342	251
Pococi	4,462	2,907	1,671	1,303
Cartago:				
Paraiso	7,921	7,045	4,569	2,715
District of Tucurrique	1,191	1,993	1,604	1,001
District of Atirro	483	939	824	475
District of Tuis	844	3,403	2,875	1,052
San Jose:				
Puriscal	13,470	7,034	5,958	4,151
Central Office	.....	10,552	3,597	2,572
City Schools	4,064*	3,919	375	399
Heredia:				
City Schools	1,199*	1,190	180	180
Puntarenas:				
Puntarenas	18,040	3,001	2,531	1,944
Esparta	5,267	2,081	2,005	1,034
Guanacaste:				
Canas	5,420	1,054	770	687

* Figures represent school matriculation.

worm disease to the school-teachers, and in some instances to the public. With the hearty co-operation of the Minister of Public Instruction and the personnel of his department, a comprehensive booklet on hookworm disease was issued for the school-teachers, and where necessary this booklet was explained to the teachers by the official doctors. The teachers in turn during the last five months of the year gave a weekly lesson to their pupils on hookworm disease and personal hygiene. Whenever possible, special lectures are given to the officials of each district, members of the town board and school board, and prominent farmers, and talks to the people are given in their homes when the premises are inspected, and at the laboratories whenever ten or more persons form an audience.

Table 3 indicates that 8,032 lectures have been delivered in the work to date, at which the total attendance was 102,065 persons.

TABLE 3: *Costa Rica—Dispensary Work: Number of Lectures Delivered from September 23, 1914, to December 31, 1915, with Attendance.*

Kind of Lectures	Number	Attendance
Total	**8,032**	**102,065**
Public	100	12,069
School	355	12,220
Special	7,577	77,776

In the educational work by means of literature Table 4 indicates that 89,333 pieces of litera-

ture were distributed up to December 31, 1915, of which 56,172 were booklets and 21,119 were notices of dispensary dates.

TABLE 4: *Costa Rica—Dispensary Work: Number of Pieces of Literature Distributed from September 23, 1914, to December 31, 1915.*

Class of Literature	Number of Pieces Distributed
Total	**89,333**
Letters	3,248
Leaflets	7,186
Booklets	56,172
Notices	21,119
Unclassified	1,608

Sanitary Improvement

Recognizing that the success of the work depends upon the construction and use of sanitary latrines, every effort was made to have the preventive measures keep pace with those of treatment and cure. In Costa Rica this phase of the work is well fortified with a code of laws compelling the householders to effect such sanitary improvements as may be required by the Department of Ankylostomiasis. Even under the most favorable conditions, however, it is a slow and difficult task to change the confirmed habits of thousands of people and to bring them to a point where latrines will be built and used.

Immediately upon opening work in each district the assistants make an inspection of the latrine conditions at each home. A total of

8,261 homes have been inspected in the work to date. On the first inspection only 867, or 10.5 per cent of these homes, were found to be provided with latrines. During the progress of the work, usually at intervals of one month, subsequent inspections are carried out and improvement in sanitation noted. On the last inspection of the premises of these 8,261 homes, it was found that 2,123, or 25.7 per cent, had latrines—making an increase in the number of homes with latrines of 1,256, or 15.2 per cent. Table 5 presents figures showing the total results accomplished in sanitary improvement up to December 31, 1915.

TABLE 5: *Costa Rica—Dispensary Work: Sanitary Improvement from September 23, 1914, to December 31, 1915.*

	No.	P. C.
1. Homes Inspected	8,261	....
2. Homes With Latrines:		
(1) On First Inspection	867	10.5
(2) On Last Inspection	2,123	25.7
3. Homes Without Latrines:		
(1) On First Inspection	7,394	89.5
(2) On Last Inspection	6,138	74.3

GUATEMALA

In November, 1914, the Republic of Guatemala invited the International Health Commission to coöperate with it in measures for the relief and control of hookworm disease. The invitation was extended in a conference between the President of the country, His Excellency Sr. Lic. Manuel Estrada Cabrera, and Dr. J. H. White, who represented the Commission in the preliminary arrangements for work in Central America. On November 30, 1914, the invitation was formally accepted by the Commission. On that date Dr. W. H. Rowan was appointed Director. Dr. Rowan arrived in Guatemala on January 26, 1915, and following a series of conferences with Government officials, plantation owners, and influential citizens, began active work on March 15. Headquarters were established at Guatemala City and a staff of one field director, four microscopists, and one clerk was employed to assist the director.

The work in Guatemala is conducted as a branch of the National Board of Health, known as the Department of Uncinariasis. Dr. Rowan was appointed Director of this department, and three members of the National Board of Health were named a committee for directing its affairs. From the outset the National Board of Health has coöperated most energetically in the work.

Operations have been conducted on a plan

almost identical in its main features with the intensive method followed in the West Indies. House-to-house distribution and collection of specimen containers is carried out; treatment is administered in the homes of the patients; and simultaneously with the work of examination and treatment, measures for preventing re-infection are introduced. The main point of difference, however, is that microscopic re-examinations for determining cure are not a feature of the work, so that no definite figures are available for the number of persons remaining in each district uncured at the close of the work. For this reason the Guatemala work is classified throughout this report as being of the dispensary type.

The coffee plantation, or finca, is the unit of work. On the first day on an estate a dispensary is established. This serves as headquarters for examining specimens, keeping records, and preparing treatments. At night there is a public illustrated lecture. On the second day house-to-house visits are made and containers distributed. The work continues until all of the inhabitants have had an opportunity to be examined and treated. It has been found possible to complete work on estates of average size in about two weeks or eighteen days.

Up to December 31, 1915, work had been completed on eighty-seven coffee estates. All except eleven were located in what is known as

the Costa Cuba coffee district, lying between the rivers Naranjo and Tilapa, in the departments of Quezaltenango, Retalhulen, and San Marcos. This district is situated on the Pacific side of the country near the northern boundary with Mexico, and is located at an average altitude of 2,400 feet. The eleven estates not included in this district are located: one in the department of Santa Rosa, one in Chinaltenango, and nine in Suchitepequez. Almost the whole extent of the Costa Cuba district in which work has been conducted lies within the department of Quezaltenango, extending for short distances into the department of Retalhulen on the south and San Marcos on the north.

Some work was also undertaken in the town of Coatepeque in the department of Quezaltenango; the patients at the General Hospital of Guatemala were examined and treated; and a few examinations were made and treatments given at the central office.

Examination and Treatment

The work conducted up to December 31, 1915, embraced a population of 28,090 persons. Of these, 25,587, or 91.1 per cent, were microscopically examined, and 15,001, or 58.6 per cent of those examined, were found infected. First treatment was administered to 13,783 persons —91.9 per cent of those found infected. This is shown in Table 1.

TABLE 1: *Guatemala—Dispensary Work: Number of Persons Examined, Found Infected, and Given First Treatment from March 15, 1915, to December 31, 1915.*

Districts	Census	Number of Persons			Percentage of Persons		
		Microscopically Examined	Found Infected	Given First Treatment	Microscopically Examined	Found Infected	Given First Treatment
Total	**28,090**	**25,587**	**15,001**	**13,783**	**91.1**	**58.6**	**91.9**
Coffee Estates	25,544	24,163	14,482	13,419	94.6	59.9	92.7
Town of Coatepeque	1,500	378	242	102	25.2	64.0	42.1
General Hospital of Guatemala	818	818	264	249	100.0	32.3	94.3
Central Office	228	228	13	13	100.0	5.7	100.0

Considering separately the results accomplished on the coffee estates, to which the work may be said to have been practically confined, it will be seen that the work embraced a population of 25,544 persons, of whom 24,163, or 94.6 per cent, were microscopically examined. Of those examined, 14,482, or 59.9 per cent, were found infected, and 13,419, or 92.7 per cent of those infected, received first treatment.

Educational Work

Almost all of the inhabitants of the coffee estates are Indians. In some cases four or five tribes may be employed on one estate, each with its own dialect and customs. Members of one tribe frequently are incapable of conversing with the members of any of the other tribes. The absolute illiteracy of these people has made it necessary to depend upon individual instruction and to teach them so far as possible by means of pictures.

On the first evening following the opening of work on an estate a public lecture illustrated by stereopticon views is given. This lecture is always well attended and full of interest for the Indians, who have never before seen a stereopticon. The next day the assistant takes his chart and specimens and goes from house to house explaining the nature of the disease and the method of curing and preventing it. At the dispensaries demonstrations under the microscope

also are given. Table 2 indicates that 5,990 lectures, including house-to-house talks, have been given, at which the attendance was 46,300 persons. Eighteen were school lectures delivered to an audience of 300 persons, and 449 were public lectures attended by approximately 22,000 persons.

TABLE 2: *Guatemala—Dispensary Work: Number of Lectures Delivered from March 15, 1915, to December 31, 1915, with Attendance.*

	No.
Total Lectures	**5,990**
(a) Public	449
(b) School	18
(c) Special (house-to-house talks)	5,523
Attendance at Lectures	**46,300**
(a) Public	22,000
(b) School	300
(c) Special (house-to-house talks)	24,000

In addition, literature has been printed and distributed among persons able to read. Table 3 shows that a total of 7,124 pieces were distributed up to December 31, 1915.

TABLE 3: *Guatemala—Dispensary Work: Number of Pieces of Literature Distributed from March 15, 1915, to December 31, 1915, by Classes.*

	No.
Total Pieces of Literature Distributed	7,124
Pieces of Literature Distributed, By Classes:	
(1) Hookworm edition of daily paper	600
(2) Large bulletin on hookworm disease	1,824
(3) Small bulletin on hookworm disease	3,800
(4) Letters mailed	900

During the year the first public health bulletin ever issued in Guatemala was published jointly by the National Board of Health and the Department of Uncinariasis. In addition, three hundred large, one-page charts on hookworm disease, to be placed in schools throughout the Republic, have been completed, and a traveling exhibit has been prepared to teach the people in detail the story of the disease.

Sanitary Improvement

Due attention has been given to sanitary improvement. The necessity for this will be clear when it is stated that in work lasting over a period of almost an entire year, embracing eighty-seven estates and a population of 25,544 persons, only four latrines used by laborers and their families have been found. It might almost be said that in its small towns and rural districts Guatemala is a country without latrines. Besides, the conditions are particularly favorable for the spread of hookworm infection. On the coffee estates the coffee trees must be protected by a growth of larger shade trees; as a result the plantation becomes a forest jungle in which the ground is well shaded and is kept moist under a covering of mulch. The laborers live in small, detached houses scattered in rows over the estates. In the absence of latrine accommodations the soil about them becomes contaminated with hookworm eggs, and the whole laboring

population goes barefoot during the entire year.

Owners and officials of the estates upon which work is conducted appreciate the situation and are anxious to coöperate by having suitable latrines erected. One administrator to whom a plan was presented of a cheap but adequate latrine gave as his reason for rejecting it that he wished to erect forty of the best latrines in the country. This attitude is typical of the estate owners as a whole.

The latrines being erected in Guatemala are commonly placed at the end of a row of laborers' houses and are large enough to accommodate all of the persons living in that row. An average of about twelve persons is accommodated by each latrine. During the progress of the work 1,048 new latrines have been constructed under the supervision of the Department of Uncinariasis, to provide latrine accommodations for 12,576 persons, or approximately one-half of the total population of the estates. These figures represent only the actual number of new latrines erected while the work of examination and treatment was in progress on each estate. A great many more latrines are erected after the dispensary work has been completed, but figures for these are not available.

All latrine building is done at the expense of the estate owner. No work is conducted on the estate until the owners have agreed to carry out

the necessary measures of sanitary improvement. Table 4 presents a brief synopsis of the results accomplished to date.

TABLE 4: *Guatemala—Dispensary Work: Sanitary Improvement from March 15, 1915, to December 31, 1915.*

	No.
1. Latrines Found on Eighty-seven Coffee Estates, First Inspection.....	185
(a) At Mills (for officials and families).....	181
(b) At Homes of Laborers.....	4
2. New Latrines Erected for Laborers' Families..	**1,048**
3. Persons Accommodated by Each Latrine Erected for Laborers' Families.....	12
4. Persons Accommodated by New Latrines Erected for Laborers' Families.....	12,576

NICARAGUA

Formal invitation to the International Health Commission to participate in measures for the relief and control of hookworm disease was extended by the Republic of Nicaragua through its Legation at Washington on October 6, 1914. This invitation was accepted by the Commission on November 30, 1914, and on December 11, 1914, Dr. D. M. Molloy was appointed to have immediate charge of the work. Dr. Molloy assisted in organizing and conducting the work in Guatemala for some months, arriving in Nicaragua near the end of May, 1915. Headquarters were established at Managua. While awaiting receipt of equipment from the States, conferences were held with Government officials, physicians, and influential citizens, and attention was given to routine matters connected with the inauguration of work. To these preliminary activities the first four months were devoted.

By presidential decree issued in September, 1915, the work is conducted as a department of the National Board of Health, its official designation being the Department of Uncinariasis. In this way the work assumes official character, and is identified as a Nicaraguan effort, done by the Nicaraguan people under the patronage and with the support of their Government.

All the work of examination and treatment has been conducted on the dispensary plan. On

the San Antonio sugar plantation effort was made to accompany this work by the necessary sanitary reform, approaching in this respect more nearly the intensive plan of work. The staff has consisted of the director in charge, one clerk, one field director, termed medical assistant, and four microscopists, termed technical assistants. Wherever possible, house-to-house work has been attempted in securing specimens and administering treatment.

To date the work has been practically confined to the department of Chinandega, although some preliminary survey work was done during November and December, 1915, in the department of Managua.

Active work was begun on October 1, 1915, on the San Antonio plantation, the largest sugar plantation in Central America. This estate, embracing fifteen colonies, lies about four miles from the town of Chichigalpa in the department of Chinandega. Work was continued on this estate until November 1, when operations were begun in Corinto, a typical Nicaraguan town, located on the Pacific coast in the same department. Here work continued until December 1, when a permanent laboratory district for the department of Chinandega with headquarters in the town of Chinandega was established.

Most of the work in Nicaragua has been done in the more populous sections, where no racial

distinctions are attempted. Comparatively few people of foreign extraction have been examined, and no work has yet been done among the indigenous tribes. The majority of the persons examined belong to the mixed class.

Examination and Treatment

Up to December 31, 1915, 5,429 persons had been microscopically examined for hookworm disease, of whom 2,681, or 49.4 per cent, were found infected. First treatment was administered to 1,611, or 60.1 per cent of those infected. Table 1 gives figures by districts showing the results of examination and treatment.

TABLE 1: *Nicaragua—Dispensary Work: Number of Persons Examined, Found Infected, and Given First Treatment from October 1, 1915, to December 31, 1915.*

Districts	Number of Persons			Percentage of Persons	
	Microscopically Examined	Found Infected	Given First Treatment	Found Infected	Given First Treatment
Total	**5,429**	**2,681**	**1,611**	**49.4**	**60.1**
Department of Chinandega:					
San Antonio Estate	941	673	399	71.5	59.3
Corinto	1,172	940	592	80.2	63.0
Chinandega	976	480	362	49.2	75.4
Department of Managua:					
Managua	2,340	588	258	25.1	43.9

Educational Work

Educational work has been carried on in all districts where laboratories have been in operation. On beginning the work in each district, public lectures illustrated by lantern slides and charts have been delivered. Local officials, plantation owners, priests, teachers, and leading citizens have also been interviewed and their support enlisted. About 1,500 pamphlets, treating of the disease in general, and a great many posters announcing the opening of the work, have been distributed.

Sanitary Improvement

There are no definite regulations covering the construction and use of sanitary latrines. Efforts at sanitary reform have therefore centered in advice given to the people at the lectures and at the dispensaries to build latrines for their own protection. On the San Antonio sugar estate during November about twenty pit latrines were installed. This measures the practical results so far accomplished. The President, however, has manifested his desire to coöperate by instructing the governors of departments and local officials to issue regulations compelling the construction and proper maintenance of latrines. Dr. Molloy has been asked to aid in framing a bill to be submitted to Congress in which sanitary regulations adequate for the present requirements of the country may be formulated. It is therefore hoped that an effective campaign may be inaugurated

during the coming year. To this end the Minister of Public Instruction has promised to coöperate through the schools by having the children properly instructed in sanitary requirements at their homes, and by setting them an object lesson in sanitation at the schools.

The sanitary survey of 469 homes in the town of Corinto, exhibited in Table 2, may be taken as typical of conditions in the average town of Nicaragua. It will be seen that only 185, or 49.1 per cent of the homes, had latrines of any kind, and that 142 of these, or 76.8 per cent, were provided with latrines of the open-back type entirely inadequate for preventing pollution of the soil. It may therefore be said that only 43, or 23.4 per cent of the homes, were provided with conditions of sewage disposal adequate for preventing hookworm disease.

TABLE 2: *Nicaragua—Dispensary Work: Survey of Premises in the Town of Corinto, November, 1915.*

	Town of Corinto	
	No.	P. C.
1. Homes Inspected	377	....
2. Homes With Latrines	185	49.1
3. Homes Without Latrines	192	50.9
4. Types of Latrines Found:		
(1) Sewerage	9	4.9
(2) Septic tank	9	4.9
(3) Pit latrine, fly-proof	20	10.8
(4) Pit latrine, unprotected from flies; or fly-proof, surface latrine	5	2.7
(5) Open-back, surface latrine	142	76.8

PANAMA

The first annual report spoke of the inauguration of work in Panama, described briefly the methods followed in the preliminary operations, and gave an account of the results up to December 31, 1914. The work received the formal sanction and authority of the Government when, on September 2, 1915, an executive decree was signed by the President incorporating it as a part of the Department of Public Works with the title of Department of Uncinariasis. During 1915 the work continued under the direction of Dr. L. W. Hackett.

Operations in Panama follow the dispensary plan, but whenever practicable treatments are followed up and re-examinations made for determining cure. In this country the sparseness of the population, the difficulties of travel and communication, and the absence of large towns or estates giving employment to hundreds of people seem to make the dispensary method a better way of bringing relief to the sufferers. The staff engaged in the work, in addition to the Director and his clerk, consists of four field directors, termed technical assistants, and eight microscopists. Four laboratories are in operation, three in the field and one at the central office. The three field laboratories succeed in examining about 95 per cent of the accessible population in each district. Approximately

one-half of the persons found infected receive at least two treatments, which, as shown elsewhere in this report, are adequate for curing the disease in about 50 per cent of the cases.

Up to December 31, 1915, work had been conducted in fifteen districts in seven provinces of Panama. The districts in which work has been undertaken contain 30 per cent of the total area of the country and 35 per cent of the total population. It should be understood, however, that in many of these districts work had not been completed by December 31, 1915; only in the province of Bocas del Toro, embracing the districts of Almirante, Bastimentos, Bocas del Toro, and Chiriqui Grande, may the work be said to have been completed. In all of the districts, and especially on the Pacific side of the country, great stretches of uninhabited hill and forest intervene and there is considerable territory inhabited by scattered Indian tribes, so that every square mile is not covered.

Examination and Treatment

A total of 30,331 persons have been microscopically examined—5,321 during 1914, and 25,010 during 1915. Of these, 19,797, or 65.3 per cent, were found infected, and 17,480, or 88.3 per cent of those found infected, were given first treatment.

Table 1 shows the total number of persons

examined and treated in the work to date, and compares the results for 1914 and 1915.

TABLE 1 : *Panama—Dispensary Work: Number of Persons Examined, Found Infected, and Given First Treatment from July 15, 1914, to December 31, 1915.*

With Comparison of Results During 1915 and During 1914.

	Up to December 31, 1915		During 1915		During 1914	
	No.	P. C.	No.	P. C.	No.	P. C.
1. Examined.....	30,331	....	25,010	....	5,321	....
2. Found Infected.	19,797	65.3	16,890	67.5	2,907	54.6
3. Given First Treatment...	17,480	88.3	14,918	88.3	2,562	88.1

In Table 2 detailed figures are given for each district where work has been conducted during 1915. The figures in this table should be added to those given in the first annual report to obtain the total figures for each district to date. (See Table 2, page 185.)

Both in percentage and degree of infection, the native population along the Atlantic Ocean and in the foothills of the mountains on the Pacific side, where the dry season is not well defined and the people are engaged mainly in agriculture, has been found to suffer most. The percentage of infection ranges from 85 to 95 per cent, and the hemoglobin index is below 60. The people of the plains on the Pacific side, where there is no moisture for three months in the year, have in comparison with this a per-

TABLE 2: *Panama—Dispensary Work: Number of Persons Examined, Found Infected, and Given First Treatment During 1915, by Provinces and Districts.*

Provinces and Districts	Number of Persons		
	Microscopically Examined	Found Infected	Given First Treatment
Total	**25,010**	**16,890**	**14,918**
Provinces:			
Panama	6,793	4,188	3,963
Bocas del Toro	5,879	3,240	3,024
Colon	1,379	1,144	966
Cocle	7,797	5,879	4,924
Herrera	3,162	2,439	2,041
Panama:			
Arraijan	48	24	19
Capira	30	24	25
Chame	1,943	1,420	1,326
Panama	2,109	920	881
San Carlos	1,671	1,262	1,196
Taboga	992	538	516
Bocas del Toro:			
Almirante	4,655	2,441	2,286
Bastimentos	518	298	278
Bocas del Toro	94	31	36
Chiriqui Grande	612	470	424
Colon:			
Chagres	798	627	586
Donoso	581	517	380
Cocle:			
La Pintada	3,743	3,070	2,338
Penonome	4,054	2,809	2,586
Herrera:			
Chitre	3,162	2,439	2,041

centage of infection not above 65 and an average hemoglobin of more than 70.

Educational Work

In each district where laboratories are located, the staff lectures on the cause and the effect of the disease, and the methods of relieving and controlling it. Instruction is given by addresses delivered to schools, to the general public, and by house-to-house or individual talks. Table 3 shows that up to December 31, 1915, 5,193 lectures were delivered, attended by 22,635 persons. Forty-nine were school lectures and 117 public.

TABLE 3: *Panama—Dispensary Work: Number of Lectures Delivered from July 15, 1914, to December 31, 1915, with Attendance.*

	Number
Total Lectures	**5,193**
(a) School	49
(b) Public	117
(c) House-to-house	5,027
Attendance at Lectures	**22,635**
(a) School	3,104
(b) Public	3,311
(c) House-to-house	16,220

Literature is also distributed extensively by the staff in the field and at the central office. Table 4 shows that up to December 31, 1915, 9,585 pieces of literature were distributed, 8,270 of which were leaflets telling in detail the story of the disease.

TABLE 4: *Panama—Dispensary Work: Number of Pieces of Literature Distributed from July 15, 1914, to December 31, 1915, by Classes.*

	Number
Pieces of Literature Distributed	9,585
(a) Letters	320
(b) Posters	824
(c) Booklets	171
(d) Leaflets	8,270

Sanitary Improvement

Elementary sanitation is one of the greatest needs of Panama. In some loosely built towns of approximately 4,000 inhabitants there are few latrines of any description. Where latrines exist they are of such a character as to be a menace rather than a protection. It seems probable that these conditions will be improved during the coming year by the enactment of a law requiring that all houses shall be provided with latrines, which shall be regularly inspected. Up to this time efforts at sanitary reform have had to rely wholly upon education and persuasion, which, unbacked by legislation, have been found to accomplish very little. One important advance, however, has been made by the Department of Public Instruction in equipping schoolhouses in the interior with latrines. It is estimated that about one-half of the schools now have latrines which were built during the year 1915. The work of constructing these latrines will be continued until every schoolhouse in the country has been provided.

EGYPT

Measures against hookworm disease in Egypt are under the direct supervision of Dr. A. MacCallan, of the Government Department of Public Health. The work has been conducted in accordance with a plan formulated by the local uncinariasis committee. It has two main features: (1) hospital work; and (2) survey work. Conditions in Egypt seem to make it necessary to administer treatment to infected persons under hospital conditions. For this purpose traveling tent hospitals, each capable of accommodating 100 patients, are established at convenient points, to which the people come for free examination and treatment. Infected persons are housed and fed at the hospital until the full course of treatment has been completed. Many of them come for hundreds of miles to receive the benefit of treatment, some floating down the Nile on rafts from remote sections of Upper Egypt. Among 10,860 persons treated up to March 31, 1915, 3,067, or 28.2 per cent, came from provinces other than those in which the hospitals were established. At each of these traveling hospitals a laboratory is provided for the microscopic examination of feces, urine, and blood; and a small separate enclosure is reserved for women patients. Each has its own staff, consisting usually of two doctors, a clerk, two male and one female attendants, a cook, a gate-

keeper, a water-carrier, a watchman, and a messenger-boy.

The scheme provides also for a systematic survey to determine the prevalence of hookworm disease, as well as to establish the danger points about the villages from which the infection is spread. In the survey work clinical examinations are also made incidentally for estimating the degree of prevalence of two other endemic scourges: bilharziasis and pellagra.

Hospital Work

The original scheme of operations provided that hospital work should be undertaken province by province until the whole of the infected area had been covered. On this basis it was proposed to establish from four to six traveling hospitals at convenient points, and to move these hospitals from point to point as the applications for admission diminished. The outbreak of the European war, by curtailing the revenue of the Egyptian Government, resulted in the enforced reduction of the number of traveling hospitals to two.

Initial operations were begun in Qaliubia province on December 13, 1913, when a traveling hospital was opened at Qaliub. Subsequently, on March 1, 1914, a second hospital was established at Qalama. Both of these hospitals remained in operation until August 10, 1914, when they were removed and established

on September 5, 1914, at Belbeis and Minia el Qamh in Sharqia province. These two hospitals continued in operation until April 8, 1915, when operations against hookworm disease had to be temporarily abandoned and the hospitals moved to Alexandria to provide emergency accommodations for wounded soldiers. During all of this period the permanent hospital on the estate of Ibraham Pasha Murad at El Deir was also used for the accommodation and treatment of persons suffering from hookworm disease.

The number of persons microscopically examined for hookworm disease in the hospital work conducted from December 13, 1913, to April 8, 1915, when work had to be temporarily abandoned, was 20,865. Of these, 12,450, or 59.7 per cent, were found to be infected. Of those infected, 11,280, or 90.6 per cent, were admitted to the hospitals; and 10,694, or 94.8 per cent of those admitted, completed the full treatment. These figures are exhibited in Table 1.

TABLE 1: *Egypt—Hospital Work: Number of Persons Examined, Found Infected, Admitted to Hospitals, and Given Full Treatment from December 13, 1913, to April 8, 1915.*

	No.	P. C.
1. Persons Microscopically Examined.....	20,865	....
2. Persons Found Infected.....	12,450	59.7
3. Persons Admitted to Hospitals.....	11,280	90.6
4. Persons Given Full Treatment for Uncinariasis.....	10,694	94.8

Patients who completed the full treatment were encouraged to return to the hospital for re-examination one month or more after being discharged, and were promised a bottle of iron medicine as an incentive. In each case the feces were centrifuged and two slides carefully examined before the specimen was pronounced negative. Statistics show that up to April 8, 1915, the number of persons who were thus re-examined following treatment was 1,859, or 17.4 per cent of those who received full treatment, and it was found that 1,622, or 87.3 per cent of the persons re-examined, had been cured. Table 2 exhibits this information in tabular form.

TABLE 2: *Egypt—Hospital Work: Number of Persons Given Full Treatment, Re-examined After Full Treatment, and Found Cured Upon Re-examination, from December 13, 1913, to April 8, 1915.*

	No.	P. C.
1. Persons Given Full Treatment.....	10,694	....
2. Persons Microscopically Re-examined One Month or More After Receiving Full Treatment.....	1,859	17.4
3. Persons Found Cured Upon Microscopic Re-examination.....	1,622	87.3

Survey Work

Simultaneously with the hospital work, surveys have been conducted in the province of Sharqia in Lower Egypt and Assiut in Upper Egypt for determining the degree of infection and for locating the danger points from which

the infection is spread. Clinical examinations have also been made for pellagra and bilharziasis.

