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December, 1969

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Outline of the  
History of the International Health Division

Part I

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(Why and how the IHD was created. Introduces the principal characters.)

Chapter 2. THE ISOLATIONIST PERIOD IN INTERNATIONAL HEALTH.  
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Part II

World War on Disease.

Ten chapters on hookworm, tuberculosis, yellow fever (two chapters), malaria, laboratory and field research, public health education, public health nursing, the strengthening of health services, and a final comment entitled "Hindsight and Foresight."

Mary Bouger

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Introduction

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At the first meeting of The Rockefeller Foundation after its chartering on May 14, 1913, for the stated purpose of promoting the well-being of mankind throughout the world, its Trustees came to the decision that one of the most promising means of achieving this end would be to carry out a world-wide program for the improvement of public health through the advancement of knowledge in this field and through education, which would include demonstrations of known methods of treating and preventing disease. Accordingly, one of the first actions of the new organization was the creation, on June 27, 1913, of a division to undertake a program of this kind. The Division was first called the International Health Commission; later (May 1916) it was named the International Health Board, and finally (April 1927) the International Health Division.

This Division, with Wickliffe Rose as director, established headquarters in Washington, D.C., in 1913 in offices connected with those of the Rockefeller Sanitary Commission, an organization which had been set up by Mr. John D. Rockefeller in 1909 to conduct a five-year demonstration of methods of eradicating hookworm disease in cooperation with government authorities of certain states of the southern United States where the disease was a serious problem.

Investigations by the Sanitary Commission had revealed that more than two million persons in the southern United States had hookworm disease, that the disease was prevalent in a populous zone encircling the earth for about 33° on either side of the equator, and that little was being done to check its ravages. Furthermore, experience had shown that the disease could be easily diagnosed, that it could be cured and prevented, and that its treatment and cure were effective means of awakening public interest in home hygiene, community health, and

practical measures for permanent sanitation. The Rockefeller Foundation therefore concluded that the Division to which it had delegated its public health work could choose no better initial tasks than to extend demonstrations in the control of hookworm disease to areas outside the United States where the infection was prevalent and, as far as was practicable, to help governments to follow up treatment and cure of this disease with the establishment of agencies for the promotion of sanitation and general public health work. From early campaigns for the relief and control of hookworm disease the Division's program gradually expanded to include new lines of work for which need became apparent. The history of the Division may be said to fall into four periods, corresponding to the terms of office of its four directors - Wickliffe Rose, Dr. Frederick F. Russell, Dr. Wilbur A. Sawyer, and Dr. George K. Strode.

First Period of the Division's History  
1913-1922

The first period of the Division's existence, covering the directorship of Mr. Rose, extended from 1913 to 1922. In the course of these 10 years most of the fundamental principles which governed the policies of the Division throughout the 37 years of its operation were established. From the beginning its officers recognized (1) that public health work is a function of government; (2) that a voluntary agency can best serve the cause of public health by aiding government authorities to organize their own forces for the development of health programs; by giving advice, guidance, and financial assistance during the early stages of these programs; and by providing facilities and opportunities for the education of men and women to carry out the programs; (3) that Division aid must be on a temporary basis, with the understanding that it would terminate as soon as a government was able to carry on a project alone; and (4) that all Division activities must be conducted with the aim of developing or strengthening official health agencies. Accordingly, from the outset the policy of the Division was to work through government agencies and to assist in the development

of a health program only when the government was willing to adopt a definite plan of work, gradually take over responsibility for the program, and within a reasonable period assume the full burden of its direction and support.

In the field of public health education and to some extent in research the Division cooperated with universities. However, during the first decade little research was undertaken. Mr. Rose believed that the function of the Division, for the time being, was to aid in putting into effective use the knowledge of hygiene already available rather than to undertake new studies, but he considered that field experiments to test methods were essential to the Division's work.

The first eight months of the Division's existence were given over to preliminary studies and to conferences between its representatives and officials of governments interested in securing its cooperation in programs for the control of hookworm disease. Field operations were begun in March 1914 with the inauguration of hookworm investigations and treatments in British Guiana. Later in the year similar work was extended to four islands of the British West Indies (Antigua, Grenada, St. Lucia, Trinidad) and to two Central American countries (Panama and Costa Rica). Aid was also given to control work which the Egyptian government had already instituted. At the end of the year the Division took over the unfinished hookworm programs of the Rockefeller Sanitary Commission in 10 states of the southern United States (Alabama, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia) when that organization brought to a close the five-year control demonstration for which it had been created.

In 1915 the Division extended its hookworm work to several additional countries (Dutch Guiana, the island of St. Vincent, Guatemala, Nicaragua, and Malaya). In the course of the year it transferred its headquarters to New York to the offices of The Rockefeller Foundation.

In 1916 the Division began to broaden the scope of its public health interests. In addition to further expansion of its hookworm work it took part during the year in field experiments in malaria control in four rural communities of the South (one in Mississippi and three in Arkansas), with the aim of finding a practical method of attacking the disease that would come within the means of the average rural community; it sent a yellow fever commission to South America to make a survey of known and suspected foci of the disease, and a medical commission to Brazil to assist in a study of medical education, hospitals, dispensaries, public health agencies, and sanitary progress; and it entered upon a program of public health education which had as the first project assistance to the Johns Hopkins University in the establishment of a school of hygiene and public health in Baltimore.

Other new lines of activity were undertaken in 1917. These were cooperation with the government of France in an emergency wartime campaign for the prevention of tuberculosis in that country; support of a movement for the organization of rural health work on a county basis, which was taking shape in the United States and in other countries as a logical outgrowth of hookworm control campaigns; and the inauguration of a fellowship program designed to increase the supply of adequately trained public health personnel.

In 1918 investigations of the prevalence of yellow fever and measures for the control of its mosquito vector, Aedes aegypti, were undertaken in Guayaquil, Ecuador, and in Guatemala, where the disease was occurring. In succeeding years similar measures were carried out in other countries of tropical America as need arose.

The year 1919 marked the beginning of cooperation with state health departments in organizing or improving essential departmental services, such as administration, public health laboratories, sanitary engineering, vital statistics, epidemiology, and public health nursing.

In 1920 the Division joined forces with the United States Public Health Service, the health departments of 10 southern states, and authorities of 52 towns in these states in demonstrations of malaria control, and it began to extend cooperation in such demonstrations to foreign countries (Puerto Rico, and Guayaquil, Ecuador). At the end of the year it terminated its support of antihookworm work in the United States. In the states in which it had been aiding in this work, county health departments had by then taken over as one of their regular functions responsibility for the relief and control of hookworm disease. The Division was therefore able to divert to other channels funds that it had previously budgeted for the hookworm programs.

In 1922 the Division made the first of a series of grants to the Health Organization of the League of Nations to enable it to put its Epidemiological Intelligence Service on a more effective basis and to develop an international interchange of public health personnel.

No further lines of work were started by the Division during its first decade. Thus its activities during this period comprised assistance in the investigation and control of four specific diseases (hookworm, malaria, yellow fever, and tuberculosis) and developmental aid to state and local health services, public health education, and the Health Organization of the League of Nations.

The hookworm program included aid to 11 states of the United States and to 36 foreign countries; the malaria program, aid to 13 states of the United States and to seven foreign countries. The yellow fever program involved assistance in control measures in five foreign countries and sponsorship of two study commissions to South America and one to West Africa. Work for the prevention of tuberculosis was limited to one country, France. Assistance in the development of local health departments was made available to 163 counties

in 21 states of the United States and to two foreign countries; and cooperation was given to central health departments of five states of the United States and seven countries abroad. The program in public health education included aid for the establishment or development of five schools or institutes of hygiene: the Johns Hopkins School of Hygiene and Public Health and the Harvard School of Public Health in the United States, the Institute of Hygiene of the University of São Paulo, Brazil, the London School of Hygiene and Tropical Medicine, and the Institute of Hygiene in Prague, Czechoslovakia. It included also support of 111 fellowships in public health. The first of these was awarded in 1917; by 1922 there were 49 in force.

The Division's expenditures for its work during this period totaled \$16,972,646.

Second Period  
1923-35

During the next 13 years (1923-35), the period of Dr. Frederick F. Russell's administration, the Division continued its work against hookworm disease, malaria, tuberculosis, and yellow fever and, until 1929, its aid to the Health Organization of the League of Nations,\* and it greatly increased its cooperation with state and local health departments and its support of public health education. It added to its program short-term field studies of amebic dysentery, anemia, cancer, diarrhea and dysentery, scarlet fever, typhoid fever, typhus fever, undulant fever, verruga peruana, and yaws in a few areas where these diseases were important public health problems. It also took part in studies of acute respiratory diseases in rural areas of southern Alabama, in a tropical area (St. John, Virgin Islands), and in isolated communities in the far North; participated in a diphtheria immunization campaign in Austria;

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\*From 1930 to 1938 inclusive, contributions to the Health Organization of the League of Nations were made by The Rockefeller Foundation direct.

provided funds to assist the health services of Tennessee and Spain in large-scale production of smallpox vaccine by improved methods; and contributed toward studies in mental hygiene in Tennessee and in a district of Baltimore, Maryland.