The survey in Sharqia province was conducted during the months of October, November, and December, 1914, and its results were reported in detail in the first annual report. The survey in Assiut was in progress from January to April, 1915. During April the survey work terminated along with the hospital work, when all facilities for the care of sick and wounded soldiers were requisitioned for use at Alexandria.

In both provinces the survey was confined to men and boys, owing to the difficulty of examining women in Oriental countries; there is, however, no doubt that women are largely infected. In Sharqia province, among 6,082 males examined, representing approximately 0.7 per cent of the total population, 3,412, or 56.1 per cent, were found infected. In Assiut, 4,411 males were examined—0.5 per cent of the total population—and 2,018, or 45.7 per cent, were found infected. This information in detail is shown in Table 3. (See Table 3, page 193.)

The prevalence of hookworm disease in Sharqia, a typical province of Lower Egypt, to the extent of 56 per cent, and in Assiut, a typical province of Upper Egypt, to the extent of 45 per cent, seems to justify the conclusion that the disease is wide-spread throughout Egypt.

In the province of Assiut the infection among men, all of whom resided in the seven largest

TABLE 3: *Egypt—Survey Work: Comparison of Number of Persons Examined and Found Infected in Sharqia and in Assiut Provinces.*

Provinces	Population	Number Examined	Per Cent Examined	Number Infected	Per Cent Infected
Total	**1,776,584**	**10,493**	**.6**	**5,430**	**51.7**
Sharqia	900,000	6,082	.7	3,412	56.1
Assiut	876,584	4,411	.5	2,018	45.7

towns of the province, was found to be 27.5 per cent, as compared with an infection of 22.7 per cent among the boys examined in these same towns. The difference between boys and men is thus seen to be small, so that the survey of rural districts, which was based entirely upon the examination of boys, may be taken as a fairly accurate measure of the infection among adults.

A very considerable difference was found to exist between the infection in the large towns and in the country villages. In the large towns the percentage of boys infected was 22.7 per cent, while in the villages it was 51.1 per cent. In the capital town of the province, Assiut, only 4.4 per cent of the boys were infected.

A cursory examination for pellagra was conducted among the 4,411 persons examined for hookworm disease, and it was found that 89, or 2.0 per cent, were infected with this disease. It

should be pointed out, however, that the survey was conducted during the winter months, when pellagra is not common, and also that the disease was not diagnosed unless very obvious.

For the purpose of estimating the prevalence of bilharziasis, each of these 4,411 persons was also questioned as to whether or not he had ever noticed blood in his urine. Those stating that they had done so numbered 443 persons—10.0 per cent of the total. These were classed as infected with bilharziasis. This is probably quite a legitimate conclusion; but the converse, that those who had not noticed blood in their urine were not infected, is far from being correct.

Hemoglobin tests were made of the blood of 505 boys, 138 of whom were infected with hookworm disease and 367 were not. The hemoglobin index of the non-infected boys was 75.5, as compared with the index of 69.6 among the infected.

In every town or village a note was made as to the presence or absence of pools of stagnant water, termed birkets. These birkets contain infiltration water which at certain seasons of the year may dry up. To them are attributed much of the high incidence of disease and consequent mortality, especially among children. In the case of hookworm disease, however, it was found that those villages with birkets did not show a markedly heavier infection than the villages without them.

III. SUMMARY OF INCIDENTAL ACTIVITIES

I

HEMOGLOBIN TESTS

1. **Among General Population.**—In three countries—Costa Rica, Panama, and Egypt—hemoglobin tests were made of a large proportion of the persons who were examined for uncinariasis. The blood of 41,380 persons was tested and it was found that the average hemoglobin index of these persons was 59. In Panama and Costa Rica the index was 63 and 64 respectively, while in Egypt it dropped to 44. These statistics are exhibited in Table 1 :

TABLE 1: *Hemoglobin Tests—Costa Rica, Panama, and Egypt: Comparison of Hemoglobin Index.*

Country	Hemoglobin Index	Number of Hemoglobin Tests Made
Total	**59**	**41,380**
Costa Rica	64	19,494
Panama	63	12,190
Egypt	44	9,696

2. **Comparison of Infected and Non-Infected Cases.**—Uncinariasis is not the only factor contributing to this anemia. In all of these countries insufficient nourishment and the presence of other diseases play their part in

reducing the vitality of the inhabitants. But that uncinariasis is responsible for much of this anemia is shown by tests made in Costa Rica, Grenada, and Egypt, the results of which are presented in Tables 2, 3, and 4.

In Costa Rica (see Table 2) hemoglobin tests made of the blood of 7,355 infected persons taken at random gave an index of 66, as compared with an index of 71 among 4,860 persons taken at random who were not infected. Further tests were made of the blood of 1,150 persons who had been cured of uncinariasis and it was found that the hemoglobin index of these persons immediately following treatment had risen to 75, showing that as a result of treatment and cure for uncinariasis the hemoglobin index rose to a point four degrees higher than the index of persons who were not originally infected.

TABLE 2: *Hemoglobin Tests—Costa Rica: Comparison of Index of Persons Infected, Not Infected, and Cured.*

	Hemoglobin Index	Number of Hemoglobin Tests Made
1. Persons Infected with Uncinariasis	66	7,355
2. Persons Not Infected with Uncinariasis	71	4,860
3. Persons Cured of Infection with Uncinariasis	75	1,150

In Grenada (see Table 3) comparison of the hemoglobin index of 429 persons infected with uncinariasis with the index of 135 persons not

infected with uncinariasis showed that for the first group the index was 78 as compared with 85 for the second—a difference of seven points in the group average of persons infected and not infected. This is shown in Table 3.

TABLE 3: *Hemoglobin Tests—Grenada: Comparison of Index of Persons Infected and Not Infected.*

	Hemoglobin Index	Number of Hemoglobin Tests Made
1. Persons Infected with Uncinariasis.....	78	429
2. Persons Not Infected with Uncinariasis.....	85	135

3. Comparison of Infected Cases Before and After Treatment.—In Egypt (see Table 4) a record was kept of the hemoglobin index of infected persons before and after treatment. Among 9,696 infected persons the hemoglobin index on admission to hospital was found to be 44. Opportunity was had for re-examining 4,031

TABLE 4: *Hemoglobin Tests—Egypt: Comparison of Index of Persons on Admission to Hospital with Index of Same Persons Following Treatment.*

	Hemoglobin Index	Number of Hemoglobin Tests Made
1. Persons Infected with Uncinariasis: On Admission to Hospital.....	44	9,696
2. Persons Cured of Uncinariasis: One Month or More After Being Fully Treated and Discharged From the Hospital...	49	4,031

of these persons a month or more after they had been fully treated for uncinariasis and discharged from the hospital, and it was found that the hemoglobin index for the group had risen to 49. (See Table 4, page 197.)

4. **By Races.**—For the countries of Panama and Costa Rica an interesting comparison of the hemoglobin index by races is given in Table 5. These blood tests were made of the general population at the time when the specimens of feces were submitted for examination, and include persons infected and not infected. The table indicates that for these two countries the hemoglobin index, both for all of the races taken together and for each race taken separately, bears a remarkable similarity. For Costa Rica

TABLE 5: *Hemoglobin Tests—Costa Rica and Panama: Comparison of Hemoglobin Index by Races.*

Races	Hemoglobin Index		Number of Hemoglobin Tests Made	
	Costa Rica	Panama	Costa Rica	Panama
All Races	**64**	**63**	**19,494**	**11,270**
White	65	62	5,331	360
Brown	65	64	11,083	2,857
Black	71	65	579	3,605
Indian	..	58	.....	1,949
Yellow	..	70	.....	31
Not Classified	58	59	2,501	2,468

the index for all races combined is shown to be 64, as compared with 63 for Panama. The Indian race in Panama presents the lowest index, with 58; and the black race in Costa Rica the highest, with 71. (See Table 5, page 198.)

II

TREATMENT FOR PARASITIC DISEASES OTHER THAN UNCINARIASIS

In all countries where uncinariasis exists the disease is complicated by the presence of other intestinal parasitic diseases, including infection with round worms (Ascaris), whip worms (Trichocephalus), pin worms (Oxyuris), tape worms (Tænia), and various other species of parasitic worms. For instance, among 291,855 persons examined for uncinariasis in the Southern United States, British West Indies, Central America, and Egypt, 98,454 were found to be infected with Ascaris, 68,590 with Trichocephalus, 3,921 with Strongyloides, 2,764 with Tænia, and 4,743 with Oxyuris. Often two, three, or more of these parasites exist in the same person; in Costa Rica more than ninety per cent of the population so far examined have been found to harbor one or more species of intestinal parasites. No thorough examination for parasites other than Uncinaria is carried out; the eggs of the other worms are always revealed incidentally in the search for Uncinaria, and no

further examination of the specimen is made after the ova of Uncinaria have been discovered.

In most of the countries no attempt has been made to administer treatment for other parasites, the work of relief being confined to measures against uncinariasis alone. In a few, however, as in Trinidad, Costa Rica, Guatemala, Nicaragua, and Panama, it has been found that treatment for other parasites often lends strong psychic support to the measures against uncinariasis. This is notably true in the case of Ascaris. These are large worms plainly visible to the naked eye, and when expelled by the patient after treatment they enable him to understand

TABLE 6: *Trinidad, Costa Rica, Guatemala, Nicaragua, and Panama: Number of Treatments Administered for Parasitic Diseases Other than Uncinariasis.*

Country	Treatments Administered for Parasitic Diseases Other than Uncinariasis				
	Total	Ascaris	Tænia	Amœba	Not Classified
Total	**20,744**	**3,584**	**2**	**4**	**17,154**
Trinidad	1,108	1,107	1	..	.....
Costa Rica	2,153	.....	..	..	2,153
Guatemala	15,001	.....	..	..	15,001
Nicaragua	1,263	1,260	..	3	.....
Panama	1,219	1,217	1	1	.....

better the part that the smaller worms, such as Uncinaria, may play in undermining his health.

Table 6 shows that 20,744 treatments were administered for other diseases in the five countries above named. In Guatemala and Costa Rica the number of treatments administered for each of the parasites is not given, but in both countries most of the treatments were for Ascaris. In Costa Rica, however, a large number of school-children in the cities of San José and Heredia were treated for Tænia, and in Panama forty-five persons received treatment for malaria in addition to the regular work against uncinariasis. (See Table 6, page 200.)

IV. TECHNIQUE OF EXAMINATION AND TREATMENT

I

MICROSCOPIC EXAMINATION

In Trinidad and British Guiana during 1915 experiments were conducted for determining the importance of the centrifuge as an aid in correct diagnosis. These experiments show a striking similarity in results and go far toward establishing a correct technique of microscopic examination. By a method combining the examination of a number of ordinary smeared slides with the examination of a number of smeared slides after the specimen had been centrifuged, an improvement was obtained of approximately 11 per cent over the results by the ordinary smeared-slide process. This is exhibited in Table 1. (See Table 1, page 203.)

In Trinidad the test led to the adoption of the examination of two smeared slides before centrifuging and two smeared slides after centrifuging as the routine method of diagnosis. In examining the 1,434 specimens referred to in Table 1, a record was kept of the results obtained on each slide. These results are exhibited in Table 2. (See Table 2, page 204.)

TABLE 1 : *Trinidad and British Guiana—Intensive Work: Comparison of Results of Microscopic Examination with and without Use of Centrifuge.*

Country	Smeared Slide Method : Without Use of Centrifuge			Combined Method : Smeared Slides and Centrifuged Smeared Slides			Difference in Favor of Combined Method With Use of Centrifuge	
	Specimens Examined	Specimens Positive	Percentage Positive	Specimens Examined	Specimens Positive	Percentage Positive	Specimens Positive	Percentage Positive
Total	**2,134**	**1,049**	**49.2**	**2,134**	**1,277**	**59.8**	**228**	**10.6**
Trinidad	1,434	741	51.7	1,434	895	62.4	154	10.7
British Guiana	700	308	44.0	700	382	54.6	74	10.6

TABLE 2: *Trinidad—Intensive Work: Detailed Results of Examination of Each Slide Before and After Using Centrifuge.*

	No.	P. C.
Specimens Examined	**1,434**	....
Specimens Positive	**895**	**62.4**
Positive Without Centrifuge	**741**	**82.8**
Positive With Centrifuge	**154**	**17.3**
Positive on First Smeared Slide Before Centrifuging	609	68.0
Positive on Second Smeared Slide Before Centrifuging	132	14.7
Positive on First Smeared Slide After Centrifuging	109	12.2
Positive on Second Smeared Slide After Centrifuging	45	5.0
Positive on Third Smeared Slide After Centrifuging	00	....

From the fact that no ova were discovered on the third slide examined after centrifuging, Dr. Washburn concluded that an examination of two slides after the specimen had been centrifuged was sufficient for accurate diagnosis.

In British Guiana the results obtained on each slide have not been reported, but for the first examination of each person Dr. Field has been led to adopt the routine of examining from five to eight smeared slides before centrifuging, and five smeared slides after centrifuging. For re-examination after treatment this process is reversed and from five to eight centrifuged smeared slides are examined first. Whether the results obtained are sufficient to justify the

examination of so many slides from each specimen can be determined only on the basis of further investigation: in both countries, however, the routine of examination would seem to be thorough enough for locating practically all of the infected cases.

In Trinidad the following rules have been adopted for the examination of specimens:

1. Each microscopist must examine in every detail and one at a time the specimens which are assigned to him. He will make a smear of the specimen on a glass slide with a wooden toothpick for examination with the microscope, using a different toothpick for each specimen and for each smear. The microscopist must make his own smears, prepare his own negative specimens for the centrifuge, and make out his own reports.

2. Two large smears will be made from each specimen and carefully examined in the ordinary way. If the specimen is found to be negative on being examined in this way, it will be put aside and centrifuged.

3. When a microscopist has accumulated twenty negative specimens he will prepare them for the centrifuge as follows:

(*a*) Containers will be placed on a chart having small squares numbered from one to twenty, and will be taken up one by one, beginning at number one.

(*b*) A sufficient portion of the specimen will be placed in a small glass jar to which water has been added, and an emulsion made by stirring with a toothpick.

(*c*) The emulsion will then be poured through a funnel into a centrifuge tube, one end of which has been previously corked.

(*d*) A cork will then be placed in the other end of the tube, and the tube placed in the pan of the centrifuge at the number corresponding to the

number on the chart from which the specimen was taken.

(*e*) After twenty specimens have been prepared and centrifuged, smears will be made from the outward end of each tube and examined. Two smears must be examined before the specimen is pronounced negative.

The microscopic department is equipped with microscopes having mechanical stages, centrifuge glassware, microscopic slides (size 1 x 3 inches preferred), toothpicks, and paper bags. Mechanical stages for the microscopes have been found to be almost indispensable for thorough and efficient work. The centrifuge used in the work is a specially constructed machine placed upon the market by the Bausch & Lomb Optical Company. It is a hand-driven machine equipped with a Stewart pan-head carrying twenty tubes.

After the specimens have been examined, the discarded tins and dirty toothpicks are thrown into paper bags. These bags are emptied each day into a large barrel filled with water into which crude carbolic acid has been placed as a deodorant. Kerosene oil is placed on top of the water to keep mosquitoes away. When the barrel becomes filled, it is carted off to the public dumping ground and the contents buried. The dirty glassware—microscopic slides, centrifuge tubes, and funnels—is placed into a pan containing a solution of formalin. After each day's work this solution is poured off and the glassware

is washed in clean water and then boiled. After being boiled it is left over night in a solution of methylated spirits (denatured alcohol) and the next morning dried with a clean towel.

In British Guiana a series of experiments was carried out for determining whether or not the thorough examination of one specimen following treatment is sufficient for demonstrating cure, and if so, at what interval of time following the last treatment this specimen should be secured. Some authorities have held that two treatments are incapable of producing a cure in all but a few mild cases, despite the fact that the records in many of the countries indicate that cures are produced by two treatments in approximately fifty per cent of the cases. Others have held that the re-examination of one specimen is insufficient for determining whether any given case is positive or negative; that re-examination at the end of one week, or less than one week, following the administration of thymol does not allow sufficient time for the ova to reach the rectum; and that the administration of thymol interferes with the procreative functions of the Uncinaria remaining in the intestine, so that more than one week must be allowed for these functions to be completely restored. These considerations led Dr. Field to re-examine at an interval of one month after treatment, 117 cases which had received only two treatments and which had been pronounced cured following

microscopic examination of one specimen. In originally pronouncing these cases cured, the regular technique of re-examination in British Guiana was followed, consisting of the examination of from five to eight smeared slides from a centrifuged emulsion, followed by the examination of five more smeared slides from the original specimen without centrifuging.

Ninety-nine of the 117 cases re-examined one month after being pronounced cured were cases which had not originally been re-examined and pronounced cured until a lapse of at least seven days following treatment. These cases ran from a minimum of seven days to a maximum of forty-eight days (mean, eleven days) following treatment before the specimen was re-examined upon which the cure was pronounced. Among these 99 cases re-examined one month after they had been pronounced cured, only six positive cases, or 6.1 per cent, could be detected; and to detect ova in these cases microscopic examination had to be made of from three to eight smeared slides from centrifuged specimens. Thirty-seven of these 99 cases had not been pronounced cured until at least nine days had elapsed following treatment; among these, only one specimen, or 2.6 per cent, contained ova.

The other eighteen of the 117 cases re-examined at the end of one month after being pronounced cured were cases that had been declared negative on re-examination less than

seven days after treatment. Among these 18 cases two were found positive, or a percentage of 11.1, as compared with the percentage of 6.1 among the cases in which a lapse of at least seven days had been allowed. These figures, though not extensive enough to be conclusive, seem to indicate that in almost all cases, especially when at least nine days are allowed to elapse after treatment before re-examination is undertaken, the thorough examination of one specimen is sufficient for determing whether or not the patient has been cured. Of the few persons who were found positive one month after being pronounced cured on re-examinations made after a lapse of at least nine days (in the case of British Guiana 2.6 per cent of the cases re-examined), it may be that a large proportion were persons who had in their bodies at the time of re-examination a few parasites en route to the intestines.

II

TREATMENT

One treatment for uncinariasis is seldom sufficient to effect a cure. Treatment must be repeated according to the severity of the infection and the efficacy of the drug used. It has been found that two treatments usually cure about 50 per cent of the infected persons. The persons not usually cured by two treatments are those in whom the infection is of long standing and the

worms are so firmly buried that the anthelmintic has little effect upon them, or persons in whom the infection is very heavy and there are large numbers of worms to be expelled. Table 3 shows that among 13,166 persons cured in the countries of British Guiana, Dutch Guiana, St. Vincent, and Trinidad, 5,772, or 43.8 per cent, were cured by two treatments.

TABLE 3: *Intensive Work—Total Number of Persons Cured, with Comparison of Number Cured by Two Treatments.*

Country	Persons Cured	Persons Cured By Two Treatments	
	No.	No.	P. C.
Total	**13,166**	**5,772**	**43.8**
British Guiana	8,612	3,678	42.7
Dutch Guiana	492	391	79.5
St. Vincent	1,350	457	33.9
Trinidad	2,712	1,246	45.9

The number of persons cured following each successive treatment has also been reported for these countries and is summarized in Table 4. This shows that of the 13,166 persons cured, only 2,175, or 16.5 per cent, required more than four treatments. (See Table 4, page 211.)

The total number of treatments administered in the dispensary work conducted during 1915 is shown in Table 5. (See Table 5, page 212.)

In most of the countries thymol is the drug regularly used. This is usually administered in capsules, preceded and followed by a dose of

TABLE 4: *Intensive Work—Number of Persons Cured Following Each Treatment.*

	Total		British Guiana		Dutch Guiana		St. Vincent		Trinidad	
	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.	No.	P. C.
Persons Found Infected.	**18,835**	....	**11,217**[1]	....	**1,942**	....	**1,676**	....	**4,000**	....
Persons Cured.....	**13,166**	**69.9**	**8,612**[1]	**76.8**	**492**	**25.3**	**1,350**	**80.5**	**2,712**	**67.8**
Persons Cured After Each Treatment:										
First and Second.....	5,772	43.8	3,678	42.7	391	79.5	457	33.9	1,246	45.9
Third.....	2,944	22.4	2,455	28.5	101	20.5	301	22.3	87	3.2
Fourth.....	2,275	17.3	1,353	15.7	....	....	262	19.4	660	24.3
Fifth.....	1,139	8.7	648	7.5	....	....	155	11.5	336	12.4
Sixth.....	557	4.2	281	3.3	....	....	95	7.0	181	6.7
Seventh.....	248	1.9	107	1.2	....	....	46	3.4	95	3.5
Eighth.....	118	.9	49	.6	....	....	15	1.1	54	2.0
Ninth.....	64	.5	24	.3	....	....	9	.7	31	1.1
Tenth.....	30	.2	13	.2	....	....	6	.4	11	.4
Eleventh.....	14	.1	3	....	....	....	4	.3	7	.3
Twelfth.....	2	....	....	....	....	....	....	....	2	.1
Thirteenth.....	3	....	1	....	....	....	....	....	2	.1

[1] The figures given in this table for the number of persons found infected and cured in British Guiana do not agree with the figures given in previous tables. In this table the number of persons found infected and cured in Area B of the Peter's Hall district in British Guiana are excluded. In that area treatment was administered by the daily method, whereas in the other areas of British Guiana and in all of the areas in the other countries the weekly method was employed.

TABLE 5: *Dispensary Work—Total Number of Treatments Administered, with Comparison of First, Second, Third, and Fourth Treatments.*

States and Countries	Total Number of Treatments Given	Number of Persons Receiving Each Treatment				
		First	Second	Third	Fourth	Subsequent to Fourth
Total	**224,414**	**110,219**	**68,632**	**28,966**	**8,719**	**7,878**
Southern United States	74,784	37,051	19,548	15,446	7,659	80
West Indies	46,763	15,918	10,781	7,279	5,161	7,624
Central America	102,867	57,250	38,303	6,241	899	174
Southern United States:						
Alabama	1,742	1,499	237	6	.....	....
Georgia	52,680	21,585	15,662	12,700	2,653	80
Kentucky	5,841	5,814	27	.....	.....	.....
Tennessee	8,491	3,069	2,739	2,683	.....	.....
Texas	6,030	5,084	883	57	6	.....
West Indies:						
Grenada	37,807	11,522	8,064	6,285	4,645	7,291
Trinidad	8,956	4,396	2,717	994	516	333
Central America:						
Costa Rica	47,739	26,938	15,330	4,457	844	170
Guatemala	26,417	13,783	11,851	783	.....	.....
Nicaragua	1,918	1,611	293	14	.....	.....
Panama	26,793	14,918	10,829	987	55	4

Epsom salts. The object of the Epsom salts is to free the intestine from mucus or other substances surrounding the hookworms and protecting them from the action of the thymol. The patient is instructed to take little or no supper on the evening before the thymol is to be administered. As early at night as is convenient he takes a dose of Epsom salts. The next morning as early as the salts has acted, half the number of capsules of thymol prescribed for the whole treatment are taken. Two hours later the remaining capsules are taken. Two hours after the second dose of thymol, another dose of Epsom salts is taken, which will expel the hookworms that have been forced to loosen their hold on the intestinal wall by the action of the thymol, and will also get rid of the excess of thymol before it has had time to produce any harmful effects on the patient. Nothing is eaten on the day the capsules are taken until the final dose of Epsom salts has acted well. A little water or strong coffee, without milk, alone is allowed.

As alcohol and oils dissolve thymol, making it actively poisonous to the patient, the use of them in any form would be exceedingly dangerous. Gravy, butter, milk, all alcoholic drinks, and patent medicines, which generally contain alcohol, are forbidden on the evening before and on the day of the treatment. Moreover, as many hookworm patients have dilated stomachs which do not readily empty themselves

and it is important that the thymol reach the small intestine at once, the patient is advised to lie on the right side for at least half an hour after taking each dose of thymol.

The dosage administered by Drs. C. W. Stiles, George Dock, and C. C. Bass, by the State Boards of Health in the Southern States, and by a number of foreign countries, is outlined in the following table:

Age, Years	Grains	Grams	6 a.m.	8 a.m.
1 to 5	7.5	.5	½ dose	½ dose
5 to 10	15.	1.	½ dose	½ dose
10 to 15	30.	2.	½ dose	½ dose
15 to 20	45.	3.	½ dose	½ dose
20 to 60	60.	4.	½ dose	½ dose
60 and upward	45.	3.	½ dose	½ dose

It should be observed, however, that owing to the absence of hospital conditions and to the uncertainty in some cases that directions will be correctly followed, the dosage prescribed is usually from ten to twenty per cent less than that indicated in the foregoing table. The dose of thymol varies with the age of the patient. As the disease retards development and persons eighteen years old often have only the normal growth of thirteen, apparent and not actual age determines the dose. In all countries a competent physician supervises the treatment.

During 1915 a number of experiments were made with oil of chenopodium as a substitute for thymol. In Guatemala more than 9,000

persons were treated with this drug and particularly favorable results were obtained. It was reported to be fully as efficient as thymol in the treatment of uncinariasis, and a better remedy in the treatment of other parasitic infestations, especially ascariasis. Furthermore, this drug was found less trying on the patient, permitting a subsequent treatment within four days, which served to facilitate the work as well as to increase the number of subsequent treatments administered. Among these 9,000 persons only two cases of untoward symptoms were observed, both in children, in the form of temporary deafness lasting in one instance two weeks and in another four weeks.

The standard dosage of oil of chenopodium used in Guatemala is as follows:

Age in Years	Drops
4	5
5	7
6	10
7	11
8	12
9	14
10	15
11	16
12	18
13	20
14	21
15	22
16	24
17	25
18	27
19	28
20 and over	30

These are maximum doses. They may be administered at one time or may be divided into two parts and administered one or two hours apart. There is no noticeable difference in results by either method.

In Nicaragua and Costa Rica excellent results have also been reported with the use of chenopodium. In both countries the strong psychic effect produced by the expulsion of large numbers of round worms, plainly visible to the naked eye, is considered a decided advantage in favor of this drug. No untoward symptoms have been observed. In Nicaragua it has been customary to administer chenopodium for the first and thymol for all succeeding treatments.

In Trinidad, however, a series of experiments with oil of chenopodium gave less satisfactory results and led Dr. Washburn to conclude that there was nothing to justify adopting this drug in place of thymol as the standard remedy for uncinariasis. He finds it to be less effective than thymol and to produce more unpleasant symptoms, but recognizes that it may be used to advantage in selected cases where a large number of treatments with thymol fail to effect a cure.

For the experiments conducted in Trinidad 342 selected cases of uncinariasis were taken. These included patients who had had no other treatment for the disease, as well as patients who had had from two to eight treatments with

thymol previous to the administration of chenopodium. Of these 342 cases, 138 were treated by the Keith method, in which ten minims of chenopodium are given daily for three days, followed by a tablespoonful of castor oil two hours after the last dose has been taken; and the other 204 cases received the full dose on one day, followed in two hours by a large dose of castor oil. In some cases magnesium sulphate was used instead of castor oil without any appreciable difference in the result.

Of the 138 cases treated by the Keith method, specimens for re-examination were obtained from 113 three days after the last dose of chenopodium had been administered, as recommended by Dr. Keith, who states that in his experience it is rare to find the eggs of Uncinaria in stools examined three days after the last dose of chenopodium is taken. Specimens from the remaining 35 cases were not collected until the end of seven days following treatment, when all of the patients, including the 113 who had been re-examined at the end of three days, were re-examined. The results obtained at the end of three days and at the end of seven days following the last treatment are compared in Table 6. (See Table 6, page 218.)