As the hookworm, malaria, and yellow fever work progressed, it became evident that there were gaps in the scientific knowledge of these diseases which seriously handicapped programs for their control. With the aim of helping to fill in some of the gaps, the Division began to direct its attention to basic research in these fields. It established specialized laboratories and research stations at various advantageous points, and at these places members of its staff carried out investigations having a bearing on its current work. It also gave support to certain studies along its lines of interest which were being conducted in university laboratories by faculty members. All research in which it had a part, however, was definitely directed toward the acquiring of knowledge that would further the effective and economical control of various diseases which jeopardize public health.

In the course of this period the Division made certain shifts in emphasis in its program in disease investigation and control. As a result of the hookworm surveys, research, and control demonstrations in which it had been participating, the hookworm problem had become well defined throughout a large part of the world; treatment techniques had been improved; health authorities had learned how the infection could be prevented at reasonable cost and were making provision in their regular budgets for permanent measures for its eradication. The Division therefore began a gradual curtailment of financial cooperation in antihookworm work, which initially had been its chief concern, and by the end of the period had practically brought this to completion.

In the meantime yellow fever had become an important focus of interest. As occasion arose, the Division had continued its assistance in combatting outbreaks of the disease in urban and rural areas of Mexico and of various countries of Central and South America. By intensive campaigns for the elimination of Aedes aegypti breeding in the infected areas outbreaks were suppressed, and precautionary measures were continued to keep these mosquitoes at a safe level. But the recurrence of yellow fever in certain localities and its sudden appearance in areas where it was not known to have been present for many years indicated that there were factors involved in its spread that were not completely understood.

The Division therefore planned to undertake a thoroughgoing investigation of yellow fever in all its aspects. As a part of this plan it sent a group of scientists to West Africa in 1925, under the leadership of Dr. Henry Beeuwkes, to learn the characteristics and epidemiology of the disease there and its relation to the yellow fever of the Western Hemisphere; to attempt to isolate the organism causing the disease; to discover the method of its transmission; and to identify the areas in which the disease was continually present. By the end of the year the group had established a laboratory at Yaba, Nigeria, a suburb of Lagos, and had begun field investigations in Gold Coast and Nigeria. Results of studies of the symptomatology and pathology of yellow fever in natives and Europeans in these colonies showed the disease to be similar to the yellow fever of the Americas.

In 1927 workers at the Yaba laboratory demonstrated that yellow fever could be transmitted from man to the Indian monkey, Macacus rhesus, by inoculating the animal with citrated blood taken early in the disease. This discovery of an animal suitable for laboratory studies of yellow fever marked the beginning of a period of fruitful research. It enabled the Yaba workers to prove conclusively that the causal agent of yellow fever is a filtrable

virus and also made it possible for them to develop an immunity test for determining whether or not a person has ever had yellow fever. It had long been known that an attack of yellow fever conveys a lasting immunity to the disease and that an individual inoculated with the blood serum of a person who has had yellow fever is protected against contracting the disease. With a susceptible laboratory animal available this information could be put to use to delimit areas where yellow fever had been present.

In 1928 two additional laboratories for yellow fever research were set up by the Division, one at São Salvador, in the state of Bahia, Brazil, under the direction of Dr. Nelson C. Davis, and the other in New York, under the direction of Dr. Wilbur A. Sawyer. In the Bahia laboratory, <sup>that year</sup> virus strains from three Brazilian yellow fever patients were established in imported rhesus monkeys. At the laboratory in New York the same year cross immunity tests in rhesus monkeys with yellow fever virus from Brazil and West Africa showed that monkeys immunized against a Brazilian strain of the virus were resistant to inoculation with an African strain and that those immunized with an African strain were resistant to a Brazilian strain. Furthermore, blood sera from persons in various parts of the Western Hemisphere, who had had yellow fever many years before, were found to protect monkeys against either the Brazilian or the West African virus. These results were convincing evidence that the yellow fever present at that time in Brazil and in West Africa and the early yellow fever of Panama and other American countries were the same disease.

A laboratory animal more practicable for yellow fever studies than the monkey became available in 1930 when it was learned that the white mouse is susceptible to the virus of this disease if it is inoculated intracerebrally. The disease which results, however, is not like yellow fever in man, but takes the form of an encephalitis. By many passages through mice a strain of

virus was produced which was highly virulent for these animals and at the same time had lost its power to kill rhesus monkeys. In other words, the virus had been fixed for mice. With the discovery that blood sera from persons who had recovered from yellow fever contained substances protective against this virus adapted to mice, the way was open for the development of a means of determining the past distribution of yellow fever that would be more convenient and less expensive than the use of monkeys. A method was soon worked out -- the intraperitoneal protection test in mice -- according to which mouse-adapted yellow fever virus and blood serum of a person who is being tested for immunity are inoculated into anesthetized mice intraperitoneally and at the same time an irritant is injected intracerebrally to localize the virus. If the person donating the blood has ever had an attack of yellow fever, the mice are as a rule protected against the effects of the virus. With this technique established the Division began in 1931 a world-wide survey of immunity to yellow fever designed to define the areas where the disease had occurred in the past. Between 1931 and 1935 the survey was carried out in 29 countries of Africa and 11 countries of South America.

At this time another important use was found for mouse-adapted virus. It was shown that the injection of this virus, together with blood serum from a person who had recovered from yellow fever, was a safe and effective means of immunization against the disease. Beginning in May 1931 human beings were successfully vaccinated by this method. These persons were principally members of the Division's staff engaging in yellow fever work, and government officials, scientists, and other persons leaving for posts in countries where yellow fever was present. The method could not be used for general vaccination programs because of the difficulty of obtaining sufficient amounts of human immune serum,

and efforts were being made to develop a more feasible process.

In the midst of these steady gains in knowledge of yellow fever a discovery was made, in the middle 1930's, which showed that the conquest of the disease presented greater problems than had been supposed. It was learned that outbreaks of yellow fever were occurring from time to time in forest and sylvan areas of South America where the traditional vector, Aedes aegypti, could not be found and where populations were small and scattered. Knowledge of the existence of this form of the disease, which came to be known as jungle yellow fever, called for investigations along new lines.

Malaria research in laboratory and field received a large share of the Division's attention during this period. Among the laboratory studies supported were investigations on the life history of the malaria organism; on the value of quinine derivatives for the prophylaxis and treatment of malaria, and on possible substitutes for quinine in malaria therapy; on the course of bird malaria in canaries, designed to throw light on the way malaria develops and subsides; on the mechanism of immunity to superinfection in birds that had had initial acute attacks of malaria; and on the mechanism of relapse. Field research included studies on varieties of anopheline mosquitoes and their respective roles in transmitting malaria; habits of different anophelines, their length of life, flight ranges, food preferences as between man and animal, and their preferential breeding and resting places; evaluation of various methods of preventing anopheline breeding, such as drainage, oiling of water deposits, spraying these with Paris green, or stocking them with larva-eating fish; covering wells and installing pumps; tests of the protective value of screening houses or placing animal barriers (cow stables or pigpens) between mosquito breeding areas and human habitations.

Until 1925 the Division's program in tuberculosis was limited to cooperation in the campaign for the prevention of this disease in France. In that year responsibility for the support of the campaign was taken over by French health authorities and the Division turned its attention to needs in other places. During the latter part of the period it gave assistance to the following projects: <sup>tuberculosis</sup> surveys, investigations, and localized control programs in Austria and the island of Jamaica; field investigations in rural areas of Alabama and Tennessee; organization of tuberculosis work in Panama; epidemiological studies in an area of New York City; studies at the Phipps Institute of the University of Pennsylvania on the origin and spread of tuberculosis in families; research at Cornell University Medical College on the value of different forms of protective inoculation <sup>against tuberculosis</sup> that were being recommended by various workers.

During this period the Division assisted 35 foreign countries in hookworm work, 28 foreign countries and 13 states of the United States in malaria work, 14 foreign countries in yellow fever surveys or control measures, two states of the United States and four foreign countries in tuberculosis programs. It aided in the development of local health departments in 34 states of the United States and 29 countries abroad, and helped 39 states of the United States and 36 foreign countries to establish or improve various essential departmental services. Its program in public health education included cooperation with one school of public health in the United States and 12 schools or institutes of public health abroad; assistance for work in public health in four other schools, one in the United States and three abroad; aid to five schools of nursing in the United States and one abroad; and support of 971 fellowships in public health. For its work during this period the Division expended \$42,064,156.