Forty-six of the persons whose specimens were re-examined both at the end of three days and seven days following the last treatment, were found negative at the end of three days and

TABLE 6: *Trinidad—Intensive Work: Comparison of Results of Treatment with Oil of Chenopodium After Lapse of Three Days and After Lapse of Seven Days.*

	Specimens Examined	Specimens Positive		Found Positive Without Centrifuge		Found Positive With Centrifuge	
	No.	No.	P. C.	No.	P. C.	No.	P. C.
Three Days Following Last Treatment.....	113	29	25.7	14	48.3	15	51.7
Seven Days Following Last Treatment.....	138	91	65.9	72	79.1	19	20.9

positive at the end of seven days, showing that the figures obtained by the re-examination of specimens at the end of three days are unreliable. This is probably due to the fact that the drug exerts a toxic effect on the female worms, causing them to lay no eggs for several days after the treatment. The fact that the specimens collected three days after treatment contained but few eggs is indicated by the unusually large percentage of specimens in which the eggs were not discovered until after the centrifuge had been used.

In the 204 cases to whom the full dose of chenopodium was administered on the same day, 74 were given 10 minims every hour for three hours, followed by a dose of castor oil after an interval of two hours; and 130 were given two capsules of 10 minims each with two hours' interval between, followed by castor oil. Re-examination after seven days showed 27 of the 74 persons treated by the first method, or 36.5 per cent, to have been cured; but this method had to be discontinued because of the large number of cases who were made sick and weak. Of the 130 cases treated by the second method, re-examination after seven days showed 37, or 28.5 per cent, to have been cured. The remaining 93 patients were given a second treatment one week later and it was found that 39 of these, or a total of 58.5 per cent of the original 130 cases, had been cured by the two treatments.

In all of the cases treated with oil of chenopodium in Trinidad, unpleasant symptoms, such as nausea, vomiting, weakness, dizziness, etc., were much more marked than with thymol, and the continued use of chenopodium in a district alarmed the people and made them afraid to take further treatment of any kind.

Experiments were also conducted in Trinidad for determining the efficiency of thymol when administered in capsule form with varying proportions of sugar of milk. Re-examinations were made in all cases after two treatments had been administered. The results show that the drug is much more effective when finely pulverized and mixed with at least an equal amount of sugar of milk. Among 325 cases treated with pure thymol, finely powdered, only 41, or 12.6 per cent, were cured by two treatments, while among 1,112 persons treated with finely powdered thymol mixed with equal parts of sugar of milk, 546, or 49.1 per cent, were cured by two treatments.

During September, 1915, a supply of thymol already mixed with sugar of milk and packed in capsules by the manufacturer was received. This thymol was not as finely powdered as that which had been previously compounded in Trinidad, and the proportions of sugar of milk to thymol, instead of being equal, were as follows:

10 grains thymol to 2½ grains sugar of milk;
5 grains thymol to 5 grains sugar of milk (but not finely powdered);
2½ grains thymol to 1 grain sugar of milk.

The results following the use of this supply were far less satisfactory than had previously been obtained. In three districts only 76 persons among a total of 350, or 21.7 per cent, were cured by two treatments. The drug was recompounded and mixed with equal parts of sugar of milk, when the number of cures following two treatments again rose to nearly 50 per cent.

V. ILLUSTRATIONS

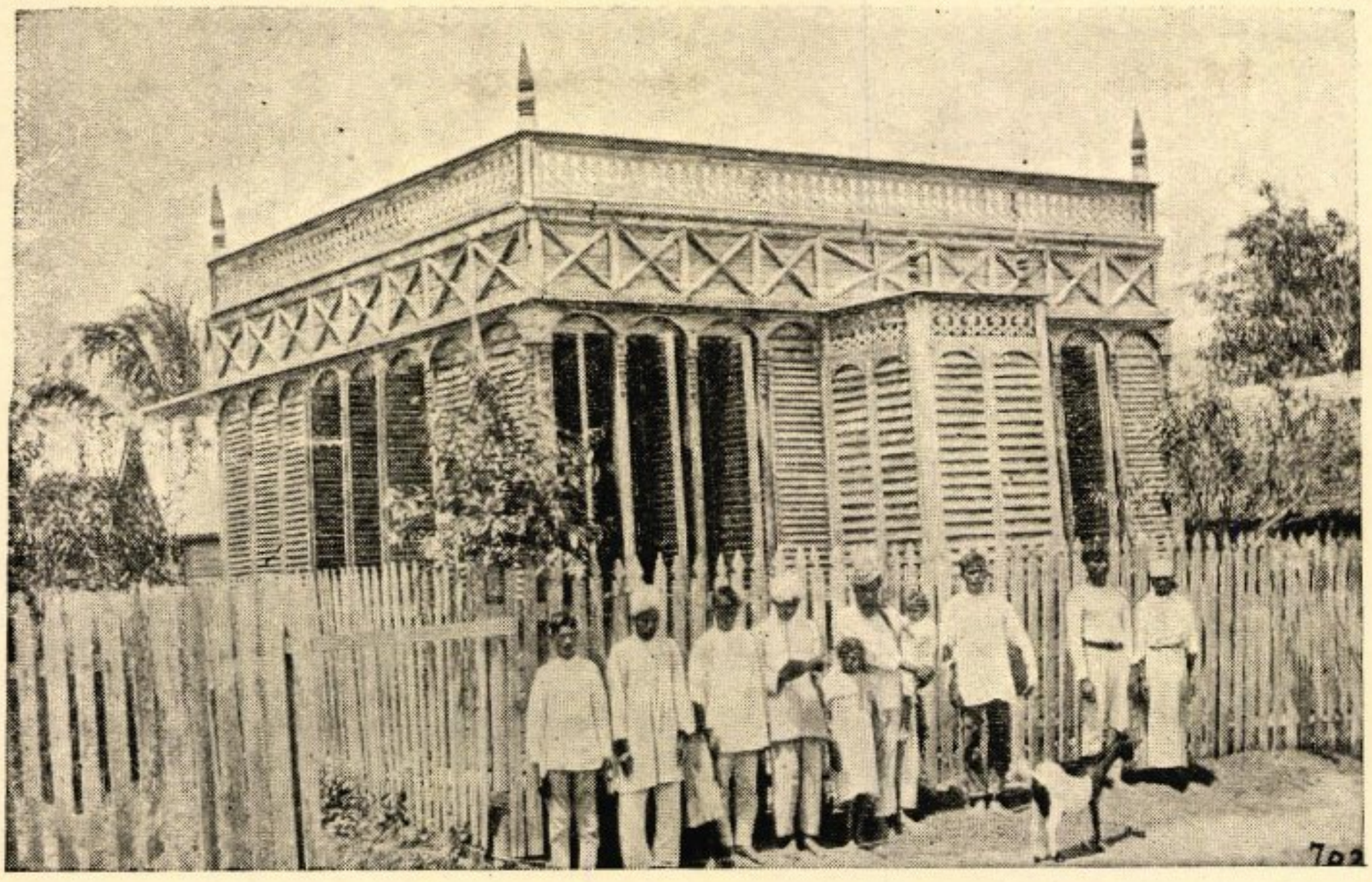

Fig. 1. Group of Mohammedans, all infected with uncinariasis. Mosque in background. British Guiana

Fig. 2. Mohammedan bishop and family. All cured of uncinariasis. Trinidad

Fig. 3. Severe case of uncinariasis. Indian; age 17; weight, 42 lbs. Guatemala

Fig. 4. Severe case of uncinariasis complicated by malaria. Patient rapidly recovering. Nicaragua

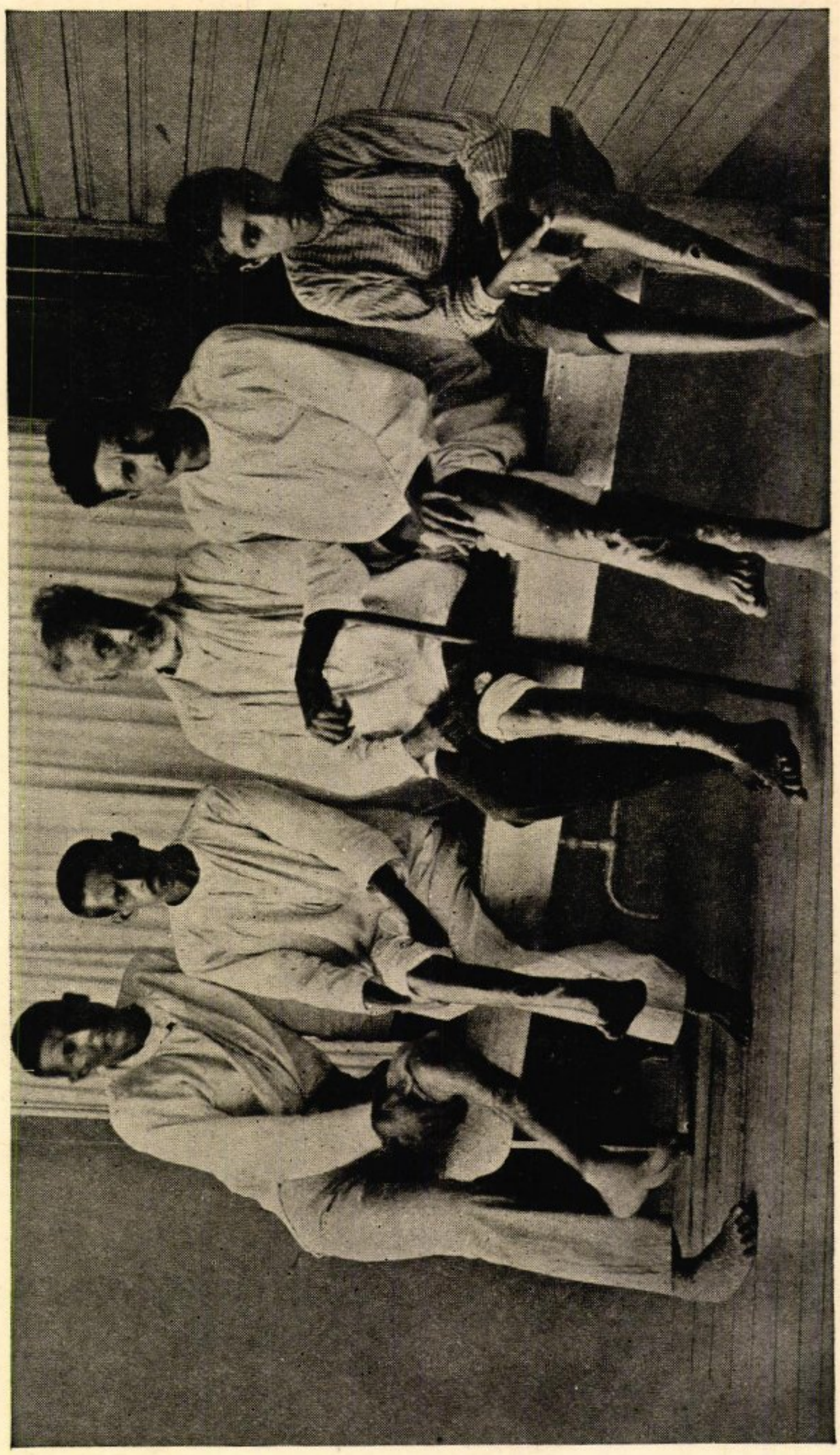

Fig. 5. Leg ulcers. Frequently associated with uncinariasis and aggravated by it. Costa Rica

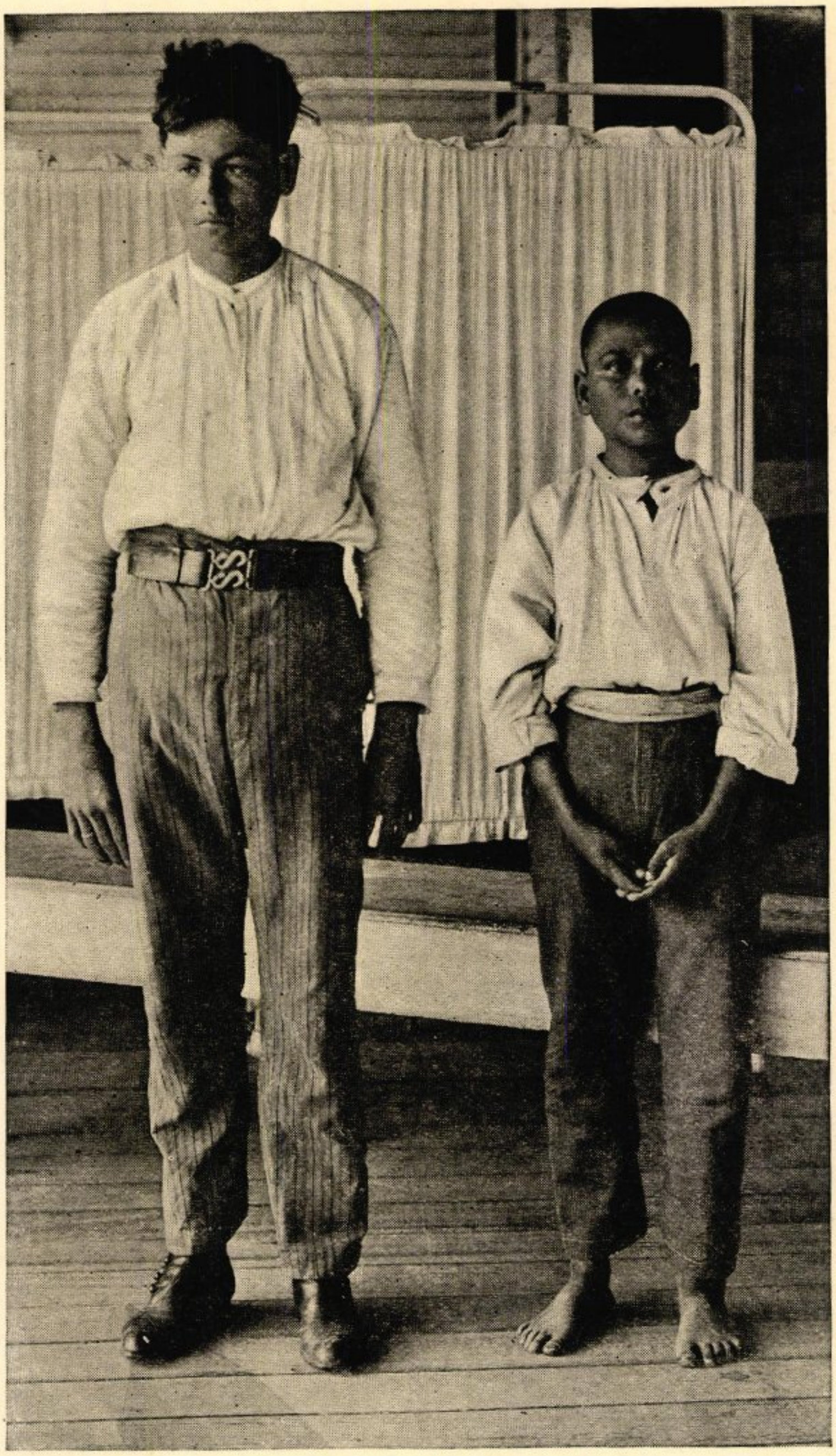

Fig. 6. Two boys of the same age; the one on the right has uncinariasis. Costa Rica

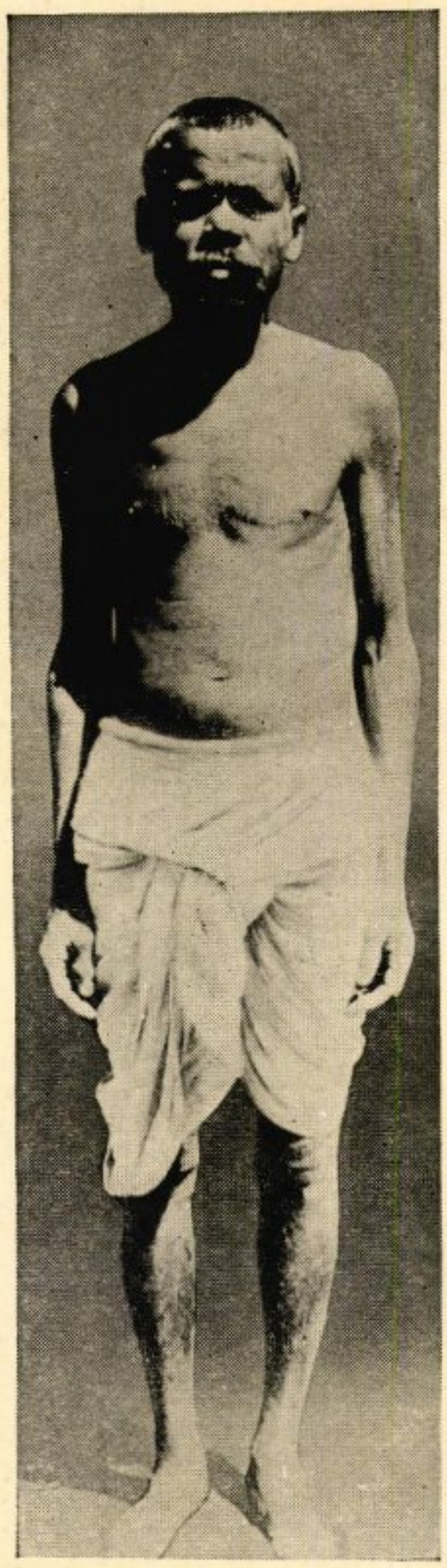

Fig. 7. East Indian named Seemungal. Severely infected with uncinariasis. A pauper, unable to work for six years; breech-cloth only clothing. Hemoglobin, 25 per cent.; red-blood-cell count, 2,000,000. Trinidad

Fig. 8. Same patient six months later, after being cured. He has changed his name from the common-place Seemungal to the more imposing Mr. Christopher Padmore, and finds employment delivering packages from the depot of the Government railway. A full suit of clothes has replaced the breech-cloth. Hemoglobin, 85 per cent.; red-blood-cell count, 4,100,000

Fig. 9. A family group. All infected with uncinariasis; all treated. St. Vincent

Fig. 10. Company of soldiers. Eighty-two per cent. infected with uncinariasis. Cured in one month. St. Lucia

Fig. 11. Dispensary group awaiting examination. Indians. Guatemala

Fig. 12. A group of Indians. All infected with uncinariasis; all being treated. Panama

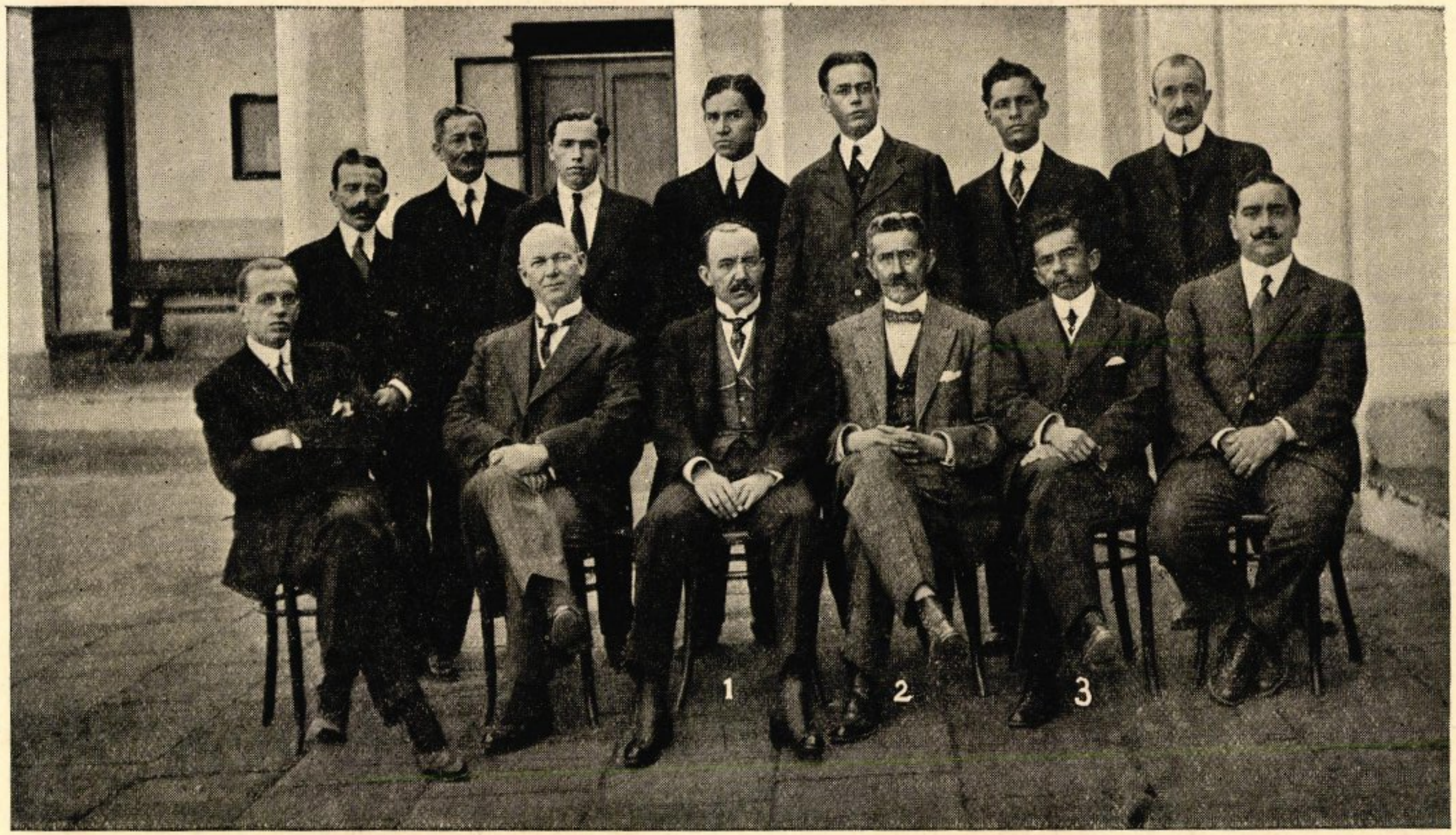

Fig. 13. Joint conference, committee from National Board of Health and Department of Uncinariasis. Guatemala. Office of the National Board of Health in background. (1) Dr. Mario J. Wunderlich; (2) Dr. Alberto Padillo; (3) Licenciado Juan Melgar, Committee-men from National Board of Health

Fig. 14. Taking treatment to the patients in their homes. St. Vincent

Fig. 15. Rear view of Fig. 14, showing method of carrying drugs and equipment

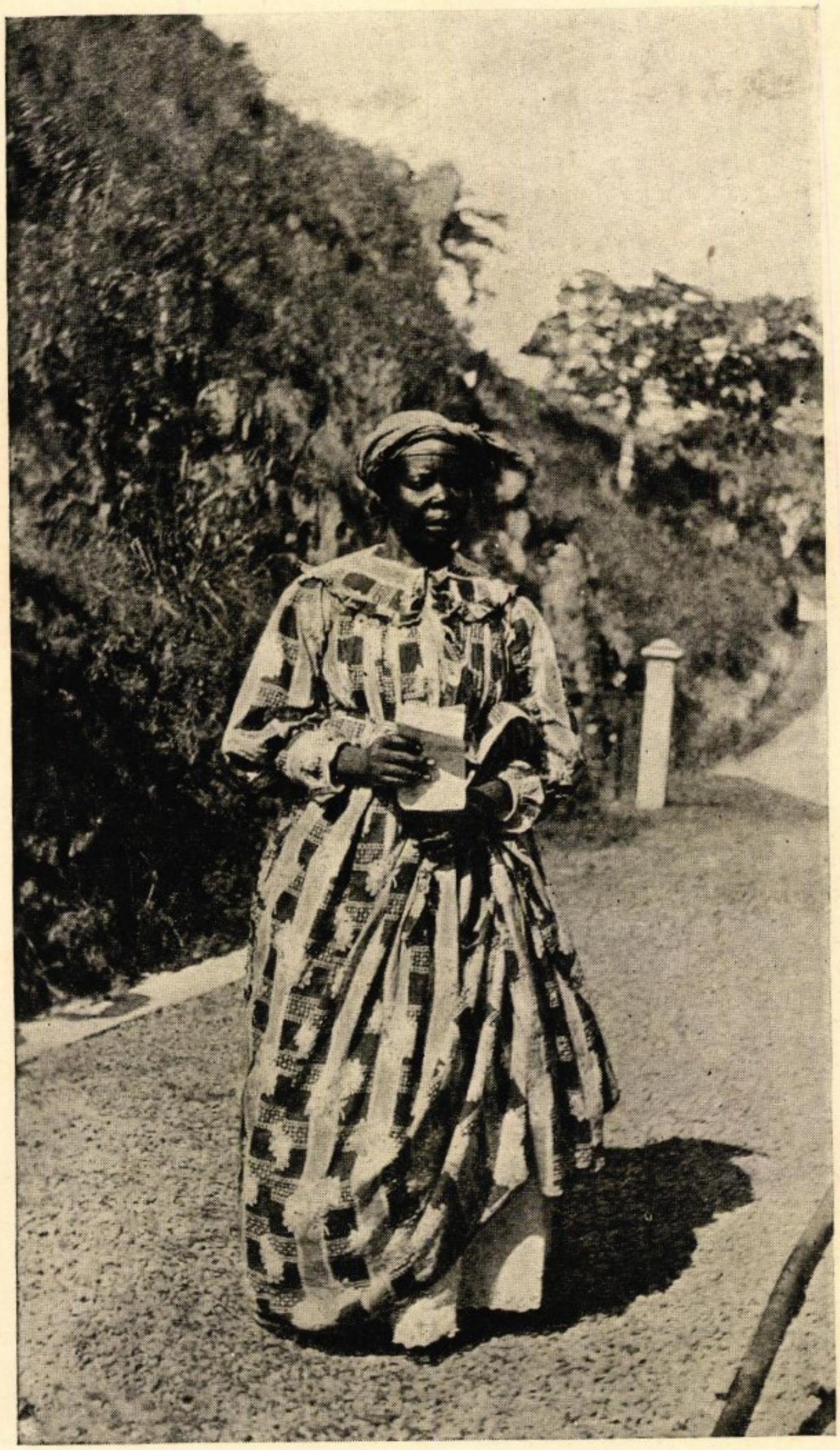

Fig. 16. Patient cured of uncinariasis, with certificate of cure. Grenada

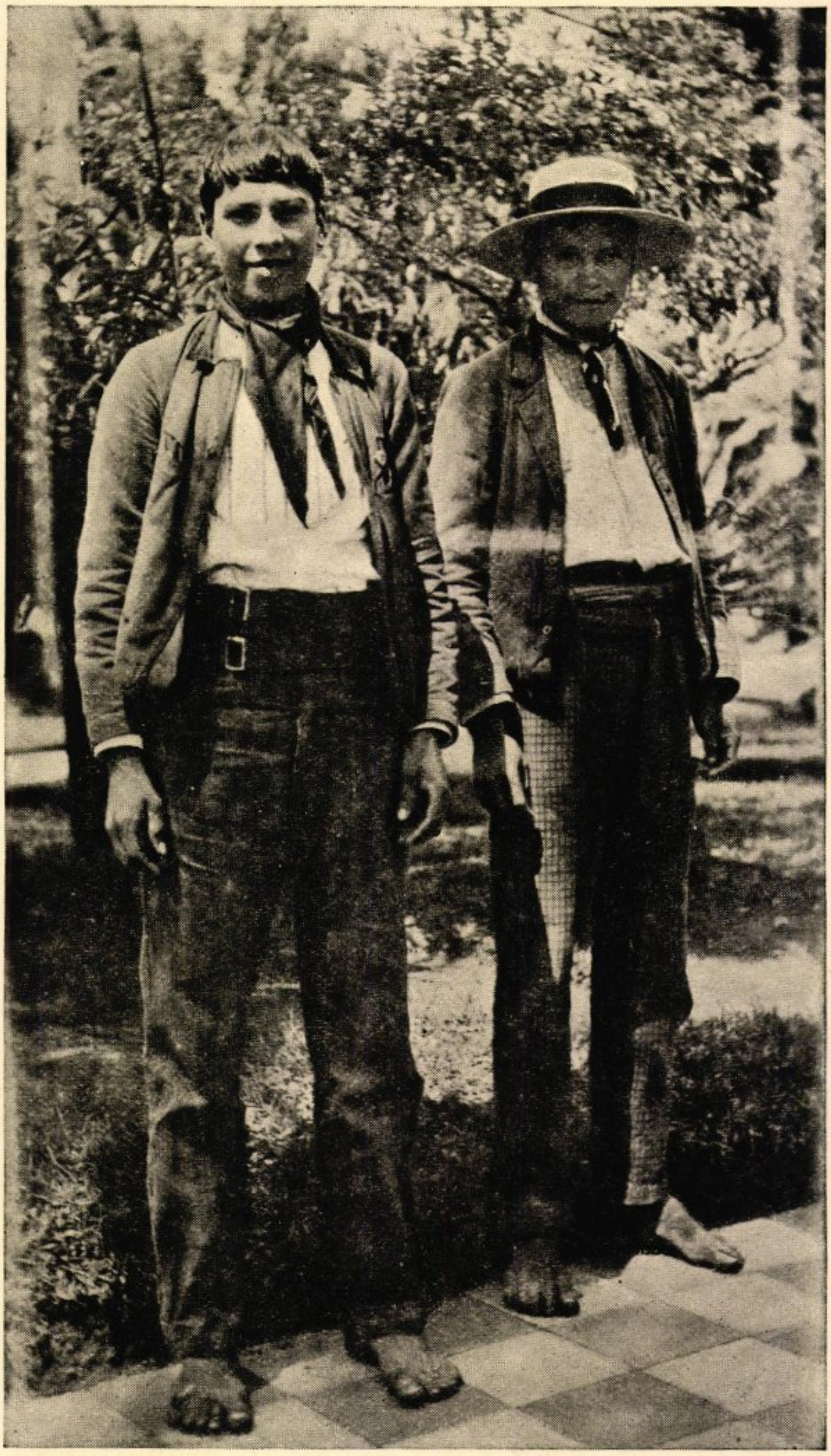

Fig. 17. Two patients who walked for four days to receive benefits of treatment. Costa Rica

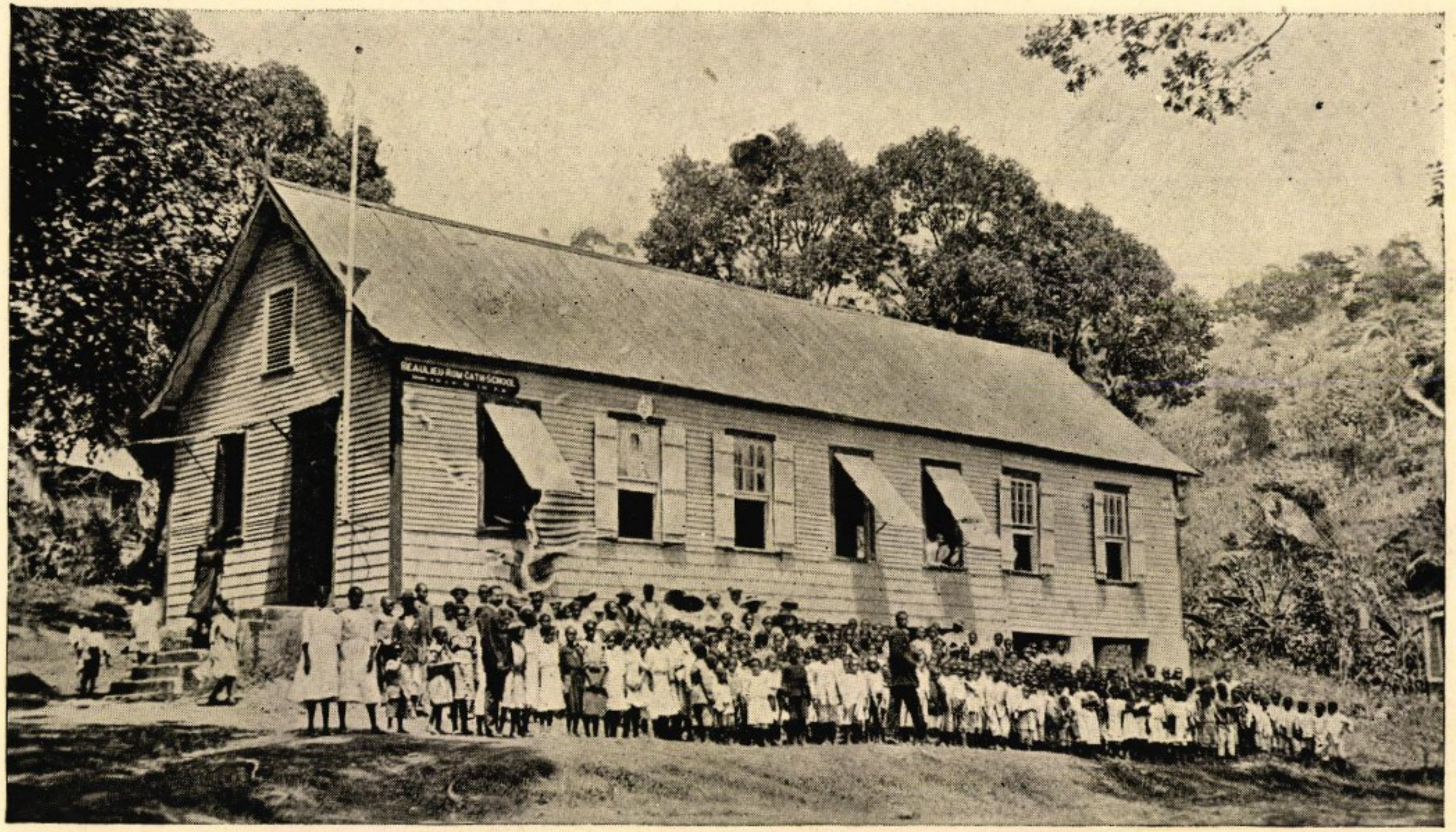

Fig. 18. School group attending lecture on uncinariasis. Grenada

Fig. 19. Staff for relief and control of uncinariasis in Trinidad, with Surgeon-General H. L. Clare (1) and Dr. C. B. Reid, District Medical Officer (2)

Fig. 20. Attendance at a lecture on uncinariasis. Costa Rica. The circle indicates the President of the Republic

Fig. 21. A lecture on uncinariasis illustrated with charts. Costa Rica

CHINA MEDICAL BOARD

Report of the Director

CHINA MEDICAL BOARD

Report of the Director

To the President of the Rockefeller Foundation:

Sir:

I have the honor to submit herewith my report as Director of the China Medical Board for the period extending from December 11, 1914, the date of the organization of the Board, to December 31, 1915.

Respectfully yours,

WALLACE BUTTRICK,
Director.

CHINA MEDICAL BOARD

OFFICERS

Chairman

JOHN DAVISON ROCKEFELLER, JR.

Vice-Chairman

FREDERICK TAYLOR GATES

Director

WALLACE BUTTRICK

Resident Director in China

ROGER SHERMAN GREENE

Secretary

EBEN CHARLES SAGE

Executive Committee

Wallace Buttrick
Frederick Taylor Gates
Starr Jocelyn Murphy
Francis Weld Peabody
John Davison Rockefeller, Jr.

Members[1]

To serve until the annual meeting of 1918

John R. Mott
Wallace Buttrick
Simon Flexner
Frank J. Goodnow

To serve until the annual meeting of 1917

William Henry Welch
Jerome Davis Greene[2]
John Davison Rockefeller, Jr.
Wickliffe Rose

To serve until the annual meeting of 1916

Harry Pratt Judson
Frederick Taylor Gates
Francis Weld Peabody
Starr Jocelyn Murphy

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[1] On January 26, 1916, the following additional members were elected: Roger Sherman Greene, to serve until the annual meeting of 1919, and Frederick Lamont Gates to serve until the annual meeting of 1918.

[2] Resigned May 26, 1915.

CHINA MEDICAL BOARD

ORIGIN AND PURPOSES OF THE BOARD

The origin and purposes of the China Medical Board are succinctly stated in the following letter, addressed by the President of the Rockefeller Foundation to the Missionary Societies in the United States and Great Britain which are conducting medical work in China:

"New York, March 15, 1915.

"My dear Sir:

"For some time the Rockefeller Foundation has been considering the need of scientific medicine in China and how best the Foundation might assist in meeting the need. A tentative general plan of procedure was adopted nearly a year ago, after conference with many eminent authorities on the subject. A competent Commission has since then visited China and studied with great care present medical conditions in that country. The Commission has now made a comprehensive report and has offered a series of recommendations. These recommendations have been tentatively adopted by the Foundation, subject to such changes as experience and further inquiry may suggest.

"Happily, the Foundation is not first in the field. Many and various missionary societies of America, Great Britain and the Continent have preceded it. Hundreds of physicians are now practicing in China under the auspices of these societies. Their patients number tens of thousands, perhaps hundreds of thousands, annually. As rapidly as possible, hospitals have been and are being established. In some cases these are fairly well equipped, but all of them are still very needy. Half a score or more of medical colleges have been started, partially manned and equipped, and these colleges are being availed of by hundreds of Chinese students, with such preparation, more or less adequate, as circumstances have admitted. The Missionary Boards have been most zealous in medical missions and have done everything possible, with the limited resources at their disposal, toward making

this work effective. With these societies and with the work undertaken by them, the Foundation from the first has contemplated the most cordial and sympathetic co-operation. We desire to supplement the work of the Missionary Boards where it is incomplete, to multiply it where it is inadequate, and always to engraft our additions in an entirely vital way. We cannot expect, even did we desire it, that the societies would materially change their principles or methods or the religious qualifications of their appointees, except as the societies may be self-moved to do so by experience and observation.

"But the medical work of the Missionary Societies and Boards is confined to limited areas and is seriously restricted by lack of funds. In carrying out its comprehensive plans, the Foundation may find it desirable:

"1. To assist Missionary Societies to strengthen their medical schools and hospitals by providing equipment and other facilities, and by making annual grants, as may be found expedient, for the support of physicians and nurses, selected by the respective Missionary Boards, subject only to the Foundation's approval of the professional qualifications of the appointees.

"2. With the consent of the Missionary Boards, to reorganize and expand existing medical schools, with their hospitals, and to support these, wholly or in part, from its own funds.

"3. To aid other medical schools that are not strictly missionary.

"4. To establish, equip and support new medical schools and hospitals. In choosing its agents, physicians and nurses for independent schools or hospitals, the Foundation will select only persons of sound sense and high character, who are sympathetic with the missionary spirit and motive, who are thoroughly qualified for their work professionally, and who will dedicate themselves to medical ministration in China. Beyond these qualifications, the Foundation cannot properly impose tests of a denominational or doctrinal nature, such as are deemed desirable by Missionary Boards for their own medical missionaries or agents.

"In entering upon its work, the Foundation will hope to avail itself of the long and valuable experience acquired by the Missionary Boards in the conduct of their medical missions, and will welcome their sympathetic counsel in all matters of procedure and administration.

"While this work of the Foundation will be limited to medical service, we believe it to be the highest duty and privilege of all men to cherish the spirit of Jesus, and ever to live and act in that spirit. The desire of earnest Christians to communicate the spirit of Jesus to the Chinese and to the whole world we share to the full. We share with the Missionary Boards also their conviction that the teaching of Jesus must be imparted to the Chinese through preaching and by all other proper agencies for communicating truth, and we are constantly mindful that, in so far as we may be able to assist the Missionary Boards in their medical service, the Boards will be enabled to devote added funds to the strengthening and enlarging of their educational and evangelistic work.

"As its agency for conducting this work, the Foundation has formed the China Medical Board, with offices at 61 Broadway, New York, and has conferred upon this Board the necessary powers and the financial resources believed to be currently needed. The Chairman of the Board is John D. Rockefeller, Jr.; the Director, Wallace Buttrick; Resident Director in China, Roger S. Greene, formerly United States Consul-General at Hankow, China.

"The members of the Board are:

Messrs. WALLACE BUTTRICK
SIMON FLEXNER
F. T. GATES
JEROME D. GREENE
HARRY PRATT JUDSON
FRANK J. GOODNOW
JOHN R. MOTT
STARR J. MURPHY
FRANCIS W. PEABODY
JOHN D. ROCKEFELLER, Jr.
WICKLIFFE ROSE
WILLIAM H. WELCH

"In behalf of the Rockefeller Foundation.

"(Signed) JOHN D. ROCKEFELLER, Jr.,
"*President.*"

The Commission of 1914, referred to in the foregoing letter, consisted of Harry Pratt Judson, President of the University of Chicago, Dr. Francis W. Peabody, of the Harvard Medical School, Boston, and Roger S. Greene, then Consul-General of the United States at Hankow, China. This Commission visited the several medical schools in China and a large number of hospitals, missionary and other. Upon its return to the United States, the Commission made a comprehensive report to the Foundation, afterwards printed under the title "Medicine in China," and presented a series of recommendations, which were adopted at the meeting of the Foundation, November 5, 1914, under the following resolution:

> "RESOLVED, That the Report of the China Medical Commission be accepted and the recommendations of the same be adopted as a working basis, together with the financial estimates with which they are accompanied, the whole or any part thereof subject to such changes and emendations as experience and further knowledge shall from time to time invite."

At a meeting of the Executive Committee of the Foundation, held November 30, 1914, the following further action was taken:

> "RESOLVED, That an organization be created to take up the work of medical education in China, as recommended in the report of the China Medical Commission and in accordance with the resolution adopted at the meeting of November 5, and that such organization be designated as the China Medical Board of the Rockefeller Foundation."

The Board met for organization December 11, 1914, all the members being present with the exception of Dr. Wickliffe Rose, who was engaged in war relief work in Europe, and Dr. William H. Welch, who was unavoidably detained. Mr. Roger S. Greene was present by invitation. Mr. John D. Rockefeller, Jr., stated the circumstances leading to the formation of the Board and pointed out some of the questions which would confront the Board in formulating its policies. He urged that the work be undertaken in a spirit of coöperation with existing agencies for medical education in China, and particularly with the medical schools and hospitals established by the missionary societies.

The following officers were appointed:

Chairman, John D. Rockefeller, Jr.
Director, Wallace Buttrick.
Resident Director in China, Roger S. Greene.
Secretary, E. C. Sage.
Executive Committee: Wallace Buttrick, Frederick T. Gates, Jerome D. Greene, Starr J. Murphy, Francis W. Peabody, John D. Rockefeller, Jr.

On May 26, 1915, Mr. Jerome D. Greene resigned his membership in the Board, and on the same day Mr. Frederick T. Gates was appointed Vice-Chairman.

The Board has held three meetings: December 11, 1914, March 1, 1915, and May 25, 1915. The Executive Committee has held four

meetings: April 15, June 22, July 10, and October 27, 1915.

In July, 1915, Mr. Roger S. Greene sailed for China and as Resident Director opened an office of the Board in Peking.

UNION MEDICAL COLLEGE, PEKING

The first important act of the Board was the acquisition of the property of the Union Medical College in Peking.

This medical college, from which the first class graduated in 1911, was maintained and directed by six Christian Missionary Societies: The London Missionary Society (non-sectarian, but closely affiliated with the Congregational Churches of Great Britain), The Society for the Propagation of the Gospel in Foreign Parts (Church of England), The London Medical Missionary Association, The American Board of Commissioners for Foreign Missions (Congregational), The Board of Foreign Missions of the (American) Methodist Episcopal Church, and The Board of Foreign Missions of the Presbyterian Church in the United States of America. The property of the College was owned by the London Missionary Society, for which Society Dr. Thomas Cochrane established the work in 1906. Since that date the college has been supported jointly by the six missionary societies named above.

Early in 1915, the Director and Mr. Roger

S. Greene conferred with representatives of the three American Missionary Societies interested in the College, when it was agreed that the China Medical Board might approach the London Missionary Society with a proposal to purchase the property of the College. Under the instructions of the Board, the Director visited London in March and April, 1915, to negotiate with the London Missionary Society. While in London he attended several meetings for conference with officers and committees of that society, with representatives of the Society for the Propagation of the Gospel in Foreign Parts, and of the London Medical Missionary Association.

As a result of these conferences, the London Missionary Society agreed to sell the property of the Union Medical College in Peking, together with the mission compound of the Society, located on Hatamen Street, near the Medical College, to the China Medical Board of the Rockefeller Foundation, and later sent Dr. Thomas Cochrane, President *Emeritus* of the College, to this country with full power to act for the London Missionary Society in completing arrangements for the transfer of the property. On June 2, 1915, a memorandum of agreement between the London Missionary Society and the China Medical Board was executed, which provided for the sale of the property of the Union Medical College in

Peking and the mission compound mentioned above to the China Medical Board of the Rockefeller Foundation. Subsequently the titles to the property were perfected and the transfer and sale consummated.

The terms of the transfer provided, among other things, that the work of the college should be conducted by a Board of Trustees, which should consist of thirteen members, one to be appointed by each of the six missionary organizations theretofore maintaining the college, and seven by the China Medical Board. Under this agreement the following trustees have been appointed:

Representing the China Medical Board: Wallace Buttrick, Simon Flexner, Frederick T. Gates, John R. Mott, John D. Rockefeller, Jr., Wickliffe Rose, William H. Welch.

Representing the London Missionary Society: F. H. Hawkins.

Representing the Medical Missionary Association of London: Arthur Wenham.

Representing the Society for the Propagation of the Gospel in Foreign Parts: J. Auriol Armitage.

Representing the Board of Foreign Missions of the Methodist Episcopal Church: Frank Mason North.

Representing the Board of Foreign Missions of the Presbyterian Church in the United States of America: Arthur J. Brown.

Representing the American Board of Commissioners for Foreign Missions: James L. Barton.

The following are the officers of the Board of Trustees of Union Medical College:

Chairman, John R. Mott.
Vice-Chairman, James L. Barton.

Secretary, Wallace Buttrick.
Executive Committee: Frederick T. Gates, Chairman; Arthur J. Brown, Wallace Buttrick, Simon Flexner, Frank Mason North.
Committee on Nominations to the Faculty: Wallace Buttrick, Simon Flexner, William H. Welch, Frank Mason North, Arthur J. Brown.

On July 1, 1915, the China Medical Board assumed full support of the College, with an annual budget of fifty-three thousand dollars ($53,000).

The Board has since purchased the residence property of Mr. Ying, adjoining the Union Medical College to the south, thus increasing the campus of the college by about one and two-fifths acres. Negotiations are also pending for the purchase of additional property adjoining the hospital of the college, belonging to Prince I, and for the extensive residence property of Prince Yu, some three hundred feet west of the laboratory building of the college, the latter being a tract of more than eight acres.

COMMISSION OF 1915

In May, 1915, the Board, by resolution, requested the Director, Dr. William H. Welch, of the Johns Hopkins Medical School, Drs. Simon Flexner and Frederick L. Gates, of the Rockefeller Institute for Medical Research, and Mr. Frederick T. Gates, Vice-Chairman of the Board, to visit China and report a definite program for the reorganization of the Peking

Union Medical College, and also to consider more particularly whether the Board might not organize a second college to be situated in Shanghai. On the 7th of August the members of the Commission sailed from San Francisco for China, returning December 27, 1915. At the last moment, Mr. Frederick T. Gates found it impossible to go.

During the five months of their absence from this country the members of the Commission visited medical schools and hospitals in Tokyo and Kyoto, Japan; Seoul, Korea; and the following places in China: Mukden, Peking, Tientsin, Tsinanfu, Hankow, Wuchang, Changsha, Nanking, Shanghai, Soochow, Hangchow, Hongkong and Canton. Mr. Roger S. Greene joined the Commission at Mukden and thereafter participated in their journeys and work. Dr. Frederick L. Gates was Secretary of the Commission and made a record of all its proceedings, which he has filed with the archives of the Board.

During their brief stay in Japan the members of the Commission were entertained by leading medical men of the country. They also met a number of prominent Japanese and foreign residents at a dinner given by Dr. Teusler, of the International Hospital, and later were entertained at luncheon by Count (now Marquis) Okuma.

Upon their arrival in China, the Commission

was welcomed by the American Minister, Dr. Paul S. Reinsch, and his associates of the American Legation, who in manifold ways aided the members in their work. At Peking they were entertained at luncheon by the Minister of Foreign Affairs, and through his courtesy and that of Dr. Reinsch they had the honor of an interview with the late President of the Chinese Republic, Yuan Shih-k'ai. The members of the Commission were also given a dinner by a large company of Chinese physicians, who expressed great satisfaction with the plans of the Rockefeller Foundation to introduce and to teach modern medicine in China and promised their cordial support.

The limits of this report forbid mention of many institutions and individuals who welcomed and furthered the work of the Commission. The faculty of the Union Medical College, Peking, coöperated with them wholeheartedly, the representatives of the several Christian Missionary Societies welcomed them warmly, and throughout their extended journey they found that the spirit of friendliness and helpfulness had gone before them. In Hankow they were entertained by the University Club of that city, of which organization their associate, Mr. Roger S. Greene, was the first President; in Changsha by the Military Governor, the chief executive of the city, the members of the Yale Mission and by a large

company of Hunanese gentry; at Shanghai by St. John's University, the Saturday Club, the University Club, the Kiangsu Educational Association (Chinese), the East China Missionary Educational Association, and by the executive secretaries of the several missionary organizations which have their headquarters in Shanghai; at Nanking by President Bowen and his associates of the Nanking University. At all places visited the representatives of missions, American and English, assisted the Commission in its work

This extended journey, with its opportunity for studying medical and other educational institutions and agencies in China, served the important purpose of giving the Director and three of his associates on the China Medical Board a first-hand contact with the people, cities and institutions of China. The Board is deeply indebted to Doctor Welch and Doctor Flexner for their services and to the Johns Hopkins University and the Rockefeller Institute for Medical Research for giving them leave of absence. Their presence on the Commission and the China Medical Board establishes the movement in the confidence of the medical profession throughout the world.

The Commission did not return to New York until January, 1916. Its specific recommendations, therefore, were not presented to the Board during the year covered by this

report. One or two important general recommendations should, however, appear in this statement.

SHANGHAI

While the members of the Commission were in Shanghai and Nanking, they consulted with Bishop Graves and Acting President Walker, of St. John's University; with Dr. Houghton and his associates of the Harvard Medical School in China, and with President Bowen and his associates of Nanking University. Under date of November 5, 1915, the following communication was received from Dr. Beebe, Secretary of the China Medical Missionary Association:

"5 Quinsan Gardens, Shanghai,
"November 5, 1915.

"Dear Dr. Buttrick:

"At a meeting of representatives, regularly appointed, of St. John's University, University of Pennsylvania Medical School, University of Nanking and the Harvard Medical School of China, the accompanying resolution was passed unanimously and I was instructed to bring the same to your attention.

'Very truly yours,
(Signed) "ROBERT C. BEEBE."

"Inasmuch as the China Medical Board of the Rockefeller Foundation has in view the establishment of a medical school in Shanghai which shall work in cordial and sympathetic coöperation with missionary societies, and in which it is desired to merge existing medical schools, the representatives of St. John's University and Pennsylvania Medical School of the University of Nanking, and of the Harvard Medical School of China, in a joint meeting, held in Shanghai, Thursday, November 4, 1915, extend a cordial invitation to the China Medical Board

to establish in Shanghai a Medical School which shall be conducted by a board of trustees upon which would be represented the governing bodies of the coöperating schools."

After consultation with his associates, the Director sent the following reply to Dr. Beebe's letter:

"Shanghai, November 7, 1915.

"Dear Dr. Beebe:

"Thank you for your letter of November 5th covering the resolution passed by the representatives of St. John's University, the University of Pennsylvania Medical School, the University of Nanking and the Harvard Medical School of China. This resolution will be presented to the China Medical Board at its meeting, which should be held the latter part of January, 1916, and you will of course be promptly advised of any action that the Board may take at that time relating to the matter.

"In the meantime, I might add that our Commission feels gratified that these organizations have, through this voluntary action, manifested their sympathetic interest in the larger scheme which we have in mind for the promotion of higher medical education in China.

"Thanking you and your associates for your manifold courtesies during our stay in Shanghai, I am

"Cordially yours,
(Signed) "WALLACE BUTTRICK."

At a meeting of the China Medical Board, held April 6, 1916, it was voted to establish a medical college in Shanghai, and a committee to select trustees and secure a charter for the college has been appointed.

CHANGSHA

Acting on the recommendation of the Commission of 1914, the Board has contributed

$16,200 a year for five years to the Hunan-Yale Medical School at Changsha. The Commission of 1915 spent two days at Changsha and were much pleased with the progress that has been made in organizing the medical school as well as with the remarkable evidences of public-spirited coöperation on the part of the gentry of the province. The new site is a most desirable one, and the hospital promises to be one of the best in China. Dr. Welch laid the corner-stone of the new hospital while the Commission were in the city.

THE AIDING OF MISSIONARY HOSPITALS

In his letter to the Missionary Societies, the Chairman of the China Medical Board stated that in carrying out its comprehensive plans the Board may find it desirable "to assist Missionary Societies to strengthen their medical schools and hospitals by providing equipment and other facilities and by making annual grants, as may be found expedient, for the support of physicians and nurses selected by the respective Missionary Boards, subject only to the Foundation's approval of the professional qualifications of the appointees."

In carrying out this proposal, the China Medical Board has decided that it should first aid those hospitals which are easily accessible from the leading medical schools to be developed at Peking and in the lower Yangtze Valley.

This means hospitals in cities which can be conveniently reached by rail or water transportation within perhaps one or two days' journey from the cities where the schools are located. In pursuance of this general program, a few appropriations were made before the departure of the Director for China in August, 1915. Following are the hospitals thus aided:

NORTH CHINA

CHIHLI PROVINCE.

Shuntehfu—*Northern Presbyterian Board Hospital*—

May 25, 1915, appropriation for:

1 doctor, salary and expenses	$2,400	
2 nurses, salaries and expenses	2,200	
1 residence	4,000	
		$8,600

Paotingfu—*Northern Presbyterian Board Hospital*—

May 25, 1915, appropriation for:

1 doctor, salary and expenses	$2,400	
2 nurses, salaries and expenses	2,200	
1 residence	4,000	
		$8,600

Peking—*Northern Methodist Board Hospital*—

July 10, 1915, appropriation for:

1 doctor (general practitioner)	$2,400	
1 doctor (specialist in eye, ear and throat)	2,400	
		$4,800

Changli—*Northern Methodist Board Hospital*—

July 10, 1915, appropriation for:

1 additional physician	$2,400	
1 additional foreign nurse	1,100	
		$3,500

SHANTUNG PROVINCE.

Taianfu—*Northern Methodist Board Hospital*—

July 10, 1915, appropriation for:

1 additional physician	$2,400	
1 additional foreign nurse	1,100	
		$3,500

Another grant was made to the *American Board of Commissioners for Foreign Missions*, April 15, 1915, for:

North China (specific hospital not stated) as follows:

1 married doctor (man) salary and expenses	$2,182	
1 unmarried woman doctor, salary and expenses	1,054	
		$3,236

CENTRAL CHINA

KIANGSU PROVINCE.

Soochow—*Southern Presbyterian Board Hospital*—

July 10, 1915, appropriation for:

1 doctor, salary and expenses	$1,200	
Outfit and travel for doctor	425	
1 additional foreign nurse, salary	1,200	
Outfit and travel for nurse	425	
		$3,250

Nantungchow—*Foreign Christian Missionary Society Hospital*—

May 25, 1915, appropriation for:

1 nurse, salary and expenses	$1,005	
Outfit	100	
		$1,105

ANHWEI PROVINCE.

Luchowfu—*Foreign Christian Missionary Society Hospital*—

May 25, 1915, appropriation for:

1 doctor, salary and expenses	$2,190	
Outfit for doctor	200	
1 nurse, salary and expenses	1,005	
Outfit for nurse	100	
		$3,495

CHEKIANG PROVINCE.

Kashing—*Southern Presbyterian Board Hospital*—

July 10, 1915, appropriation for:

1 additional foreign nurse, salary	$1,200	
Outfit and travel to field for nurse	425	
		$1,625

FELLOWSHIPS AND SCHOLARSHIPS

The Board has created a limited number of fellowships in the United States for graduates of Chinese Medical Colleges, and a limited number of scholarships for Chinese graduate nurses and pharmacists.

Under these fellowships and scholarships the following appointments have been made:

Fellowships for Chinese Graduates in Medicine:

Tsing-meu Li, M.D., of the Hunan-Yale Medical School, Changsha, Hunan.

Tsing-liang Li, M.D., of the Hunan-Yale Medical School, Changsha, Hunan.

E. T. Hsieh, M.D., Graduate Union Medical College, Peking, Chihli.

Sze-jen Shen, M.D., Graduate Harvard Medical School of China, Shanghai, Kiangsu.

Mary Stone, M.D. (Chinese), of the Methodist Hospital at Kiukiang, Kiangsi.

Tsung-hsien Tsen, M.D., Graduate Harvard Medical School of China, Shanghai, Kiangsu.

Ching Kiang (Peter Kiang), M.D., of the University of Pennsylvania, Philadelphia, Pa.

Scholarships for Chinese Nurses:

Lillian Wu, Women's Methodist Hospital (under the direction of Dr. Mary Stone), Kiukiang, Kiangsi.

Mildred Wu, Yale Mission Hospital, Changsha, Hunan.

Scholarships for Chinese Pharmacists—($600 each, with $400 for travel to the United States and $300 for the return journey): Tsung-yi Ch'eng, Yin-dah Hsi, Kyan-tsing How (June, 1916).

The Board has granted fellowships to a number of medical missionaries in order that they may pursue graduate work while on furlough. Dr. Adrian Stevenson Taylor, of the Southern Baptist Hospital at Yangchow, and Dr. Frederick E.. Dilley, of the Union Medical College at Peking, received fellowships. Smaller grants which, without special authority, cannot exceed $600, have been made from a fund of $10,000

placed at the disposal of the Director, to the following persons:

J. Oscar Thomson, M.D., of the Canton Hospital, Canton, Kwangtung.

Allen C. Hutcheson, M.D., of the Southern Presbyterian Hospital in Kashing, Chekiang.

John Todd Anderson, M.D., of the Foreign Mission Board of the Southern Baptist Convention Mission Hospital at Chengchow, Honan.

CONCLUSION

Before closing this report, it may be well to refer to a few other matters, although they do not actually fall within the period under review. On April 6, 1916, the China Medical Board voted to support the Red Cross Hospital in Shanghai for two years, under the direction of Dr. Henry S. Houghton, for over three years head of the Harvard Medical School of China, which on June 30, 1916, terminated its useful career of the past five years. On April 6, 1916, the China Medical Board appointed Mr. Charles A. Coolidge, of Boston, Consulting Architect, and commissioned him to proceed to China, where, with the assistance of the Resident-Director, he is to study the conditions in Peking and Shanghai. In June, 1916, Dr. Franklin C. McLean, a graduate of the University of Chicago and of the Rush Medical College, and for the past year and a half Assistant Physician at the hospital of the Rockefeller Institute for

Medical Research, was unanimously selected as Professor of Internal Medicine and head of the Union Medical College in Peking. Dr. McLean and Mr. Coolidge sailed on July 13 from Vancouver for Yokohama, where they were met by Mr. Greene.

In conclusion, the Director wishes to record his appreciation of the friendly coöperation of the several Missionary Societies with the Board in their efforts to develop the science and practice of medicine in China.

WALLACE BUTTRICK,
Director.

WAR RELIEF COMMISSION

Report of the Chairman

WAR RELIEF COMMISSION

Report of the Chairman

To the President of the Rockefeller Foundation:

Sir:

I have the honor to submit herewith my report as Chairman of the War Relief Commission for the year 1915.

Respectfully yours,

WICKLIFFE ROSE,

Chairman.

WAR RELIEF COMMISSION

MEMBERS

Chairman

WICKLIFFE ROSE

Secretary

JEROME DAVIS GREENE

Ernest P. Bicknell
Henry James

Eliot Wadsworth
Jeremiah Smith, Jr.

Frederic Collin Walcott

WAR RELIEF COMMISSION

ACTIVITIES IN 1914

In the first annual report of the Rockefeller Foundation appears an account of the activities of the Foundation during 1914 in the relief of suffering caused by the war. These activities are briefly summarized below in order to promote a clearer understanding of the work of the Foundation throughout the past year.

1. The Foundation, coöperating with the Commission for Relief in Belgium, provided the greater part of five cargoes of food and other supplies for Belgian relief. These supplies cost approximately $1,000,000.

2. An appropriation at the rate of $20,000 a year was made to provide stipends for certain professors in Belgian universities who were refugees in England.

3. Dr. Alexis Carrel, a member of the Rockefeller Institute for Medical Research, whose services had been accepted by the Medical Corps of the French army, was provided with funds enabling him to respond to urgent calls for anti-meningitis serum and anti-dysentery serum.

4. The American Red Cross was given $10,000 to meet the expenses of sending a detachment of physicians and nurses to Europe.

5. A War Relief Commission was organized and sent to Europe to inquire generally into the need of relief measures in all the countries affected by the war. In November and December, 1914, this Commission made a survey of the organization and working of relief in Belgium and Holland and transmitted to the Foundation a full report of its observations and recommendations.

During 1915, the field of war relief work widened rapidly. One or more of the members of

the War Relief Commission visited each of the countries engaged in the war. They reported fully upon the conditions observed and made numerous recommendations to the Foundation regarding possible relief activities. Apart from the reports received from the Commission, the Foundation was informed by numerous individuals and war relief agencies of conditions of widespread and appalling distress among refugees in various countries of Europe and Asia. The conditions existing in the different areas affected and the aid given by the Foundation are here described.[1] For convenience, the account of the work in each country is given separately.

NORTHERN FRANCE

To the summary of the war relief activities of the Foundation during 1914 must be appended an account of a tour of inspection made by the War Relief Commission in the latter part of December, 1914, in that portion of French territory which lay between the battle front and the frontier of Belgium and was in the control of the German military authorities. The inquiry began on December 17th, at Valenciennes. From there the tour extended northeast to Douai, south as far as St. Quentin, east and southeast to Rethel, then northeast to Sedan, then north-

[1] A statement of expenditures made by the Rockefeller Foundation for war relief work during 1914 and 1915 will be found in the Appendix, page 354.

west and north to Fumay and Givet. From Givet the Commission returned to Brussels via Philipville and Charleroi on December 21st.

As a result of this inspection, the members of the Commission were strongly impressed with the importance of providing early relief for the people in this French territory, cut off as they were from their central government, from their banking connections, their markets, and their chief source of supplies. Upon their return to Brussels the Commission took the matter up with the Belgian National Committee and with the German authorities.

The National Committee of Belgium (Comité de Secours et d'Alimentation de Belgique) is an organization of Belgians, representing all political parties and the leaders of Belgian business and finance. The Committee apportions to the provinces of Belgium the supplies which are procured and transported by the Commission for Relief in Belgium and supervises the distribution of the supplies to the people within the communes.

The National Committee hesitated to assume jurisdiction for relief purposes over the strip of French territory occupied by the German army, but after some discussion with the members of the War Relief Commission the Committee agreed to forward relief supplies through their regularly organized machinery, treating the territory exactly as though it were a part of

Belgium. The Committee announced, however, that their action did not establish a precedent as to any other section of France, and that this strip was taken in solely because it was isolated from France by the destruction of all means of transportation from the south. Under the arrangement agreed upon, food was sent into the French towns from the Belgian provincial headquarters at Namur.

THE RELIEF OF BELGIAN REFUGEES IN HOLLAND

Following the occupation of Belgium by the German forces, probably 800,000 Belgians crossed the border and sought refuge in Holland. The people fled in panic, carrying few of their belongings. A majority seemed to have saved nothing beyond the clothing they wore. The Queen of Holland issued a proclamation welcoming the refugees and promising shelter and protection to all.

It quickly became evident that private resources could not meet the situation thus suddenly created. Relief committees were organized in many cities and towns, contributions were called for, and systematic efforts to feed and shelter those who could not be taken into private houses were promptly set on foot. In a few weeks it became necessary to relieve many households of the heavy burden of expense and the serious inconvenience which they had generously assumed. Thus more and more of the

refugees were gathered into large buildings or camps, where they were provided with beds and food by local committees. A national committee was organized, with headquarters in Amsterdam, and this committee undertook to do something toward raising relief funds and creating a supply of clothing from which the meager resources of the local committees might in some measure be supplemented. All these efforts fell far short of meeting the situation, especially as a large and increasing stream of refugees flowed from private houses into the shelters provided by the committees.

Eventually the Netherlands government assumed the greater part of the burden. It began by making a small per capita allowance for the feeding of refugees, but quickly followed this by the adoption of a policy of creating large concentration camps, into which it caused to be transferred the refugees from the small camps maintained by local relief committees. The government also assumed the expense of administering the camps and of feeding their occupants.

Many refugees later returned to Belgium, others went to England and a few were able to assume their own support. By January 1, 1915, the number of Belgian refugees in Holland had fallen to between 250,000 and 400,000.

The cost to the Netherlands government of this great charity was so large as to necessitate

the issue of bonds as a means of obtaining the money necessary to support the work of relief. At the concentration camps, large private and public buildings were occupied, when available, and elsewhere temporary wooden barracks were constructed, provided with simple equipment for meeting the primary human needs. A Royal Commission was created to represent the government in the direction and supervision of the camps.

In the latter part of November and early December, members of the War Relief Commission of the Rockefeller Foundation inspected several of the refugee camps in Holland and conferred with officers of a number of local relief committees. The enforced idleness of the inmates deeply impressed the Commission. It was evident that no means of providing wholesome employment had been devised, and, indeed, the difficulties in the way of employment were serious. Holland was suffering a business depression as an immediate effect of the war, and was struggling with a heavy problem of unemployment among her own people. At the same time, it was obvious that months of idleness in the enervating atmosphere of the camps could not but have a deteriorating influence upon the refugees.

In December, the Commission appointed Mr. Charles Jenkinson as its special representative in Holland, and upon his arrival toward the end

of the month he was set to work investigating conditions in the refugee camps. The following facts were brought out by this investigation:

1. The Netherlands Government was prepared to provide shelter and food for the refugees but did not feel that it could do more.

2. Refugees were suffering intensely for lack of warm clothing, a need which the local relief committees were trying vainly to meet. Many cases of disease due to exposure were reported, and mortality was abnormally high.

3. Enforced, universal idleness was threatening to undermine the energy and character of the refugees.

Before Mr. Jenkinson's investigation, the War Relief Commission were informed by officers at the Rotterdam office of the Commission for Relief in Belgium that large shipments of clothes (chiefly second-hand) intended for the Belgians were arriving at Rotterdam. As the Commission for Relief in Belgium were not prepared to handle clothing, these shipments were going into Belgium in an unsystematic way, and were, in fact, accumulating rapidly in a temporary warehouse in Rotterdam. It was apparent also that a fair proportion of the clothing should be distributed to the refugees in Holland. An inspection of this contributed clothing, however, revealed very little underclothing.

After considering the conditions disclosed by these investigations, the War Relief Commission undertook to classify, pack and re-ship the clothing contributed from all parts of the world,

apportioning it properly between Belgium and Holland; and also, as an experiment, to provide employment for some of the idle refugees by giving them an opportunity to make clothing for themselves and their compatriots.

DISTRIBUTION OF CLOTHING

By arrangement with the Rotterdam office of the Commission for Relief in Belgium, Mr. Jenkinson was appointed to take charge of all contributed clothing. The clothing which was coming in had been sent from the United States, Canada and England. It was of good quality and much of it absolutely new. Only a small portion of it, however, was packed, classified and marked in such a manner as to make it possible for those in charge of the distribution to know what was contained in any given case. To classify and distribute this clothing the War Relief Commission were given free use of a small warehouse in Rotterdam. When this warehouse was opened it was determined that as far as possible the labor should be performed by Belgian men and women, refugees from Belgium, who might in that way be enabled to support themselves. Men to handle the cases and women required for sorting and packing the clothing were quickly secured from among refugees in the neighborhood. Besides a small compensation given these Belgians for their work, they were also allowed, each Saturday

night, to take home one large piece of clothing, according to their requirements. Accurate records were kept of the articles taken by each employee and nobody was allowed to take the same article of apparel twice.

The warehouse was large enough to allow from 150 to 300 cases of clothing to be made ready for shipment each working day. Early in January, however, it was decided to hasten the work of assorting and distributing the clothing in order that the Belgians might get the benefit of the heavy clothing while the weather was still cold. Another warehouse was therefore secured, with a capacity of from 300 to 550 cases of clothing each day, and the force of employees was materially increased. During the life of this organization a number of people varying from 50 to 100 were given employment for periods ranging from one to five months each.

Following is a summarized statement of the distribution of clothing made by the Rotterdam organization:

Country	Number of Articles of Clothing
Belgium	1,605,142
Holland	364,021
Northern France	50,612
Total	2,019,775

In addition to the clothing, 357 cases of food

and 1,483 cases of toys and miscellaneous articles packed with the clothing were also handled.

On April 20, 1915, work having fallen off, Mr. Jenkinson closed the larger of the two warehouses used for the sorting and re-packing of clothing. On May 12th, the Commission for Relief in Belgium stated that they knew of no further shipments of clothing consigned to Rotterdam, but that if additional shipments were received they could be handled efficiently in Brussels. The clothing department was therefore closed.

The War Relief Commission, in attempting to provide work for some of the refugees, asked the Committee in charge of a concentration camp in Rotterdam to coöperate in establishing a sewing department. All the women in the camp were called together and asked as to their ability to use sewing machines, to sew by hand and to knit. They were also asked whether they would be willing to help manufacture underwear, not for their own use alone, but for the use of other refugees. Their response was so prompt and hearty that the Commission was encouraged to go forward with the experiment.

A professional dressmaker from Brussels, herself a refugee, was engaged as supervisor of the first class, which was also under the supervision of a committee of Dutch ladies. Light, airy rooms were set aside for the sewing. Fifty

women entered the class. Material was provided and twelve sewing machines were installed, together with other necessary equipment, such as scissors, needles, thread, etc. A supply of woolen yarn was provided for women and girls who could not sew, but who could knit stockings. From the first the experiment was successful. The manager of the camp was enthusiastic over the better spirit which appeared among the women. Steadily, but with no great rapidity, new, warm garments accumulated. Careful accounting was made for all goods provided. The scraps from cutting were saved and groups of young girls and children were set to piecing quilts from them. This class, in one week, produced 459 articles of clothing, two-thirds of which were drawers and undershirts for men and one-third assorted articles for women and children.

When the Rotterdam experiment was in full operation, the Chairman of the Commission, in company with the American Minister at the Hague, called upon the Foreign Minister, and explained fully the industrial venture established in the camp in Rotterdam. The Minister was much interested and asked whether the Commission would be willing to extend their operations into other camps. This the Commission agreed to do.

As the winter was far advanced and the need for underwear extreme, it had seemed unwise to

rely solely upon the supply to be manufactured in the camps and the small quantities included in the contributed shipments of clothing. The Commission accordingly purchased, on bids from local manufacturers, about 10,000 suits of underwear for distribution in the various camps where extreme instances of individual need were reported.

Under the plan of the War Relief Commission, approved by the Netherlands Government, workrooms were provided by the different communities or camps. The Commission furnished supervisors, sewing machines, materials and compensation for the workers. In accordance with this arrangement the work was rapidly extended to all the eleven provinces of Holland. Thirty-five sewing classes, in as many different places, were established within a few months.

Approximately 4,000 women worked in these sewing and knitting classes. For each group of 100 workers a supervisor was employed, who received a bonus running from $2.80 to $3.60 per week. A bonus of about forty cents a week was paid to each worker. In order to earn this bonus the workers were required to work six hours a day six days a week. During the five months of operation the classes produced approximately 100,700 pieces of underwear, 28,000 pairs of socks and about 26,000 miscellaneous garments.

In establishing sewing and knitting classes for

the Belgian refugees in Holland, the Commission kept constantly in mind the fact that nothing should be done to encourage the refugees to stay in Holland later than the earliest date on which it was practicable for them to return to Belgium. Unquestionably the work could have been greatly extended. Twenty thousand sewing and knitting workers could have been secured as easily as the 4,000 who were organized into classes. Shoe shops and clothing shops could have been established in the different camps to give employment to men. The Commission felt, however, that in the very success of the work lay its danger. Its continuance would have encouraged the Belgians to stay away from their country. With this belief in mind the Commission ordered the work to be brought to a close on June 5th. When the Commission announced in April its intention of bringing the work to a close, the Netherlands Government arranged to take over the classes as part of its programme of relief. Upon the announcement of the intention of the Government, every attempt was made to facilitate the transfer. Purchasing and distributing arrangements had already been greatly simplified. Efforts were made to provide a greater variety of materials. The Commission purchased outright the 498 sewing machines which were held under a lease and lent them to the Dutch Government for the continuance of the work.

The total expenditures on account of relief work in Holland were $82,370.07, classified as follows:

Administration	$9,506.00
Distribution of Clothing	9,155.15
Sewing and knitting classes	62,617.43
Miscellaneous	1,091.49
	$82,370.07

Of this amount, 49 per cent was spent for cloth and wool, and 20 per cent was spent for wages and bonuses.

The work of the War Relief Commission in Holland was greatly simplified by the coöperation of the Government. Both the Government Committee for the Relief of Belgians and the National Committee for the Relief of Belgians placed the facilities of their organizations at the disposal of the Rockefeller Foundation. Baron E. Van Tuyll Van Serooskerken was appointed as the official delegate and representative of the Government and the two committees to assist the Foundation in its work.

CLOTHING FOR THE DESTITUTE IN BELGIUM AND NORTHERN FRANCE

In the latter part of November, 1915, the Commission for Relief in Belgium announced that the problem of clothing the destitute people in Belgium and Northern France was rapidly becoming acute. Reports from their relief

depots indicated that the stocks of clothing in Belgium would probably be exhausted by the end of the year, while in Northern France the need was even more urgent, as practically no clothing had been distributed there. The Commission estimated that $4,000,000 worth of clothing would be required to meet the needs of the destitute in the two areas. The Rockefeller Foundation was asked to make a contribution toward the amount required. After carefully considering the information submitted in support of the application, the Executive Committee, on December 3d, appropriated $200,000 to the Commission for Relief in Belgium "for the purchase of material for clothing, the same to be imported by the Commission into Belgium and there manufactured by Belgian labor." While the members of the Executive Committee felt amply justified by the known facts in making this appropriation, they believed that any further aid to Belgium should be based upon a thorough study of the situation by a representative of the Foundation. Accordingly, on December 15, 1915, they appointed to act for them Mr. Frederic C. Walcott, a member of the firm of William P. Bonbright & Company, Bankers, of New York. Mr. Walcott was in France at the time of his appointment and undertook at once to make the desired investigation. It had not been completed at the end of the year.

STIPENDS FOR BELGIAN PROFESSORS

The quarterly grant of $5,000 made by the Foundation to provide stipends for Belgian professors of scientific subjects who are refugees in England was continued throughout 1915.

POLAND

At a series of conferences held in Berlin in January, 1915, the conditions existing in that part of Russian Poland held by the German and Austrian armies of occupation were discussed with members of the War Relief Commission by German Government officials and others.

Following the conferences, the War Relief Commission traversed the territory occupied by the German and Austro-Hungarian armies. Throughout the territory examined the Commission found all industries stopped and the people idle. Many of the towns had no oil for lighting and no coal for heating or cooking. In many places the people were living upon potatoes or upon small quantities of supplies given to them by the soldiers. It was estimated that about three millions of people in the occupied territory were facing famine. Everywhere the distress seemed more extreme than it had been at any time in Belgium and with far less resisting power on the part of the people.

When the Commission returned to Berlin, and after discussions with representatives of the German and Austro-Hungarian governments

and the Spanish and American Ambassadors, an agreement covering the administration of relief in Poland was tentatively drafted. Following is a brief outline of the principal features of the plan:

1. It was proposed to create three groups of agencies:

a. Committees to collect money with which to purchase and transport food.

b. An International Commission for Relief in Poland, to serve as a neutral agency to purchase and distribute food supplies.

c. Local relief committees in Polish cities and villages to distribute food to individuals and to establish a system of payment for food by all having sufficient means.

2. The German and Austro-Hungarian governments were expected to agree:

a. To requisition no food within the territory covered by the relief operations excepting in that actually occupied by their troops.

b. To requisition no money in any part of the occupied territory.

c. To furnish agents of the International Commission for Relief in Poland with passes and facilities enabling them to supervise the transportation and distribution of supplies and to satisfy themselves of the observance of the agreements regarding the requisition of food and money.

d. To carry free of charge the personnel of the Commission, their baggage, and all supplies to be distributed.

e. To recognize only the Commission for Relief in Poland for the purpose of delivering supplies in Poland.

f. To accept as final the decision of the Chairman of the Commission upon questions arising in connection with the work of the Commission.

g. To coöperate with Poland in devising a method by

which the resources and credit of the Polish people might be made available toward financing the work of relief.

3. The War Relief Commission proposed, in the event of the adoption of the foregoing guarantees and plan of organization:

a. To supply the administrative expenses of the International Commission.

b. To endeavor to establish a channel through which food supplies might be imported from neutral countries under the governmental guarantees described above.

c. To make such contributions to the relief funds as might be warranted by:

1. The coöperation and efficiency of the governments and committees mentioned in the agreement.

2. The needs of the people in Poland.

3. The means at the command of the War Relief Commission.

This proposed agreement was considered by the Trustees of the Foundation at a meeting held March 2, 1915. It was decided that the Foundation could not assume the grave responsibility of forming and conducting an agency for relief in Poland, but if a satisfactory neutral agency were formed the Foundation would contribute $10,000 a month for twelve months for the administrative expenses of such an agency.

Some weeks later, the Commission for Relief in Poland was organized substantially in accordance with the plan which has been outlined. A number of attempts were made by officials of the Commission to purchase grain for use in Poland. Grain could have been purchased in

Russia, but it was impossible to arrange for its transport. For one reason and another vigorous efforts made in various other countries to secure an adequate supply of grain suitable for use by the Poles proved unsuccessful. Finally, in May, the members of the War Relief Commission were informed that the German Government had completed another inventory of her food supplies and had found that there was enough food in the country to support the population until the following November. This assurance had led the Government to the conclusion that enough food could be spared from the German supply to support German Poland until the new harvest, in connection with such supplies as Poland herself might obtain. Following this announcement the Commission for Relief in Poland withdrew from any further attempt at that time to be of assistance in German Poland. A few weeks later the negotiations between the Austro-Hungarian Committee and the Commission for Relief in Poland were likewise discontinued.

EAST OF THE FIGHTING LINE IN POLAND

In examining into the general conditions existing in Eastern Poland, the War Relief Commission found that not fewer than 200,000 destitute refugees had fled into Warsaw and that proportionate numbers had crowded into many other towns and villages. The widespread distribution and general character of the exodus

were indicated by the fact that the Central Citizens' Committee, the largest relief agency operating in Warsaw and the surrounding territory, had found it necessary to establish subsidiary committees in over five hundred different communities.

The War Relief Commission reported that it would make only for waste and confusion to create new relief agencies for Eastern Poland. The Central Citizens' Committee and the organization in charge of relief for the Jews were well organized and fully accepted by all concerned. The Commission confined itself, therefore, to a report upon the relief agencies operating in the territory and upon the character and extent of the need.

The information contained in this report was transmitted by the Foundation to the principal relief agencies in this country which were concerned in sending aid to Eastern Poland and Galicia. With this knowledge at their disposal the relief committees were aided in securing considerable sums of money from the American public for transmission to the proper organizations in Russia and Eastern Poland.

SERBIA

In February, 1915, members of the War Relief Commission visited Serbia to inquire into the destitution reported in that country. During the progress of the war between Serbia and Aus-

tria-Hungary up to that time, the military forces of the latter had twice invaded northwestern Serbia and both times had been withdrawn across the border. These successive invasions had wasted the land traversed by the contending armies, while the population had fled to the southward and found refuge among the towns and villages beyond the invaded territory.

The members of the Commission learned that since the second withdrawal of the Austro-Hungarian forces many of the Serbians had returned to their destroyed homes, and were reported to be suffering from want of shelter, clothing and food. The refugees who remained in the scattered communities to which they had fled, when driven southward, had some sort of shelter, but in other particulars were in as much want as their neighbors who had returned to their homes.

The difficulties of travel in Serbia were such that it would have required several weeks to enable the War Relief Commission to make a comprehensive first-hand investigation of the actual living conditions of the people. The aspect and conditions of places which the members of the Commission did see induced them to accept statements that were made that much need existed among many thousands of Serbians —probably 300,000 or more. Indeed such opportunities as the Commission had to observe conditions prepared them to believe that the des-

titution in Serbia was more extreme than that which they had found elsewhere.

The Commission learned that the plight of the people was aggravated and complicated by the prevalence of epidemic disease among them, which they were apparently quite unable to control. At the time of the Commission's visit, typhus, typhoid and recurrent fever were epidemic in Serbia, and smallpox and scarlet fever were present in some communities. Cholera was expected with the warmer weather of spring. It was evident that the three epidemic diseases were distributed throughout the country. All of them were found in the communities visited by the Commission and in all the larger hospitals. In mortality, typhus was far in the lead.

It was impossible to obtain comprehensive or reliable statistics of the extent or virulence of the epidemics. One report indicated that in the military hospitals alone there were 33,000 sick patients, of whom 11,000 were suffering from epidemic diseases. This report did not include the hospitals for non-combatants, the sick in homes or the sick among the Austrian prisoners. Estimates based on inadequate information placed the total number of typhus cases in Serbia at 25,000 to 30,000, and while the figures could not be regarded as other than largely conjectural, it was feared that they could not be far in excess of the truth. Up to March, no serious effort had been made to check the

epidemic with the exception of the establishment of an isolation hospital at Skopje.

Perhaps nothing more strikingly illustrated the universality of the typhus infection and the difficulty of escaping it than the inroads which it had made upon doctors and nurses. Normally, Serbia has had not more than 400 physicians, a very small number for a population of four and a half millions. During January and February 60 of these physicians died of typhus and during the stay in Serbia of the members of the War Relief Commission they were told daily of the death of others.

Three medical groups had been sent to Serbia from the United States by the American Red Cross. Two of the groups were combined, with a total personnel of six doctors and twelve nurses, and were placed in charge of a hospital in the town of Djevdjeli containing 1,000 patients. Three of the doctors and nine of the nurses contracted typhus. One doctor had died of the disease when the Commission was in Serbia and several nurses were very ill.

A British Red Cross medical group of eighteen members was stationed at Skopje. Three died of typhus and all but three of the others were ill with the disease when the Commission was in that city.

This great mortality among the already inadequate force of doctors was rapidly reducing the ability of Serbia to grapple with the epidemic

herself. More than half of the total number of doctors were with the army at the front, or in the military hospitals. Trained nurses, as they are known elsewhere, were unknown in Serbia, except as a few had been brought in by the medical groups from other countries.

The conditions which have been described indicated to the members of the Commission that widespread as was the destitution reported to them, the greater and more urgent problem was that of controlling the epidemics. In fact, the problems of destitution and health were inextricably interwoven, and it was evident that no general measures for the relief of destitution could be effected until health conditions were radically bettered. On the other hand, a reduction in the amount of sickness and death would inevitably lighten the burden of present and future destitution.

Consideration of these facts, daily impressed more deeply upon the minds of the members of the Commission, led them to the conclusion that any help which the Foundation might be disposed to give in Serbia should first be devoted to the direction and support of a strong, systematic fight upon the epidemics which were threatening to envelop the entire nation.

Accordingly, on March 4th, the Commission sent a cablegram to the Foundation summarizing the facts regarding destitution and disease in Serbia, and stating that an expert organizer

of sanitary relief could accomplish important results if adequately supported, but that he would have to import assistants and supplies for a large work. The Commission stated further that sanitary work would have to include both soldiers and civilians, and requested to be advised on what scale, if at all, the Foundation was prepared to engage in relief under the conditions described.

Recognizing the menace to the health, not only of the Serbian people, but of the whole world, presented by this terrible condition in Serbia, the Executive Committee of the Foundation instructed Mr. Wickliffe Rose to confer with the officers of the American Red Cross in Washington and to ask whether the Red Cross would be willing, if financially aided by the Foundation, to send a Sanitary Commission to Serbia. This inquiry was considered by the Executive Committee of the American Red Cross at a special meeting held on March 6th. The Committee decided to appropriate $25,000 for work in Serbia and agreed to disburse such funds as the Rockefeller Foundation or any other agency might donate. Inquiry by the Red Cross brought a cable from the Serbian Government inviting the presence of an American Sanitary Commission which, the Red Cross was assured, would be fully empowered to institute vigorous measures to cope with the epidemic.

The Executive Committee of the Foundation

thereupon appropriated $25,000 for expenditure under the direction of the American Red Cross toward the support of the proposed Sanitary Commission. Immediately following the decision by the Foundation and the American Red Cross to send a Sanitary Commission to Serbia, the work of organizing the Commission was energetically prosecuted. After careful inquiry as to the availability of a number of men whose names had been suggested for the work, the American Red Cross appointed Dr. Richard P. Strong, Director of the Harvard University School of Tropical Medicine, as Director of the Sanitary Commission. Dr. Strong started abroad on March 17th, ahead of his American associates, taking with him an initial supply of 10,000 anti-cholera treatments. On April 3rd nine members of the Sanitary Commission left this country bound for Serbia.

On May 15th, a large party of physicians and skilled sanitarians, some of whom had worked under Surgeon General Gorgas in the Canal Zone, left for Serbia to join the Sanitary Commission. Others followed from time to time as Dr. Strong cabled for further assistance. There were forty-three members of the Commission in all.

Upon learning that the Rockefeller Foundation and American Red Cross had decided to send a Sanitary Commission to Serbia, the members of the War Relief Commission pro-

ceeded to London. They were informed there that thirty British physicians had been sent by the army to Serbia and had already reached their destination. In his visit to France, Mr. James, of the War Relief Commission, had learned that the French were planning to send 100 physicians.

It was obvious to the War Relief Commission, first, that the help of all the countries furnishing aid would be none too great to cope with the Serbian situation; and, second, that unless a unified and coördinated effort were made by all concerned, the work would be inadequately done, and friction would be reasonably certain. The members of the War Relief Commission thereupon bent their energies toward bringing about a mutual understanding and agreement among the three Serbian sanitary expeditions. A number of conferences were accordingly held for the purpose of working out a plan for united effort in Serbia.

These conferences brought out the fact that five separate British agencies were at that time engaged in some form of relief work in Serbia, and that they were working entirely independently of each other. The effort of the Foundation and American Red Cross to establish a close coördination in the Serbian work led to the calling of a meeting of representatives of all the British societies. Mr. Bicknell, of the War Relief Commission, was present at this meeting

by invitation. After long discussion, it was proposed that an Executive Committee of three members be formed, consisting of one representative of the British group of societies working in Serbia, one representative of the French agencies in Serbia, and one representative of the American agencies. Mr. Bicknell accepted this arrangement on behalf of the Rockefeller Foundation and American Red Cross and announced that Dr. Richard P. Strong would be the American representative upon this executive committee.

Sir Ralph Paget, formerly British Minister to Serbia, was selected to represent the English societies on the Executive Committee and Dr. Jaubert was appointed as the French representative.

It was agreed that the committee should select its own chairman. It was also decided that Serbia should be divided into three sections, with each national group in charge of a section, but that the organization should be elastic so that changing conditions and emergencies might be met promptly, forces thrown into places where most needed, uniform methods and standards applied, and supplies equitably apportioned. Later a joint committee of English and Americans was formed in Paris to coöperate with the French authorities, and to help in buying and forwarding supplies to Serbia as required.

The agreement with the authorities controlling

the British and French medical units sent to Serbia, committing them to the principle of a central organization to direct the work in Serbia, was of the utmost importance. It gave marked impetus to Dr. Strong's efforts, upon his arrival in Serbia early in April, to secure for the various commissions absolute authority in sanitary matters throughout Serbia. With the aid and consent of the Serbian government and with the coöperation of the heads of the various Commissions, Dr. Strong succeeded in bringing about the organization of an International Serbian Sanitary Commission, consisting of the following persons:

OFFICERS:

President, H. R. H. The Crown Prince Alexander
Vice-President, Sir Ralph Paget
Medical Director, Dr. Richard P. Strong

MEMBERS:

The Chief Sanitary Officers of the Serbian Civil and Military Departments.
A representative from the Serbian Parliament.
The Chiefs of the British, French, Russian and American Sanitary Commissions.

The regulations decided upon by this Commission were immediately enforced through the Ministry of War and the Ministry of the Interior.

The following extracts from Dr. Strong's preliminary report describe the methods employed by the various medical units, working under the direction of the International Sanitary

Commission, to stamp out the epidemics which were ravaging Serbia.

"The country was divided, for sanitary purposes, into fourteen districts. To seven of these districts the French, British and Russian physicians were assigned and to the remaining seven the American physicians and sanitarians. A system for securing information regarding the occurrence of cases of typhus and other infectious diseases in each city and village throughout Serbia was established.

"House to house inspection for the finding of cases of typhus in the cities, with the removal of the patients to hospitals and wards devoted to the care of typhus cases, disinfection of such individuals, disinfection of the other inmates of houses in which cases of typhus had been discovered, as well as of their clothes, and finally disinfection of the houses themselves, were also systematically begun. Quarantine of individuals who had been in contact with typhus cases was undertaken after disinfection of their persons and clothing. In a number of such instances they were cared for in tents * * * where houses were not available as detention camps. In some instances the districts were so badly infected that it was necessary to evacuate them *en masse* and to destroy, by partially tearing down and by fire, the majority of the dwellings. Dispensaries were established in the different cities where the people were treated free of charge. These proved a great aid in the finding of infectious diseases.

"As typhus is conveyed from man to man commonly by vermin (the bite of the body louse), bathing and disinfection of very large numbers of people and immediate disinfection of their clothing in a short period of time was an important problem in combating the disease. For this purpose, sanitary trains consisting each of three converted railroad cars were fitted up. One car contained a huge boiler which supplied the steam for disinfection of the

clothing. In a second car fifteen shower baths were constructed. A third car was converted into a huge autoclave (disinfector), into which steam could be turned under atmospheric pressure. In this manner the vermin were immediately destroyed and the clothes thoroughly disinfected.

"Large tents were erected beside the railroad sidings on which the cars were placed. The people were marched by the thousands to these tents, their hair was clipped, and a limited number undressed themselves, carried their clothes to the disinfecting car and then passed to the car containing the shower baths. After a thorough scrubbing with soap and water they were sprayed with petroleum as an extra precaution for destroying the vermin. They then received their disinfected clothing. In many instances in which the clothing was very badly soiled fresh clothing was supplied.

"In the larger cities and in those situated away from the railway, disinfecting and bathing plants were established or constructed, and separate hours were arranged for bathing women and men in large numbers.

"In many towns the clothes were disinfected by baking them in ovens, either specially constructed for this purpose or those which had been built previously for the baking of bricks, or other purposes. As all the hospitals were infected it was necessary to systematically disinfect these and the inmates.

"The patients were first removed from a ward, which was then thoroughly disinfected. They were then given a thorough bath by being scrubbed with soap and water and disinfectants. They were given clean clothing and placed in the disinfected ward. Their old clothing was usually boiled. The wards were first disinfected by sulphur fumigation to kill the vermin. Beds were then removed and disinfected, mattresses, sheets, etc., being disinfected with steam or by boiling. Walls, ceilings and

floors were then scrubbed with solutions of bichloride of mercury or carbolic solutions. In many instances the interiors of hospitals were thoroughly whitewashed. Every precaution was taken to prevent infection among the personnel of the Commission. A campaign of education of the people by the issuing of popular circulars describing the disease, its methods of transmission and prevention, was undertaken.

"As cholera had occurred in places along the border between Serbia and Austria it was deemed advisable to perform vaccination against this disease, and so vaccination trains and parties were also established, which went about the country with the doctors and assistants, who inoculated thousands of people daily. Vaccination against cholera and typhoid fever was made compulsory in Serbia * * * * * * * * * So far, no cases of cholera have occurred in Serbia this year.

"The water supply of many of the towns was also greatly improved and artesian wells were bored in a number of instances where the water in the vicinity had been condemned as unsafe after it had been examined systematically in our laboratories. In fact, a systematic bacteriological examination of local water supplies was one of the tasks which was undertaken by our laboratories.

"An important problem in the reduction of the amount of typhoid fever and the prevention of cholera was the disposal of human excreta, and a large number of sanitary and flyproof latrines were constructed throughout the country, particularly about barracks, hospitals, etc. In many cases the cesspools became filled to overflowing and there was not a sufficient number of hydraulic pumps in Serbia to empty a quarter of them. The American Red Cross immediately supplied, upon my request, a large number of these pumps. The construction of filter beds for purification of sewage was also undertaken in a number of places, and the sanitary condition of some of the ceme-

teries, where from twenty to thirty people had been buried in numerous shallow pits and insufficiently covered with earth, was improved. The destruction of the breeding places of flies, in connection particularly with the spread of typhoid and cholera, and of mosquitoes, in connection with the spread of malaria in southern Serbia, was also undertaken."

In July, the members of the War Relief Commission spent some ten days in Serbia endeavoring to find out how much destitution existed among the civil population of Serbia and Montenegro, and to ascertain the general conditions as to health and sanitation in the two countries as the result of the three months of work by the International Sanitary Commission. Montenegro had been included in the territory covered by the Sanitary Commission shortly after Dr. Strong commenced active work in Serbia.

The Commission found that at that time the problem of destitution was to a very considerable extent, if not fully, being cared for by existing agencies.

It was quite evident to the members of the Commission from the moment of their arrival that the sanitary conditions were in vivid contrast to those described in their first report. There seemed to be not the slightest fear among the people of the possibility or danger of contracting a dangerous disease. The government officials and the doctors all felt that the typhus epidemic was practically at an end. A consider-

able amount of sanitary work in the way of cleaning up remained, however, to be done.

On August 12th the International Sanitary Commission officially declared the typhus epidemic to be at an end. Early in September Dr. Strong recommended that the staff of the American section be reduced to twelve men on October 1st, and that this staff be authorized to conduct general sanitary work in Serbia for six months from that date. The estimated cost of the work was $30,000. Dr. Strong's recommendation was approved by the American Red Cross and the Rockefeller Foundation agreed to provide the amount needed to carry on the work for the period agreed upon. Accordingly, toward the end of September, the American Sanitary Commission, with the exception of the one unit authorized to continue sanitary work, brought its work to a close.

The Rockefeller Foundation contributed $100,000 for work in Serbia. In the latter part of February, when the members of the War Relief Commission thought at first that money was needed chiefly to relieve destitution in Serbia, the Foundation, in response to their cabled request, placed $25,000 to their credit abroad to be spent in Serbia for such purposes as they might think best. As has been previously described in this report, further investigation convinced them that the paramount problem in Serbia was the control of epidemics, and resulted

in their recommendation that a Sanitary Commission be sent to Serbia. Upon learning that the Foundation had granted their request for $25,000 for Serbian relief, the members of the Commission gave $5,000 to Dr. Barrie of the English Red Cross to be applied in properly equipping for hospital purposes a building at Skopje which had been turned over to him by the Government to be used as an isolation hospital. Later, when the American Sanitary Commission was organized, the War Relief Commission turned over to Dr. Strong the $20,000 remaining at its disposal for Serbia. Subsequently amounts totaling $75,000 were remitted to the American Red Cross by the Foundation, as contributions toward the expenses of the Sanitary Commission.

The sanitary work of the unit left in Serbia by Dr. Strong under the direction of Mr. Edward Stuart was abruptly interrupted early in October by the invasion of Serbia by the Central Powers. During October and November every effort was made to ascertain through Mr. Stuart and others the conditions in Serbia and among the refugees who had fled from the country. On November 30th cablegrams from Mr. Stuart and Dr. Henry S. Forbes reported an extreme lack of food and clothing among the general population at Monastir and recommended that flour and clothing be sent via Salonica. The Foundation immediately contributed $5,000 to the American

Red Cross to be sent to Mr. Stuart for emergency relief work.

The question of providing food and clothing was taken up energetically by the American Red Cross and 400 tons of supplies costing $50,000 were shipped on the steamer "Frixos," which left for Piræus on January 1st. The Foundation contributed $30,000 toward the cost of these supplies.[1]

During December numerous reports were received from various relief organizations describing terrible conditions in Serbia and among the refugees who had left the country. Every effort was made by these organizations to formulate a comprehensive plan for administering relief under the extremely difficult conditions then obtaining.

FRANCE

In November, 1914, and February, 1915, Mr. James, representing the War Relief Commission, visited France and acquainted himself with conditions in that country. Owing to the urgency of the needs of the non-combatant population in the other countries referred to in this report, and to the large amount of volunteer relief work being done by other agencies in France, it was thought advisable by

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[1] Owing to the exigencies of the military situation the effective distribution of this cargo was delayed and a considerable part of it eventually reached the interior of Serbia overland by way of Marseilles and Switzerland.

the Foundation not to undertake active relief operations in France at that time.

In the summary of war relief work undertaken by the Foundation during 1914, mention was made of an appropriation to enable Dr. Carrel to meet the urgent need for certain sera. Dr. Carrel was spending his vacation in France at the outbreak of the war. He immediately offered his services to the French Government. They were accepted and he was detailed to the military hospital at Lyons. The terrible condition of the wounded that came to the hospital at Lyons for treatment, convinced Dr. Carrel that his greatest usefulness would consist in a combination of research with military hospital service. To this end arrangements were made whereby he was provided with a military hospital at Compiègne near the front, with accessory pathological and chemical laboratories in which special facilities were offered for carrying out the surgical procedures in which Dr. Carrel was especially interested. Mr. James cabled to the Rockefeller Institute for Medical Research advising that the French Government had made this arrangement with Dr. Carrel and recommending that the Institute give Dr. Carrel $2,500 for equipping laboratories and appropriate $1,200 a month for six months for maintenance. The Rockefeller Institute appropriated the amount recommended by Mr. James. Subsequently the Foundation appropriated

$20,000 to the Rockefeller Institute to cover the expenditures in connection with Dr. Carrel's work and certain other small items. In November the Foundation appropriated $5,000 additional to the Rockefeller Institute to enable it to continue its support of Dr. Carrel's work. As a result of Dr. Carrel's work in collaboration with Dr. Henry D. Dakin significant contributions to the technique of treating infected wounds and of accelerating their recovery were made.

ARMENIAN AND SYRIAN RELIEF

As early as August, 1914, the distressing conditions existing throughout the Turkish Empire were brought to the attention of the Rockefeller Foundation. On December 14, 1914, the following gentlemen met at the office of the Foundation to make representations concerning the need of relief: Hon. Oscar S. Straus; Dr. Arthur J. Brown and Dr. Stanley White, of the Presbyterian Mission Board; Dr. E. L. Smith, of the American Board of Commissioners for Foreign Missions; Professor Richard J. H. Gottheil; Dr. John R. Mott, and Rabbi Stephen S. Wise.

Reports were cited as having come from the American Ambassador in Constantinople, from agents of the mission boards, and others, showing that great distress was beginning to prevail in different parts of the Turkish Empire on ac-

count of the commandeering of money and supplies for the support of military operations.

In May, 1915, a report from the Persian War Relief Fund stated that destitution was widespread among refugees in Northwestern Persia, and that the immediate pressing need was for funds with which to buy food.

These and similar reports accumulating from many different sources over a period of several months caused the Executive Committee to determine upon sending a member of the War Relief Commission to Turkey to make a first-hand investigation of the situation on behalf of the Foundation. Accordingly Mr. Jeremiah Smith, Jr., a member of the law firm of Fish, Richardson, Herrick & Neave, of Boston, was appointed a member of the Commission and departed for Turkey early in June. Mr. Smith did not reach Constantinople until July 4th, and his report was not forwarded to the Foundation until August 8th. In the meantime conditions in Northwestern Persia were becoming acute. On July 20th the Persian War Relief Fund reported that it had been able to secure for relief in Persia only $40,000 of the $100,000 that was thought to be necessary in order to give fairly adequate relief, and requested the Foundation to aid it to meet the emergency. The Executive Committee believed that the situation was one calling upon the Foundation to act with something less than that finality and detail of knowl-

edge which ordinarily would be desirable, and appropriated $20,000 to the Persian War Relief Fund.

In August representatives of the American Board of Commissioners for Foreign Missions transmitted to the Foundation a very full report upon the conditions and needs of the Christians in Turkey. The report of the War Relief Commission was expected daily at that time and it seemed best to the Executive Committee not to make any substantial contribution for Turkish relief until it had been received. An appropriation of $10,000 was made, however, with the understanding that it would be disbursed by representatives in Turkey of the American Board acting in coöperation with Ambassador Morgenthau.

The report of the War Relief Commission regarding conditions in Turkey was received toward the end of August. It verified substantially the reports received during the year from other sources, and recommended that any relief given should be in the form of money which should be placed for disbursement in the hands of the representatives of missionary boards in Turkey acting in coöperation with the American Embassy.

About October 1st, the American Ambassador in Constantinople sent, through the State Department, an appeal for additional funds for the relief of the Turkish Empire. In the opinion of

Ambassador Morgenthau a fund of $100,000 was required to carry on effective measures of relief; and similar representations were made by the American Board of Commissioners for Foreign Missions. In the meantime, a national committee had been organized to receive subscriptions and the Department of State advised that contributions be made through that committee. After a consideration of the situation existing at that time the Executive Committee of the Foundation appropriated $30,000 for Armenian relief.

A few weeks later the principal Turkish and Persian relief agencies united, the combined organization being called the American Committee for Armenian and Syrian Relief. In November this Committee reported that the need in Northwestern Persia had been greatly increased since the Foundation's contribution in July, owing to the arrival in that section of 25,000 to 35,000 Syrians who had fled from the mountains of Eastern Turkey down into the plains between Urumia and Tabriz. The Committee asked for a contribution of $10,000 from the Foundation to be sent to Northwestern Persia, with a similar amount which had been raised by the Committee. The Executive Committee appropriated the amount requested.

The question of further contributions for Armenian relief was held in abeyance pending a survey of the whole field of war relief work and a

determination of the relative urgency of the need in the various areas where aid was required.

WORK AMONG PRISONERS OF WAR

In June, Mr. John R. Mott of the International Committee of Young Men's Christian Associations brought to the attention of the Foundation the work which the Association had undertaken in the military prison camps throughout Europe. The method of work pursued by the Association was to erect buildings in as many as possible of these camps. The buildings had in them, as a rule, a large hall for lectures, meetings and entertainments and four or five smaller rooms for evening and day classes, as well as for library and committee purposes. After erecting a building in a camp, the Association organized a number of committees, the members of which were set to work interesting their comrades in the opportunities offered for study and recreation. The International Committee stated that it cost about $2,000 to erect one of these buildings and run it for four months. An effort was being made to raise a fund of $250,000 to take advantage of the opportunities for work open to the Committee. The Foundation was asked to contribute $25,000 toward this fund, and this amount was appropriated by the Executive Committee.

HEADQUARTERS IN EUROPE

It became apparent during the year that in order to accomplish the objects of the War Relief Commission satisfactorily it should be continued indefinitely in Europe. This was desirable for the purpose both of keeping in touch with the rapidly changing phases of the relief work already in progress and of anticipating new needs. Accordingly, soon after the close of the year Mr. Warwick Greene, late Director of Public Works in the Philippine Islands, was appointed Director of the War Relief Commission, without limit of time, and his headquarters have been established at Berne.

The activities of the Commission have necessitated constant coöperation with the Department of State, with American diplomatic and consular officials abroad, with the representatives of many foreign governments, and with other relief agencies, as well as with a large number of private individuals, to all of whom grateful acknowledgments are due for unfailing courtesy and helpfulness.

WICKLIFFE ROSE,
Chairman.

THE ROCKEFELLER FOUNDATION

Report of the Treasurer

TREASURER'S REPORT

New York, January 15, 1916.

To the Members of The Rockefeller Foundation:

Gentlemen:

Herewith I send you a report of the financial operations of the Rockefeller Foundation and its subsidiary organizations for the fiscal year ending December 31, 1915.

The income for the year was $4,183,084.19; the balance from the previous year, after adding sundry refunds, was $4,468,103.99, making a total of $8,651,188.18 available for disbursement. The sum of $3,642,180.36 was disbursed, including $1,341,561.11 on account of Mr. Rockefeller's designations, leaving a balance of $5,009,007.82, divided as follows:

Amount to credit of Mr. Rockefeller's Reservation.....	$1,443,334.24
Balance payable on appropriations	1,819,937.85
Amount available for appropriation	1,745,735.73

The two latter figures do not take into account pledges to unaffiliated organizations which will require payments in future years, amounting to $744,800.00, as shown in Exhibit C, nor the Foundation's guarantee of Mr. Rockefeller's designation of $1,452,125.11 for the Rockefeller Institute for Medical Research. The $744,800.00 is treated as a current liability in the balance sheet, Exhibit A, thereby reducing the amount shown there as available for appropriation to $985,935.73. The $1,452,125.11, however, is not included in the balance sheet.

It should be noted that the income for the year does not include interest and dividends on bonds and stocks which had accrued on December 31, 1915, but which matured at later dates, while the accounts for previous year did include such accruals as of December 31. Because of this change, income for the year was reduced by about $1,053,293.43.

The financial condition and operations of the Foundation are set forth in the following Exhibits:

Balance Sheet.....Exhibit A
Receipts and Disbursements of General Funds Income.....Exhibit B
Foundation Appropriations.....Exhibit C
Mr. Rockefeller's Designations.....Exhibit D
International Health Commission Disbursements.....Exhibit E
China Medical Board Disbursements..Exhibit F
China Medical Board Appropriations.Exhibit G
War Relief Disbursements.....Exhibit H
General Funds, Principal and Reserve.Exhibit I
Land, Buildings and Equipment Fund.Exhibit J
Funds Carried in Suspense.....Exhibit K
Special Funds, Principal and Income..Exhibit L
Transactions Relating to Invested Funds.....Exhibit M
Schedule Showing Investment of General Funds.....Exhibit N
Schedule Showing Investment of Special Funds.....Exhibit O

Respectfully submitted,

L. G. MYERS,
Treasurer.

EXHIBIT A

BALANCE SHEET—

ASSETS

I. INVESTMENTS:		
General (Exhibit N)	$104,929,729.94	
Less amount of income investments (see below)	3,605,153.16	
	$101,324,576.78	
Special (Exhibit O)	422,624.67	
	$101,747,201.45	
Funds Uninvested—Estate of Laura S. Rockefeller (Exhibit L)	4,548.33	
		$101,751,749.78
II. LAND, BUILDINGS, EQUIPMENT AND INVENTORIES (Exhibit J)		$319,241.04
III. INCOME ACCOUNTS:		
ACCOUNTS RECEIVABLE:		
General Fund (Exhibit B)		$379.93
CASH ON HAND:		
General Funds (Exhibits B & K)		1,525,517.28
INCOME INVESTED TEMPORARILY (Exhibit N)		3,605,153.16
		$5,131,050.37
GRAND TOTAL		$107,202,041.19

EXHIBIT A

DECEMBER 31, 1915

FUNDS AND OBLIGATIONS

I. FUNDS:		
General Funds (Exhibit I).....	$100,000,000.00	
Reserve (Exhibit I).....	1,324,576.78	
		$101,324,576.78
Special Funds (Exhibit L):		
Gift of John D. Rockefeller..	$37,000.00	
Gift of Laura S. Rockefeller.	49,300.00	
Gift of Estate of Laura S. Rockefeller.....	340,873.00	
		427,173.00
		$101,751,749.78
II. LAND, BUILDINGS AND EQUIPMENT FUND:		
Appropriations from Income (Exhibit J).....		$319,241.04
III. INCOME ACCOUNTS:		
Income reserved for payment on account of Mr. Rockefeller's designations (Exhibit D)....		$1,443,334.24
Balance payable on appropriations (Exhibit C).....		1,834,937.85
Installments of appropriations due in 1916 and subsequent years (Exhibit C).....		744,800.00
Income available for appropriation.....		985,935.73
Funds carried in suspense (Exhibit K).....		120,000.00
Accounts payable—General Funds (Exhibit B).....		2,042.55
		$5,131,050.37
		$107,202,041.19

NOTE. The foregoing obligations do not include the Foundation's guarantee of Mr. Rockefeller's designation of $1,452,125.11 for the Rockefeller Institute for Medical Research.

EXHIBIT B

GENERAL FUNDS

RECEIPTS AND DISBURSEMENTS OF INCOME

Receipts

Balance January 1, 1915:			
Undisbursed income..		$4,443,992.84	
Special contribution...	$500.00		
Less amount returned to donor.....	22.90	477.10	
			$4,444,469.94
Refund of unexpended balances of 1914 appropriations to International Health Commission.....		$19,727.05	
Deduct further payments on 1914 account.....		1,093.00	
			18,634.05
Amount appropriated for Dr. Carrel's work, refunded by The Rockefeller Institute.....			5,000.00
Total Net Balance.			$4,468,103.99
Income received for the year, not including accrued income as of December 31, 1914, amounting to $604,-960.53, shown in 1914 account.....			4,183,084.19
			$8,651,188.18

EXHIBIT B

GENERAL FUNDS

RECEIPTS AND DISBURSEMENTS OF INCOME

Disbursements

Equipment, Etc., Purchased and Carried in Land, Buildings and Equipment Fund:		
Furniture and Fixtures	$12,428.16	
Library	325.55	
Drugs, etc	11,341.28	
Grand Chenier Tract—Taxes, fees, etc	6,259.34	
		$30,354.33
Administration:		
Secretary's Office	$54,724.89	
Treasurer's Office	11,817.59	
		66,542.48
Subsidiary Organizations:		
International Health Commission (Exhibit E)	$441,301.23	
China Medical Board (Exhibit F)	157,623.40	
War Relief (Exhibit H)	582,339.58	
Department of Industrial Relations	19,509.77	
Scientific Studies of Governmental Problems	50,000.00	
		1,250,773.98
Payments Made to Unaffiliated Organizations on Account of Foundation Appropriations (Exhibit C)		952,948.46
Payments on Account of Mr. Rockefeller's Designations (Exhibit D)		1,341,561.11
Total Disbursements		$3,642,180.36
Balance:		
Securities (Exhibit N)	$3,605,153.16	
Accounts Receivable	379.93	
Cash on Deposit	1,405,517.28	
	$5,011,050.37	
Less Accounts Payable	2,042.55	
		5,009,007.82
		$8,651,188.18

EXHIBIT C

Foundation Appropriations made in 1915, Unpaid Balances and Installments of Appropriations Made in Previous Years, and Payments Thereon Made in 1915

TO UNAFFILIATED ORGANIZATIONS	APPROPRIATED PRIOR TO 1915	APPROPRIATED DURING 1915	PAYMENTS DURING 1915
R.F. 265 Bureau of Municipal Research for constructive studies in the Government of New York, $10,000.00 per year for five years (installment due in 1915).....	.....	$10,000.00	$10,000.00
R.F. 266 Bureau of Municipal Research for its New York City work during the current year.	.....	20,000.00	20,000.00
R.F. 268 Mayor's Committee on Unemployment of the City of New York.....	.....	10,000.00	10,000.00
R.F. 285 Colorado State Committee on Unemployment and Relief....	.....	100,000.00	99,984.59
R.F. 295 Bureau of Municipal Research for study of prison administration in the State of New York.....	.....	2,000.00	.....
R.F. 2102 Bureau of Municipal Research for its New York City work, $15,000.00 per year for four years, beginning with 1916.....	.....	.....	.....
R.F. 2105 Academy of Political Science for enlarging the edition of proceedings of the meeting of the Academy on the Revision of the State Constitution.....	.....	500.00	500.00
R.F. 2712 Bureau of Social Hygiene, toward the support of Diagnostic Laboratory maintained by the Department of Health of New York City	.....	712.50	712.50
AMOUNTS CARRIED FORWARD.....		$143,212.50	$141,197.09

EXHIBIT C—Continued

	APPROPRIATED PRIOR TO 1915	APPROPRIATED DURING 1915	PAYMENTS DURING 1915
AMOUNTS BROUGHT FORWARD.....	.....	$143,212.50	$141,197.09
R.F. 2135 Rockefeller Institute for Medical Research for its Corporate Purposes, payment to be made on completion of the new buildings of the Institute at Princeton, New Jersey.....	.....	1,000,000.00	.....
R.F. 215 American Academy in Rome for general purposes, $10,000.00 a year for ten years (installment due in 1915)..	$10,000.00	.....	10,000.00
R.F. 228 Committee of Reference and Counsel of the Annual Foreign Missions Conference of North America for carrying out its program of cooperation and coördination in foreign missionary work of the principal American Mission Boards, total pledge of $425,000.00 extending over ten years (installment due in 1915).....	75,000.00	.....	75,000.00
R.F. 251 Bureau of Municipal Research for Studies in State Government.....	5,000.00	.....	3,775.00
R.F. 233 National Committee for the Prevention of Blindness, $5,000.00 a year for five years. Installments due in 1914 and 1915.....	10,000.00	.....	10,000.00
R.F. 234 Wellesley College, towards fund for buildings and endowment.....	750,000.00	.....	680,976.41
AMOUNTS CARRIED FORWARD.....	$850,000.00	$1,143,212.50	$920,948.50

EXHIBIT C—Continued

	APPROPRIATED PRIOR TO 1915	APPROPRIATED DURING 1915	PAYMENTS DURING 1915
AMOUNTS BROUGHT FORWARD	$850,000.00	$1,143,212.50	$920,948.50
R.F. 239 Association for Improving the Condition of the Poor, for the purpose of providing pensions for dependent widows with families, $20,000.00 a year for ten (10) years. Installment due in 1914	20,000.00	.....	20,000.00
Installment due 1915	20,000.00	.....	.....
R.F. 262 and 2107 For Promotion of Mental Hygiene	.....	29,800.00	11,999.96
TOTALS TO UNAFFILIATED ORGANIZATIONS	$890,000.00	$1,173,012.50	$952,948.46
TO ADMINISTRATION AND AFFILIATED ORGANIZATIONS:			
Administration of Rockefeller Foundation		$66,554.20	$66,542.48
To International Health Commission		800,112.89	441,301.23
To China Medical Board		451,683.60	157,623.40
To War Relief		612,339.58	582,339.58
To Industrial Relations		21,500.00	19,509.77
To Scientific Inquiry Governmental Problems		90,000.00	50,000.00
TOTALS FOR R.F. ADMINISTRATION AND AFFILIATED ORGANIZATIONS		$2,042,190.27	$1,317,316.46

SUMMARY

Balances and installments of appropriations to unaffiliated organizations made prior to 1915	$890,000.00	
Appropriations made in 1915	1,173,012.50	
Appropriations for R.F. Administration and affiliated organizations made in 1915		$2,063,012.50
		2,042,190.27
TOTAL APPROPRIATIONS		$4,105,202.77
Payments on account of appropriations to unaffiliated organizations	$952,948.46	
Payments on account of appropriations for R.F. Administration and affiliated organizations	1,317,316.46	
TOTAL PAYMENTS		2,270,264.92
BALANCE PAYABLE ON ALL APPROPRIATIONS		$1,834,937.85

EXHIBIT C—Continued

In Addition to the Foregoing, Pledges to Unaffiliated Organizations Already Reported Will Require for Payments in Future Years the Following Amounts:

Year 1916	$110,000.00
Year 1917	110,000.00
Year 1918	110,000.00
Year 1919	100,000.00
Year 1920	70,000.00
Year 1921	65,000.00
Year 1922	60,000.00
Year 1923	55,000.00
TOTAL, THE ROCKEFELLER FOUNDATION	$680,000.00
TOTAL, CHINA MEDICAL BOARD PLEDGES TO UNAFFILIATED ORGANIZATIONS, AS SHOWN IN EXHIBIT G	64,800.00
	$744,800.00

EXHIBIT D

MR. JOHN D. ROCKEFELLER'S DESIGNATIONS[1]

PAYMENTS MADE TO UNAFFILIATED ORGANIZATIONS

Alta Social Settlement, toward the budget for the fiscal year, $13,500; and toward the repair fund, $1,000	$14,500.00
American Baptist Home Mission Society	100,000.00
American Baptist Foreign Mission Society, toward the accumlated deficit in the missionary work of the Foreign Mission Society, Home Mission Society and Women's Foreign Mission Society of the East, $50,000; and as a contribution toward the work of the fiscal year, $200,000	250,000.00
American Female Guardian Society and Home for the Friendless	500.00
Baptist Church Extension Society of Brooklyn and Queens	3,000.00
Baptist Ministers' Home Society	250.00
Baptist Missionary Convention of the State of New York, toward the general work and also its church edifice fund	15,000.00
Baptist Union of Western Canada, toward their Baptist missionary work for the current fiscal year	10,000.00
AMOUNT CARRIED FORWARD	$393,250.00

[1] By his letter of gift of March 6, 1914, Mr. Rockefeller reserved the right to draw from the income of the Foundation the sum of $2,000,000 annually, to be applied during his lifetime to such specific objects within the corporate purposes of the Foundation as he might from time to time direct.

EXHIBIT D—Continued

AMOUNT BROUGHT FORWARD.....	$393,250.00
Blue Ridge Association, toward a total of $3,000, to meet expenses of maintaining the Social Service Summer School of the Association.....	1,500.00
Brooklyn Bureau of Charities.....	2,000.00
Boy Scouts of America.....	5,000.00
Charity Organization Society of the City of New York	6,000.00
Children's Aid Society.....	2,500.00
Clemson Agricultural College, toward the cost of erecting and equipping a building for the social and religious work of the students.....	50,000.00
Cleveland Federation for Charity and Philanthropy..	9,000.00
Cleveland School of Art.....	700.00
Committee on the Prevention of Tuberculosis, for the Red Cross Christmas Seal Fund.....	500.00
Eugenic Record Office, of Cold Spring Harbor, L. I., to provide for field workers in Eugenics in State institutions.....	4,050.00
Federal Council of Churches of Christ in America....	500.00
Foreign Mission Board of the Southern Baptist Convention, for the equipment of their work in foreign lands.....	49,811.63
Girls' Branch of the Public Schools Athletic League..	300.00
Hospital Saturday and Sunday Association.....	5,000.00
International Committee of Young Men's Christian Associations, toward its home work for the fiscal year, $22,500; and to the foreign work, $32,500....	55,000.00
International Y. M. C. A. College.....	2,000.00
Laymen's Missionary Movement, toward the current expenses of the present fiscal year, $5,000; and for the expenses of the National Missionary Campaign for 1915–16, $3,450.....	8,450.00
Legal Aid Society.....	1,000.00
Music School Settlement, as a special gift to meet the exigencies of the present year.....	1,500.00
National Association for the Study and Prevention of Tuberculosis.....	500.00
National Board of the Young Women's Christian Associations.....	10,000.00
National League on Urban Conditions Among Negroes	2,000.00
New Jersey Baptist Convention.....	900.00
New York Association for Improving the Condition of the Poor.....	7,000.00
New York City Baptist Mission Society, for the fiscal year, $28,000; and for the Grace Church Building Fund, $2,985.60.....	30,985.60
New York Milk Committee.....	4,000.00
AMOUNT CARRIED FORWARD.....	$653,447.23

EXHIBIT D—Continued

AMOUNT BROUGHT FORWARD		$653,447.23
Ohio Baptist Convention, for the General Fund and for the Church Edifice Fund		4,500.00
People's Institute		1,000.00
Prison Association of New York		500.00
Public Education Association		5,000.00
Rockefeller Institute for Medical Research, to be used for its corporate purposes		8,854.17
Rockefeller Institute for Medical Research, toward the construction of new buildings		570,559.71
Seamen's Church Institute of New York, toward the cost of their building		50,000.00
Society for Italian Immigrants		750.00
State Charities Aid Association of New York		2,000.00
State Executive Committee of the Young Men's Christian Association		1,000.00
State Mission Board of the Pennsylvania Baptist General Convention		800.00
Superintendent W. H. Maxwell, New York City Schools, toward a fund to provide cooking utensils for various schools, and food for destitute pupils		2,500.00
Traveler's Aid Society, toward the work for the year 1914		1,000.00
Westchester County Poor, Special Agent, to work among the poor children		1,200.00
Westchester County Poor, Eugenic Investigator, to cover expenses for nine months		900.00
Working Women's Protective Union		50.00
Young Men's Christian Association:		
Brooklyn	$1,000.00	
Cleveland	2,000.00	
Tarrytown	500.00	
University of Michigan, toward providing the necessary land, and erecting and equipping a building	30,000.00	
White Plains	5,000.00	38,500.00
		$1,342,561.11
Deduct refund on 1914 payment		1,000.00
TOTAL PAYMENTS IN 1915		$1,341,561.11
Balance subject to Mr. Rockefeller's Designation, January 1, 1915	$784,895.35	
Set aside for Mr. Rockefeller's Designation during 1915	2,000,000.00	2,784,895.35
Balance subject to Mr. Rockefeller's Designation, January 1, 1916		$1,443,334.24

EXHIBIT E
INTERNATIONAL HEALTH COMMISSION
Statement of Disbursements

Administration:		
Home Office	$48,934.18	
Survey and Exhibits	8,565.65	
Panama and Pacific Exhibition	6,492.00	
		$63,991.83
Payments from Home Office for Work Done in Field		9,526.00
Southern States:		
Alabama	$4,343.33	
Georgia	22,822.59	
Kentucky	12,030.00	
Louisiana	860.01	
Mississippi	13,295.00	
North Carolina	3,026.99	
South Carolina	6,700.00	
Tennessee	11,889.72	
Texas	7,755.96	
Virginia	6,961.16	
County Dispensary Work	4,796.92	
		94,481.68
Central America:		
Administration	$1,617.37	
Costa Rica	19,971.74	
Guatemala	11,523.56	
Nicaragua	15,033.25	
Panama	19,783.86	
		67,929.78
West Indies:		
Administration	$7,772.87	
Antigua	5,571.80	
British Guiana	15,935.10	
Dutch Guiana	4,001.88	
Grenada	10,751.96	
St. Lucia	6,512.07	
St. Vincent	5,347.50	
Trinidad	14,451.67	
		70,344.85
The East:		
Administration	$13,393.10	
Ankylostomiasis Commission	15,927.65	
Ceylon	2,245.00	
Egypt	11,250.00	
Philippine Hospital Ship	25,000.00	
Seychelles Islands	1,157.33	
		68,973.08
Advance Remittances for Work in Year 1916		78,655.48
		$453,902.70
Deduct Credit on Account of Letters of Credit		12,601.47
		$441,301.23

EXHIBIT F

CHINA MEDICAL BOARD

Statement of Disbursements

Property Purchased and Carried in Land, Buildings and Equipment Fund:		
Property of the Union Medical College.	$39,895.12	
Land of J. Ying.....	24,055.99	
Equipment.....	48.65	
		$63,999.76
Administration:		
Home Office.....	$39,795.48	
Peking Office.....	7,348.47	
Union Medical College.....	14,905.14	
		62,049.09
Payments on Account of Appropriations to Unaffiliated Organizations (Exhibit G).....		33,903.37
		$159,952.22
Deduct Credit on Account of Letters of Credit.....		2,328.82
		$157,623.40

EXHIBIT G

China Medical Board Appropriations and Payments From 1915 Income

TO UNAFFILIATED PERSONS AND ORGANIZATIONS	AMOUNTS APPROPRIATED	AMOUNTS PAID
C.M. 27 Yale Foreign Missionary Society, to pay the cost of not to exceed six instructors for its Medical School at Changsha, China.....	$16,200.00	$6,605.90
C.M. 28 Harvard Medical School of China, for current expenses of fiscal year July 1, 1915, to June 30, 1916.....	15,000.00	15,000.00
C.M. 211 American Board of Commissioners for Foreign Missions, for salary and allowances of two doctors.....	3,236.00	600.00
C.M. 214 Board of Foreign Missions of the Presbyterian Church in the United States, for salary and allowance of two doctors and four nurses.....	17,200.00	.....
Amount Carried Forward.....	$51 636.00	$22,205.90

EXHIBIT G—Continued

	AMOUNTS APPROPRIATED	AMOUNTS PAID
AMOUNT BROUGHT FORWARD.....	$51,636.00	$22,205.90
C.M. 215 Foreign Christian Missionary Society, for salary and allowances of one doctor and two nurses.....	4,600.00	.....
C.M. 220 Mr. Dilley, of the Union Medical College, for special graduate work in the United States.....	1,000.00	750.00
C.M. 221 Executive Committee of Foreign Missions of the Presbyterian Church in the United States, for salary and allowances of one doctor and two nurses.....	4,875.00	425.00
C.M. 222 Fellowships for Dr. and Mrs. Chiu.....	700.00	700.00
C.M. 29 Fellowship in Medicine (1)....	2,000.00	1,250.00
C.M. 223 Board of Foreign Missions of the Methodist Episcopal Church.....	11,800.00	.....
C.M. 210 Scholarships for Pharmacists (3) (no commitments have been made).	.....	.....
C.M. 218 Special Appropriation at the disposal of Dr. Buttrick.....	10,000.00	1,535.00
C.M. 21 Kuling Medical Missionary Association, for equipment of laboratory	1,000.00	.....
C.M. 22 Rockefeller Fellowship in Medicine (4).....	5,600.00	4,086.25
C.M. 23 Rockefeller Fellowship in Medicine (2).....	2,800.00	1,401.22
C.M. 26 Scholarships to Chinese Women (5). Commitments for two (2) only...	7,400.00	950.00
C.M. 24 Nurses' Association of China, for salary of translator of nursing textbooks.....	900.00	600.00
TOTAL TO UNAFFILIATED ORGANIZATIONS.....	$104,311.00	$33,903.37
TO AFFILIATED ORGANIZATIONS:		
Administration at home and in China..	59,072.60	*59,720.27
Equipment.....	.....	48.65
C.M. 212–13 Purchase of Union Medical College.....	213,300.00	39,895.12
C.M. 25 Purchase of Land from J. Ying.	25,000.00	24,055.99
C.M. 224 Discretionary Fund, to be used to purchase property.....	50,000.00	.....
	$451,683.60	$157,623.40
Balance payable on China Medical Board Appropriations.....		294,060.20
		$451,683.60

*Net, after deducting unused letters of credit.

EXHIBIT G—Continued

China Medical Board pledges to Unaffiliated Organizations require for payment in future years the following amounts:

Year 1916	$16,200.00
Year 1917	16,200.00
Year 1918	16,200.00
Year 1919	16,200.00
	$64,800.00

EXHIBIT H

STATEMENT OF DISBURSEMENTS FOR WAR RELIEF, FOR THE YEAR 1915

WAR RELIEF COMMISSION:		
Administration		$31,757.10
BELGIAN RELIEF:		
Food Supply	$2,839.54	
Relief Work for Refugees in Holland	78,410.94	
Relief of University Professors in England	20,000.00	
Commission for Relief in Belgium, for clothing	200,000.00	
		301,250.48
SERBIAN SANITATION AND RELIEF		104,332.00
ARMENIAN AND SYRIAN RELIEF		70,000.00
Advanced to American Red Cross for war relief, but not expended		25,000.00
International Committee of Young Men's Christian Associations, for work in prison camps		25,000.00
The Rockefeller Institute for Medical Research, for Medical Supplies and Research at the Seat of War		25,000.00
		$582,339.58

EXHIBIT I

GENERAL FUNDS

Principal Fund

Amount received May 22, 1913, from Messrs. John D. Rockefeller, Jr., Starr J. Murphy, Jerome D. Greene and Edward L. Ballard, Trustees, in securities	$3,200,000.00
Mr. John D. Rockefeller's gift of June 14, 1913, in securities and accrued interest and dividends	21,052,028.54
Mr. John D. Rockefeller's gift of June 27, 1913, in securities and accrued dividends	10,178,402.00
Mr. John D. Rockefeller's gift of March 6, 1914, in securities and accrued dividends	65,569,569.46
Total of John D. Rockefeller's Gifts to General Funds	$100,000,000.00

Reserve

Gains on Securities Sold and Redeemed 1913–14	$320,079.73	
Gains on Securities Sold and Redeemed 1915 (Exhibit M)	1,004,497.05	
		1,324,576.78
The total of the General Funds is invested in the securities shown in Exhibit N		$101,324,576.78

EXHIBIT J

Land, Buildings and Equipment Fund

Income appropriated in 1914.....	$224,886.95	
Income appropriated in 1915 (Exhibits B and F).....	94,354.09	
		$319,241.04
Assets Acquired through Appropriation of Income by Rockefeller Foundation:		
Grand Chenier Tract (land, taxes, fees, etc.), in Louisiana.....	$231,146.29	
Furniture and Fixtures.	12,428.16	
Library.....	325.55	
Inventory, Drugs, etc...	11,341.28	
		$255,241.28
By China Medical Board:		
On account Peking Union Medical College property, Peking, China...	$39,895.12	
Land of J. Ying, Peking, China.....	24,055.99	
Equipment, New York City.....	48.65	
	63,999.76	
	$319,241.04	$319,241.04

EXHIBIT K

Funds Carried in Suspense

Amount carried forward from previous year.....	$80,000.00
Proceeds of sale of coupons due July 1, 1915, removed from $2,000,000 St. Louis and San Francisco Refunding 4% bonds.....	40,000.00
Total Amount on Deposit.....	$120,000.00

EXHIBIT L
SPECIAL FUNDS

Special Funds of Laura S. Rockefeller

Gift of June 7, 1913. (Income payable at Foundation's discretion to the Baptist Ministers' Home Society of New York)	$8,000.00
Gift of September 11, 1913. (Income payable at Foundation's discretion to the Baptist Home of Northern Ohio)	8,000.00
Gift of November 29, 1913. (Income payable at Foundation's discretion to the Euclid Avenue Baptist Church, Cleveland, Ohio)	24,000.00
Gift of December 9, 1913. (Income payable to the Baptist Home Society of the City of New York)	9,300.00
Investments as shown in Exhibit O	$49,300.00

Income Account

Interest on above gifts for the year 1915.		$3,250.00
Amount sent to the various Societies as above	$3,166.67	
Interest accrued at date of gift repaid to Mrs. Rockefeller	83.33	
		$3,250.00

Special Fund of Estate of Laura S. Rockefeller

Received from the administrator in securities and accrued interest		$340,873.00
Investments as shown in Exhibit O	$336,324.67	
Accounts receivable	46.85	
Cash on deposit	4,501.48	
	$340,873.00	$340,873.00

Special Fund of John D. Rockefeller

Gift of December 15, 1914. (Income payable at Foundation's discretion to the Baptist Home for the Aged of New York City)	$25,000.00
Gift of February 11, 1915. (Income payable at Foundation's discretion to the Baptist Home for the Aged of New York City)	12,000.00
Investments as shown in Exhibit O	$37,000.00

Income Account

Income received on above during 1915		$1,850.00
Interest accrued at date of gift repaid to Mr. Rockefeller	$485.42	
Baptist Home for the Aged of New York City	1,364.58	
		$1,850.00

EXHIBIT M

Following is a Statement of Various Transactions Relating to Invested Funds, Together with Tables of Purchases, Sales and Exchanges of Securities:

On January 8, 1915, the Finance Committee authorized the exchange of $500,000.00 Chicago, Milwaukee & St. Paul Railway Co. Debenture 4s, costing 91.0625%, for $500,000.00 Refunding 4½s of the same Company at 89. The apparent loss on the Debenture bonds has been added to the cost of the Refunding bonds, which are secured in the same manner as the others and return a higher interest yield. In the tables of purchases and sales, in this Exhibit, the sale price of the one and the purchase price of the other are given as 91.0625%.

On February 1st, the International Mercantile Marine Co. failed to meet the interest payment due on that date on its issue of International Navigation Co. 5% bonds. The Company had already defaulted on its 4½% bonds, and in April, at the request of the Trustee of the latter mortgage, a Receiver was appointed. The Foundation owns $1,305,000.00 of the Navigation Co. 5s and $3,692,000.00 of the Marine Co. 4½s. The income thereon, amounting to $231,390.00, has, of course, been cut off. A reorganization will be effected by Protective Committees representing both issues, or by the Committees representing the preferred and common stocks of the Company. The business of the Company has been so large and profitable during the last eight months that it is probable that the reorganization will provide for the payment of both issues of bonds.

During February, the $10,000.00 Colorado Industrial Co. First Mortgage 5% bonds, carried at 80% in the Laura S. Rockefeller Fund for the Baptist Home Society of the City of New York, were exchanged, at the suggestion of the donor, for $10,000.00 Virginia-Carolina Chemical Co. First Mortgage 5s at 93%. This transaction increases the principal fund by $1,300.00. It is also shown in the table of securities bought, in this Exhibit.

On February 15, 1915, Mr. John D. Rockefeller conveyed to the Foundation $12,000.00 par value Canada Southern Railway Consolidated Mortgage 5% bonds, the income of which is to be paid to the Baptist Home for the Aged, of New York City, as long as the Foundation shall deem it wise. This is the second gift from Mr. Rockefeller for this object, making $37,000.00 of this issue of bonds in all.

The Consolidated Gas Company Convertible 6% bonds, referred to in the table of securities bought, in this Exhibit, were purchased from the Company, which issued the privilege to stockholders to subscribe at par in the proportion of $1,000.00 in bonds to $4,000.00 in stock. As the value of this privilege represented 10% of the par value of the bonds (equal to 2½% of the par value of the stock), and as the exercise of the privilege left the market value of the stock impaired to that extent, the Finance Committee ruled that the bonds should be given a valuation of 110%, and the original valuation of the stock reduced by 2½%.

On March 1st, the Western Pacific Railway Company failed to

EXHIBIT M—Continued

meet the interest due on its First Mortgage 5% bonds, of which the Foundation holds $4,039,000, thus curtailing income by $201,950.00 a year. A Protective Committee has been formed, of which Mr. Starr J. Murphy is a member. The bonds have been deposited with the Equitable Trust Co. as Depositary under an agreement dated May 1, 1915.

As stated in the table of securities sold and redeemed, in this Exhibit, the Foundation has received from the Cleveland Trust Co. $123,868.00 on account of the Foundation's interest in the assets of the Euclid Heights Realty Co., in liquidation, as represented by its ownership of $716,000.00 of the bonds of the Company. This payment, with those previously received, exceeds the valuation at which the bonds were taken by $121,870.28, which sum has been credited to Reserve. A further small distribution may be received later. The $76,148.00 in mortgages on Euclid Heights property in Cleveland, reported in the table of securities bought, in this Exhibit, were received in part payment of the above.

On July 1, 1915, the Sunday Creek Company defaulted on its Collateral Trust 5% bonds, of which the Foundation holds $81,000.00, thus curtailing income by $4,050.00 a year.

On July 1st, the Protective Committee for the St. Louis & San Francisco Refunding 4s purchased the July 1, 1915, coupons of the $2,000,000.00 par value of these bonds held by the Foundation. The $40,000.00 received therefrom has been added to the suspense account in which the proceeds of the sales of July, 1914, and the January, 1915, coupons were placed, pending the readjustment of the Company's finances.

On September 1st, the Missouri Pacific Ry. Company defaulted on its 40-year Collateral 4% bonds, of which the Foundation holds $2,198,000.00 par value, thus curtailing income by $87,920.00 a year. These Bonds have been deposited with the Bankers Trust Co. as Depositary under a Reorganization Plan dated July 1, 1915, which provides for the exchange of this issue for 5% Preferred Stock of the reorganized company.

As of September 30th last, the Executors of the Estate of Mrs. Laura S. Rockefeller delivered to the Foundation securities having a value of $340,324.67, and accrued dividends amounting to $548.33, a total of $340,873.00. The securities are listed in Exhibit O.

The Foundation has the following securities among its investments:

451 Shares H. B. Claflin Company Common at	79.32	$35,774.92
354 Shares Pope Manufacturing Co. Common at.....	4.	1,416.00
280 Shares Pope Manufacturing Co. Preferred at.....	15.	4,200.00

Both of these companies have been in process of liquidation for a year or more, and it now appears that their assets are not sufficient to cover the claims of their creditors. The shares, therefore, have no apparent value, and, by order of the Finance Committee, the valuations at which they were taken have been charged against Reserve. They will hereafter be carried in the accounts without value, and will not appear in the Treasurer's reports.

EXHIBIT M—Continued

GENERAL FUNDS

SECURITIES SOLD AND REDEEMED

		PER CENT		LOSS	GAIN
500	Canadian Pacific Ry. 1st Debenture 5s.....	@96.	$2,400.00	$150.00	
500,000	Chicago, Milwaukee & St. Paul Debenture 4s	91.0625	455,312.50		
278,548	Euclid Heights property mortgages, payments received thereon.....		147,524.78		
716,000	Euclid Heights Realty Bonds, amount received in liquidation thereof.....		123,868.00		$121,870.28
60,000	Magnolia Petroleum Co. 6s.....	100.	60,000.00		
36,000	New York Central Lines Equipment Trust 5s	100.	36,000.00		345.85
14,000	New York City Corporate Stock 6s.....	100.	14,000.00		
40,000	Provident Loan Society Certificates of Contribution.....	100.	40,000.00		
600	Shares Cuban-American Sugar, Preferred...	100.856	60,513.60		8,823.50
15,300	Shares Erie R.R. 1st Preferred.....	55.3015	846,113.00		142,313.00
16,603	Shares International Mercantile Marine, Common.....	1.5246	25,313.16	24,495.84	
5,832	Shares International Mercantile Marine, Preferred.....	5.979	34,869.53	29,282.06	
400	Shares International Paper Co., Common..	10.835	4,334.00		1,134.00
3,000	Shares International Agricultural, Common.	26.1412	78,423.50		63,423.50
4,000	Shares International Agricultural, Preferred.	60.787	243,146.32		123,146.32
2,000	Shares Missouri Pacific.....	11.1975	22,395.00	29,605.00	
43,600	Shares National Lead, Common.....	63.979	2,789,492.40		609,492.40
	AMOUNTS CARRIED FORWARD.....		$4,983,705.79	$83,532.90	$1,070,548.85

EXHIBIT M—Continued

GENERAL FUNDS

Securities Sold and Redeemed

		PER CENT		LOSS	GAIN
	Amounts Brought Forward.....		$4,983,705.79	$83,532.90	$1,070,548.85
6,000	Shares St. Louis & San Francisco, 2nd Preferred.....	5.789	34,735.00	7,265.00	
388	Shares Swan & Finch, Capital.....	127.511	49,474.33	28,125.67	
8,100	Shares U. S. Cast Iron Pipe, Common.....	19.4016	157,153.00		76,153.00
3,000	Shares U. S. Cast Iron Pipe, Preferred.....	50.481	151,443.02		18,109.69
	Total amount received from Securities Sold and Redeemed.....		$5,376,511.14		
	Gross Gain on Securities Sold and Redeemed				$1,164,811.54
	Gross Loss on Securities Sold and Redeemed			$118,923.57	
	Securities Written off:				
451	Shares H. B. Claflin Co., Common.....			35,774.92	
354	Shares Pope Manufacturing Co., Common..			1,416.00	
280	Shares Pope Manufacturing Co., Preferred..			4,200.00	
	Total Loss.....				160,314.49
	Net Gain for Year Credited to Reserve.				$1,004,497.05

Securities Bought

$600,000	Anglo-French External Loan 5s.....	@96.25	$577,500.00
500,000	Atlantic Coast Line 1st Consol. Mtg. 4s.....	91.	455,000.00
650,000	Baltimore & Ohio R.R. Co. Rfdg. & Gen. Mtg. 5s.....	99.75	648,375.00

350,000	Chicago, Milwaukee & St. Paul 25-yr. Deb. 4s	87.49	306,215.00
500,000	Chicago, Milwaukee & St. Paul Rfdg. 4½s	91.0625	455,312.50
500,000	Consolidated Gas Co. Conv. Deb. 6s	110.	550,000.00
76,148	Euclid Heights Property in Cleveland, Mortgages on	100.	76,148.00
330,000	New York Central & Hudson River 30-yr. Deb. 4s	88.45	291,885.00
250,000	Northern Pacific General Lien 3s	65.	162,500.00
1,500,000	Pennsylvania R.R. General Mtg. 4½s	98.25	1,473,750.00
40,000	Provident Loan Society, Certificate of Contribution	100.	40,000.00
500,000	Province of Quebec 5-yr. 5s	99.75	498,750.00
100,000	Southern Pacific Refunding 4s	86.	86,000.00
250,000	Union Pacific 1st Lien & Rfdg. 4s	90.125	225,312.50
5,000	Shares Atchison, Topeka & Santa Fe Pfd	98.25	491,250.00
	TOTAL		$6,337,998.00

SPECIAL FUNDS

ESTATE OF LAURA S. ROCKEFELLER

SECURITIES REDEEMED

$4,000	Pennsylvania R.R. Conv. of 1905	100.	$4,000.00

LAURA S. ROCKEFELLER SPECIAL FUNDS

SECURITIES DELIVERED

10,000	Colorado Industrial Co. 1st 5%	80.	8,000.00

SECURITIES RECEIVED

10,000	Virginia Carolina Chemical Co. 5%	93.	9,300.00

EXHIBIT N

Schedule of Securities of The Rockefeller Foundation on December 31, 1915, Representing Both Principal and Income Temporarily Invested

BONDS

Name	Rate %	Date of Maturity	Amount	Price %	Cash Price
American Agricultural Chemical 1st Mtg. Conv...	5	Oct. 1928	$500,000	101.	$505,000.00
Anglo-French External Loan.....	5	Oct. 1920	600,000	96.25	577,500.00
Ashland Power Company 1st Mtg.....	5	Mar. 1928	8,000	100.	8,000.00
Atlantic & Birmingham Ry. 1st Mtg.....	5	Jan. 1934	677,000	90.	609,300.00
Atlantic Coast Line Ry. 1st Consol. Mtg.....	4	July 1952	500,000	91.	455,000.00
Baltimore & Ohio R.R. Rfdg. & Gen. Mtg.....	5	Dec. 1995	650,000	99.75	648,375.00
Baltimore & Ohio R.R. 1st Mtg.....	4	July 1948	6,000	91.	5,460.00
Central Pacific Ry. 30-yr. Gtd. by So. Pac.....	3½	Aug. 1929	2,000	89.	1,780.00
Chicago & Alton R.R. Refunding.....	3	Oct. 1949	551,000	65.	358,150.00
Chicago & Alton Ry. 1st Mtg. Lien.....	4½	July 1950	854,000	53.	452,620.00
Chicago City & Connecting Rys. Coll. Trust.....	3	Jan. 1927	1,305,000	85.	1,109,250.00
Chicago, Burlington & Quincy R.R. Gen. Mtg....	5	Mar. 1958	1,000,000	93.5	935,000.00
Chicago & Eastern Ill. R.R. Refdg. & Imp.....	4	July 1955	300,000	63.	189,000.00
Chicago, Milwaukee & St. Paul Ry. Gen. Mtg. Ser. A.....	4	May 1989	30,000	97.	29,100.00
Chicago, Milwaukee & St. Paul Ry. Gen. Mtg. Ser. 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. Gen. & Refdg. Ser. A.....	4½	Jan. 2014	500,000	91.0625	455,312.50
Chicago & North Western Railway Extension....	4	Aug. 15'26	50,000	95.	47,500.00
Chicago & North Western Railway Skg. Fund Debenture.....	5	May 1933	80,000	102.	81,600.00
Chicago Railways Co. 1st Mtg.....	5	Feb. 1927	500,000	97.	485,000.00
Cleveland, Cin., Chic. & St. Louis Ry., St. Louis Div. Coll. Tr.....	4	Nov. 1990	73,000	90.	65,700.00

Cleveland, Cincinnati, Chicago & St. Louis Ry. Gen. Mtg.	4	June 1993	700,000	83.89	587,250.00
Cleveland Short Line 1st Mtg. Gtd. L. S. & M. S.	4½	April 1961	500,000	95.	475,000.00
Cleveland Trust Co. Participation Ctf. in certain mortgages on property formerly owned by Euclid Heights Realty Co.	..	.....	278,548	Liq. to	126,993.22
Colorado Industrial Co. 1st	5	Aug. 1934	2,000,000	80.	1,600,000.00
Consolidated Gas Co. (N. Y.) Conv. Debenture	6	Feb. 1920	500,000	110.	550,000.00
Denver & Rio Grande R.R. 1st Consol	4	Jan. 1936	6,000	85.	5,100.00
Erie R.R. Conv. Ser. B	4	April 1953	1,065,000	75.	798,750.00
Illinois Central R.R. Refunding	4	Nov. 1955	300,000	87.	261,000.00
Interborough Rapid Transit 1st	5	Jan. 1966	1,000,000	96.	960,000.00
International Mercantile Marine Mtg. & Coll. Tr. Gold	4½	Oct. 1922	3,692,000	55.	2,030,600.00
International Navigation Co. 1st Skg. Fund	5	Feb. 1929	1,305,000	75.	978,750.00
Lake Erie & Western R.R. 2nd Mtg	5	July 1941	100,000	100.	100,000.00
Lake Shore & Mich. So. Ry. 1st Mtg	3½	June 1997	926,000	87.	805,620.00
Lake Shore & Mich. So. Ry. Debenture	4	Sept. 1928	762,000	92.	701,040.00
Lake Shore & Mich. So. Ry. Debenture	4	May 1931	2,673,000	92.	2,459,160.00
Long Island R.R. Refunding	4	Mar. 1949	2,000	90.	1,800.00
Louisville & Nashville R.R. Unified	4	July 1940	6,000	90.	5,580.00
Magnolia Petroleum Company 1st	6	Jan. 1937	3,140,000	100.	3,140,000.00
Missouri, Kansas & Texas Ry. Gen. Skg. Fund	4½	Jan. 1936	1,325,000	84.	1,113,000.00
Missouri Pacific Ry. 40-year Collateral	4	Mar. 1945	2,198,000	60.	1,318,800.00
Morris & Essex R.R. 1st Mtg. & Refunding	3½	Dec. 2000	175,000	82.75	144,812.50
Mutual Fuel Gas Co. 1st Mtg	5	Nov. 1947	250,000	100.	250,000.00
N. Y. Central Lines Equip. Tr. of 1913	4½	36M ea. yr. Jan. 17-'28	432,000	99.039	427,849.81
N. Y. Central & H. R. R. R. 30-year Debenture	4	May 1934	330,000	88.45	291,885.00
New York City Corporate Stock	4¼	Mar. 1964	100,000	94.5	94,500.00
New York City 2-year Revenue Bonds	6	Sept. 1916	67,000	100.	67,000.00
New York City 3-year Revenue Bonds	6	Sept. 1917	94,000	100.	94,000.00
New York, Chicago & St. Louis R.R. 1st Mtg.	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 Connecting R.R. 1st Mtg	4½	Aug. 1953	250,000	93.38146	233,453.65

EXHIBIT N—Continued
BONDS

Name	Rate %	Date of Maturity	Amount	Price %	Cash Price
Norfolk & Western R.R. 1st Consol. Mtg.	4	Oct. 1996	$5,500	91.	$5,005.00
Northern Pacific Ry. General Lien	3	Jan. 2047	250,000	65.	162,500.00
Northern Pacific Ry. Refunding & Imp.	4½	July 2047	390,000	91.5769	357,150.00
Northern Pacific Ry. Prior Lien Ry. and Land Grant	4	Jan. 1997	5,500	93.	5,115.00
Ohio Fuel Supply Co. Debenture	6	Mar. 1927	51,925	100.	51,925.00
Pennsylvania R.R. Consolidated	4	May 1943	£2,400	99.	11,880.00
Pennsylvania R.R. General Mtg.	4½	June 1965	$1,500,000	98.25	1,473,750.00
Pere Marquette R.R. Consol.	4	Jan. 1951	520,000	63.	327,600.00
Philadelphia Co. Convertible Debenture	5	May 1922	1,000,000	97.	970,000.00
Philadelphia Co. Gold Convertible	5	Aug. 1919	500,000	95.	475,000.00
Pittsburgh, Cin., Chic. & St. L. Ry. Con. Ser. D.	4	Nov. 1945	56,000	97.	54,320.00
Pittsburgh, Cin., Chic. & St. L. Ry. Con. Ser. I.	4½	Aug. 1963	500,000	103.	515,000.00
Province of Quebec, 5 year	5	April 1920	500,000	99.75	498,750.00
Rutland R.R. 1st Consolidated	4½	July 1941	25,000	81.	22,500.00
St. Louis & San Francisco R.R. Refunding	4	July 1951	2,000,000	76.	1,520,000.00
St. Louis & San Francisco, New Orleans, Texas & Mexico 1st	5	Mar. 1940	450,000	60.	270,000.00
Seaboard Air Line Ry. Adjustment	5	Oct. 1949	455,000	77.	350,350.00
Southern Pacific Branch Ry. 1st Mtg.	6	April 1937	100,000	117.1402	117,140.20
Southern Pacific R.R. 1st Refunding	4	Jan. 1955	100,000	86.	86,000.00
Sunday Creek Co. Coll. Trust	5	July 1944	81,000	78.	63,180.00
Union Pacific R.R. 1st Lien & Refunding	4	Jan. 2008	250,000	90.125	225,312.50
Wabash R.R. 2nd Mortgage	5	Feb. 1939	117,000	98.	114,660.00
Wabash R.R. Detroit & Ohio Ext. 1st	5	July 1941	3,000	106.	3,180.00
Wabash R.R. Omaha Division 1st	3½	Oct. 1941	45,000	65.	29,250.00
Washington Railway & Electric Cons. Mtg. Gold.	4	Dec. 1951	450,000	83.5	375,750.00
Western Maryland R. R. 1st	4	Oct. 1952	1,032,000	78.9193	814,158.76
Western Pacific Ry. 1st	5	Sept. 1933	4,039,000	69.	2,786,910.00
Wheeling & Lake Erie R.R., Lake Erie Div. 1st.	5	Oct. 1926	140,000	100.	140,000.00
Wheeling & Lake Erie R.R. 1st Consol.	4	Mar. 1949	434,000	80.	347,200.00
Total Bonds					$40,893,315.64

EXHIBIT N—Continued

STOCKS

Name	Rate %	Number of Shares	Price %	Cash Price
Oil Company Stocks:				
Borne-Scrymser Company	20	350	295.	$103,250.00
Buckeye Pipe Line Company (par $50)	16	49,693	160.	7,950,880.00
Chesebrough Manufacturing Co. Consolidated	40	690	670.	462,300.00
The Colonial Oil Company	..	619	100.	61,900.00
The Continental Oil Company	12	7,000	190.	1,330,000.00
Crescent Pipe Line Company (par $50)	6	14,120	60.	847,200.00
Cumberland Pipe Line Company	5	2,481	72.	178,632.00
Eureka Pipe Line Company	24	12,357	361.33	4,464,995.59
Galena Signal Oil Co. Preferred	8	4,193	140.	587,024.13
Galena Signal Oil Co. Common	12	20,842	190.	3,959,976.12
Indiana Pipe Line Co. (par $50)	16	24,845	125.111	3,108,385.28
National Transit Co. (par $25)	8	126,481	41.	5,185,721.00
New York Transit Co.	16	12,392	300.	3,717,600.00
Northern Pipe Line Company	10	9,000	110.	990,000.00
Solar Refining Company	10	4,964	185.007	918,375.00
Southern Pipe Line Company	24	24,845	229.5556	5,703,308.88
Standard Oil Company (Kansas)	12	4,966	275.016	1,365,733.13
Standard Oil Company (Kentucky)	16	7,434	140.509	1,044,547.23
Standard Oil Company (Nebraska)	20	2,482	270.	670,140.00
Standard Oil Company (Ohio)	24	8,696	420.	3,652,320.00
South West Penn. Pipe Lines	12	8,000	160.	1,280,000.00
Swan & Finch Company	..	515	200.	103,000.00
Union Tank Line Company	5	24,105	70.	1,687,350.00
Washington Oil Company (par $10)	..	1,774	30.	53,220.00
Total Oil Company Stocks				$49,425,858.36

EXHIBIT N—Continued

STOCKS

Name	Rate %	Number of Shares	Price %	Cash Price
Miscellaneous Stocks:				
American Shipbuilding Co. Preferred	..	9,457	85.	$803,845.00
American Shipbuilding Co. Common	..	14,972	35.	524,020.00
Atchison, Topeka & Santa Fe Ry. Common	6	21,100	95.95	2,009,908.33
Atchison, Topeka & Santa Fe Ry. Preferred	5	5,000	98.25	491,250.00
Central National Bank of Cleveland	8	500	159.22	79,611.10
Chehalis & Pacific Land Company	..	220	45.45	10,000.00
Chicago City & Connecting Ry. Preferred Participation Certificates	1½	17,530	69.1875	1,212,856.88
Chicago City & Connecting Ry. Common Participation Certificates	..	10,518	30.	315,540.00
Cleveland Arcade Company	8	2,500	98.6222	246,555.56
Cleveland Steel Company	..	2,121	100.	212,100.00
Cleveland Trust Company	10	286	238.195	68,123.77
Colorado & Southern Ry. Company 1st Preferred	..	7,000	54.	378,000.00
Consolidated Gas Company (of N. Y.)	6	20,000	127.50	2,550,000.00
Wm. Cramp & Sons, Ship & Engine Building Co.	..	648	15.	9,720.00
Erie Railroad Company 1st Preferred	..	21,100	46.	984,400.00
Great Lakes Towing Company Common	..	1,200	12.	14,400.00
Great Lakes Towing Company Preferred	7	1,527	88.7361	135,500.05
Great Northern Ry. Preferred	7	500	106.05	53,025.00
International Agricultural Corp. Preferred	..	7,345	30.	220,350.00
International Agricultural Corp. Common	..	9,575	5.	47,875.00
H. H. Kohlsaat Company	..	1,900	50.	95,000.00
Manhattan Railway Company	7	10,000	128.775	1,287,750.00
National Lead Company Preferred	7	1,400	104.	145,600.00

National Lead Company Common	3	29,900	50.	1,495,000.00
New York, Chicago & St. Louis R.R. Common	..	100	55.	5,500.00
New York, Chicago & St. Louis R.R. 2nd Preferred	..	400	78.70	31,480.00
Northern Pacific Railway Company	..	1,000	91.7625	91,762.50
Ohio Fuel Supply Company (par $25)	8	4,154	41.	170,314.00
Otis Steel Company Preferred	7	140	90.	12,600.00
Otis Steel Company Common	..	329	20.	6,580.00
Pressed Steel Car Company, Preferred	7	500	89.75	44,875.00
Provident Loan Society 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
Superior Savings & Trust Company (Cleveland, Ohio)	12	300	297.8333	89,350.00
Tilden Iron Mining Company	..	1,780	27.35	48,683.46
U. S. Cast Iron Pipe & Foundry Co. Preferred	..	1,987	44.444	88,310.89
U. S. Rubber Company 1st Preferred	8	300	101.2313	30,369.40
U. S. Steel Corporation Common	2	200	65.	13,000.00
Wilson Realty Company	..	591	100.	59,100.00
Woman's Hotel Company	..	300	80.	24,000.00
Woman's Hotel Company (Dividend Scrip $750)	..	...	80.	600.00
TOTAL MISCELLANEOUS STOCKS				$14,610,555.94
*TOTAL SECURITIES BELONGING TO GENERAL FUNDS PRINCIPAL AND INCOME ACCOUNTS				$104,929,729.94

*NOTE—The securities representing Special Funds Exhibits B and C are not included in the above.

NOTE—All securities are valued at the price at which they were purchased or at the value assigned to them when they were donated, interest and dividends accrued at the date of purchase or donation being allowed for.

NOTE—The foregoing investments are apportioned as follows:

General Funds Principal	$101,324,576.78
General Funds Income	3,605,153.16
	$104,929,729.94

EXHIBIT O

Securities in Laura S. Rockefeller Special Funds

Name	Rate %	Date of Maturity	Amount	Price %	Cash Price
Colorado Industrial Co. 1st	5	Aug. 1934	$50,000	80.	$40,000.00
Virginia-Carolina Chemical Co	5	Dec. 1923	10.000	93.	9,300.00
					$49,300.00

List of Securities Received from the Estate of Laura S. Rockefeller

BONDS

Atlantic Coast Line R.R. L. & N. Coll	4	Oct. 1952	$4,000	87.	$3,480.00
Chesapeake & Ohio Ry. Conv	4½	Feb. 1930	10,000	77.	7,700.00
Chicago, Rock Island & Pac. Ry. Refunding	4	April 1934	50,000	63.	31,500.00
Colorado Industrial Co. 1st	5	Aug. 1934	20,000	78.	15,600.00
Imperial Chinese Government 5s of 1911	5	Jan 22-'51	£2,000	75.	7,500.00
National Rys. of Mexico, S. F. with Jan., 1915 and subsequent coupons attached	4½	July 1957	$50,000	59.	29,500.00
National Rys. of Mexico, Secured Notes 6s for coupons due Jan. 1, 1914	6	Jan. 1917	1,125	59.	663.75
National Rys. of Mexico, Guaranty Trust Co. receipt for July 1, 1914, coupon	..	.....	1,125	59.	663.75
*Pennsylvania R.R. Conv. of 1905	3½	Oct. 1915	4,000	100.	.....
St. Louis, Iron Mt. & Southern Ry. U. & R.	4	Jan. 1929	20,000	63.	12,600.00
Seaboard Air Line Ry. 1st Mtg.	4	April 1950	2,000	79.	1,580.00
U. S. Mortgage & Trust Co. Series J	4	May 1919	25,000	96.	24,000.00
Wabash R.R. 50-year 2nd Mtg	5	Feb. 1939	3,000	90.	2,700.00
Western Maryland R.R. 1st Mtg	4	Oct. 1952	75,000	70.25	52,687.50
Total Bonds					$190,175.00

*Redeemed Oct. 1, 1915 (See Exhibit "M")

Consolidated Gas Co. Capital	7	.....	$300	130.7083	$39,212.50
Manhattan Railway Co. Capital	7	.....	36	128.	4,608.00
National Fuel Gas Co. Capital	10	.....	138	202.913	28,002.50
Ohio Fuel Supply Co. Capital (par $25)	8	.....	200	39.5833	7,916.67
Sheffield Farms-Slawson Decker Co. Preferred	6	.....	150	99.4	14,910.00
Title Guarantee & Trust Co. Capital	20	.....	75	380.	28,500.00
Western Maryand Ry. Preferred		.....	500	46.	23,000.00
TOTAL STOCKS					$146,149.67
TOTAL SECURITIES					$336,324.67

SECURITIES IN JOHN D. ROCKEFELLER SPECIAL FUND

Canada Southern Ry. Consolidated	5	Oct. 1962	$37,000	100.	$37,000.00

APPENDIX

APPENDIX I

LETTERS OF GIFT[1]

December 15, 1914.

The Rockefeller Foundation,
26 Broadway, New York City.

Gentlemen:

I hand you herewith twenty-five Canada Southern Railway Company Consolidated five per cent Gold Bonds, Series A, due October 1, 1962, Nos. 4501–4525, the income to be paid over currently to the Baptist Home for the Aged of New York City, so long as in the judgment of the Directors of the Foundation the Home is conducting the work for worthy aged people along useful and economical lines, whether such old people be Baptists or otherwise. When in the judgment of the Directors of the Foundation the income from this fund can no longer be properly appropriated to the work of the Home, in accordance with the provisions above set forth, the principal of the fund and any accrued income shall become a part of the unrestricted funds of the Foundation to be used for any of its corporate purposes.

The Foundation is to have the power in its discretion to sell these bonds and reinvest the proceeds and to change the investment from time to time, but is under no obligation so to do. The bonds and their proceeds shall be kept upon its books as a separate fund so long as the income is paid to the Home.

Very truly yours,

(Signed) JOHN D. ROCKEFELLER.

Enclosures.

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[1] For previous Letters of Gift, see Annual Report for 1913–14.

February 11, 1915.

The Rockefeller Foundation,
New York.

Gentlemen:

I hand you herewith twelve Canada Southern Railway Company Consolidated five per cent Gold Bonds, Series A, due October 1, 1962, Nos. 4526–4537, the income to be paid over currently to the Baptist Home for the Aged of New York City, so long as in the judgment of the Directors of the Foundation the Home is conducting the work for worthy aged people along useful and economical lines, whether such old people be Baptists or otherwise. When in the judgment of the Directors of the Foundation the income from this fund can no longer be properly appropriated to the work of the Home, in accordance with the provisions above set forth, the principal of the fund and any accrued income shall become a part of the unrestricted funds of the Foundation to be used for any of its corporate purposes.

The Foundation is to have the power in its discretion to sell these bonds and reinvest the proceeds and to change the investment from time to time, but is under no obligation so to do. The bonds and their proceeds shall be kept upon its books as a separate fund so long as the income is paid to the Home.

Very truly yours,

(Signed) JOHN D. ROCKEFELLER.

Enclosures.

26 Broadway, New York.
November 10, 1915.

The Rockefeller Foundation,
61 Broadway,
New York City.

Gentlemen:

The will of the late LAURA S. ROCKEFELLER gave her residuary estate to her Executors in trust for charitable uses to distribute according to their discretion among certain enumerated corporations, with power to exclude any one or more absolutely, and with the power to apply any portion of the fund not used for said objects to such charitable corporations as they might select and in such sums respectively as they might deem proper. In exercise of that discretion, the said Executors and Trustees, on September 30, 1915, gave to the Rockefeller Foundation and delivered to its Treasurer the following securities:

4 Bonds Atlantic Coast Line R.R. L. & N. Collateral of 1952 at 87.....	$3,480.00
10 Bonds Chesapeake & Ohio Ry. Co. Conv. of 1930 at 77.....	7,700.00
50 Bonds Chicago, Rock Island & Pac. Ry. 1st Refdg. of 1934 at 63.....	31,500.00
20 Bonds Colorado Industrial Co. 30 yr. Gold of 1934 at 78.....	15,600.00
10 Bonds Imperial Chinese Gov. 5s of 1911, at 75, Jan. 1922–51 Callable.....	7,500.00
50 Bonds National Railways of Mexico S. F. with Jan., 1915, coupons and subse-	

	quent coupons attached of 1957, at 59.....	$29,500.00
	National Railways of Mexico Secured Notes, 6s, for coupon due January 1, 1914, of 1917, at 59.....	663.75
	National Railways of Mexico, Guaranty Trust Co. Receipt for July 1, 1914, coupon, at 59.....	663.75
4	Bonds Pennsylvania R.R. Conv. of 1905, of 1915, at 100.....	4,000.00
20	Bonds St. Louis, Iron Mtn. & Southern Un. & Refdg. of 1929, at 63.....	12,600.00
2	Bonds Seaboard Air Line Ry. 1st Mtge. of 1950, at 79.	1,580.00
25	Bonds United States Mortgage & T. Co. 1st Se. J. of 1919, at 96.....	24,000.00
3	Bonds Wabash R.R. 50-Yr. 2nd Mtge. of 1939, at 90..	2,700.00
75	Bonds Western Maryland Ry. 1st Mtge. of 1952, at 70¼.....	52,687.50
		$194,175.00
	Stocks	
300	Shares Consolidated Gas Co., Capital, at 131.....	$39,300.00
36	Shares Manhattan Railway Co., Capital, at 128.....	4,608.00
138	Shares National Fuel Gas Co., Capital, at 205.....	28,290.00
200	Shares Ohio Fuel Supply Co. (par $25) at $40.....	8,000.00
150	Shares Sheffield Farms-Slawson-Decker Co., Pfd., at 100.....	15,000.00

75 Shares Title Guarantee & Trust Co., Capital, at 380.	$28,500.00
500 Shares Western Maryland Ry. Preferred, at 46.....	23,000.00
	$146,698.00
Total Bonds and Stocks.....	$340,873.00

On behalf of the Executors,

(Signed) STARR J. MURPHY,
Counsel.

APPENDIX II

WAR RELIEF APPROPRIATIONS

TO DECEMBER 31, 1915

	1914	1915	Totals
BELGIAN RELIEF:			
Food Supply:			
The greater part of five cargoes of supplies sent to Belgium	$979,042.37	$ 2,839.54	$ 981,881.91
Clothing:			
Given to the Commission for Relief in Belgium for the purpose of material for clothing, to be imported into Belgium and manufactured by Belgian labor	.....	200,000.00	200,000.00
Relief Work in Holland:			
Establishment of an organization in Rotterdam for receiving, sorting and shipping clothing contributed from all parts of the world for Belgian sufferers; organization of Belgian women refugees into sewing and knitting classes; sewing machines and materials	.....	78,410.94	78,410.94
Stipends for Belgian professors in England	5,000.00	20,000.00	25,000.00
Total Belgian Relief	$984,042.37	$301,250.48	$1,285,292.85
SERBIAN RELIEF:			
Organization and maintenance in coöperation with the American Red Cross, of an American Sanitary Commission for Serbia, to combat an epidemic of typhus, $99,332; contributed to the American Red Cross for the relief of destitution, $5,000	.....	104,332.00	104,332.00
Carried forward	$984,042.37	$405,582.48	$1,389,624.85

APPENDIX II—*Continued*

	1914	1915	Totals
Brought forward.....	$984,042.37	$405,582.48	$1,389,624.85
ARMENIAN AND SYRIAN RELIEF:			
Contributed for the relief of suffering within the Turkish Empire and Northwestern Persia.....	.....	70,000.00	70,000.00
INTERNATIONAL COMMITTEE OF YOUNG MEN'S CHRISTIAN ASSOCIATIONS:			
For the establishment of Y. M. C. A. organizations and buildings in military prison camps in Europe.....	.....	25,000.00	25,000.00
ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH:			
Surgical Laboratory at Compiègne under the direction of Dr. Alexis Carrel.....	5,000.00	25,000.00	30,000.00
AMERICAN RED CROSS:			
To meet the expenses of sending a detachment of physicians and nurses to Europe (August, 1914).....	10,000.00	.....	10,000.00
WAR RELIEF COMMISSION:			
Administration.....	5,570.69	31,757.10	37,327.79
	$1,004,613.06	$557,339.58	$1,561,952.64

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