## I. INTRODUCTION

## A Preamble and Some Resolutions

In spite of the almost unrestricted range of action permitted ~~(to it)~~ *delete* under its charter, the Rockefeller Foundation (RF) limited its program during the first sixteen years almost exclusively to medicine and public health. Even when important new fields were added in the natural and social sciences and in humanistic studies, the original objectives continued to receive major approval and support. When George E. Vincent, a sociologist and the President of the Foundation during most of the early period, was asked some years later why large funds and technical resources had been channeled primarily into public health rather than into sociological projects, his reply was that public health lends itself to objective measurement<sup>1</sup>. This is an interesting reflection in retrospect, but it does not explain why out of the almost boundless opportunities suggested by the broad mandate of the Founder to "promote the well-being of mankind," the trustees of the newly created Foundation should without hesitation have singled out medicine and public health, in neither of which could the United States at that time pretend to a position of leadership or even, in the opinion of qualified critics, to a reasonable stage of advancement.<sup>2, 3</sup>

The decision to choose this, rather than some other, field of action -- or indeed, several fields of action -- was taken at the first meeting of the trustees on May 22, 1913, hardly more than a week after the charter of the Foundation was granted. After the officers were elected and a constitution adopted the discussion turned at once to the possible lines of work which the Foundation might undertake and "which were likely to present the largest

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1. Atwater

2. Flexner, Abraham

3. Chapin, Chas. V.

probability of permanent and far-reaching usefulness."<sup>4</sup> There seems to have been little hesitation or contrast of opinion in arriving at a decision of such magnitude, charged as it must have been with perplexities. Putting aside a large accumulation of suggestions and applications,\* all of which were declined, the trustees agreed that "the advancement of public health through medical research and education, including the demonstration of known methods of treating and preventing disease, afforded the surest prospect of such usefulness." The trustees went a step further and indicated that the demonstration of the treatment and prevention of hookworm disease should in their opinion be used as the spearhead of this unprecedented venture into international public health.

This rather surprising action so promptly taken by the trustees in a matter of obvious moment and complexity represented in fact a carefully matured opinion which had a considerable background of previous experience and discussion. The field of medicine and public health was one which had been prominent in the minds of all those who had been associated with the planning of this and of the other philanthropic enterprises of Mr. Rockefeller. Frederick T. Gates, Mr. Rockefeller's closest adviser, who described himself in Who's Who as "business and benevolent representative of John D. Rockefeller. . . in industrial, educational and charitable organizations," had for years been profoundly disturbed by "the woeful neglect" of scientific medicine "in all civilized countries, but perhaps most of all in the United States."<sup>5</sup> Disease, to Mr. Gates, was "the supreme ill of human life and. . . the main source

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4. Annual Reports, R.F.

\*"There was always a spate of begging letters after any great gift by Rockefeller; one count showed 15,000 letters the first week and over 50,000 the first month." Gates, unpublished memoirs.

5. Flexner, S. & T.J.

of almost all other human ills."<sup>6</sup> The Rockefellers, Sr. and Jr., shared his interest and concern, and from it had arisen, some twelve years before, the Rockefeller Institute for Medical Research (R.I.).

Mr. Gates' strong feeling about disease had received unexpected corroboration from the experience of the General Education Board (GEB) founded by Mr. Rockefeller in 1903 to promote education in the U.S. and particularly in the Southern States where an urgent situation existed. Its director, Dr. Wallace Buttrick, found the problem of the mental and physical sluggishness of the rural South both serious and baffling. It had been vaguely ascribed to the residual consequences of the Civil War, to climate, to poverty, to malnutrition, to decadence of the human stock. Only after some years did it become clear, through the investigations of Dr. <sup>C. W.</sup> Stiles, a zoologist of the U.S. Public Health Service, that the underlying cause of retardation in education and to no small extent in social and economic advancement, was a widespread infection with hookworm. This is a bloodsucking parasite which locates itself in the intestines and produces a devitalizing anemia with very serious effects on children, making them undersized, listless, and dull. Mr. Gates, who was Chairman of the GEB, brought to Mr. Rockefeller's attention the magnitude of the hookworm problem in the Southern States and its grave consequences to health, education, and progress. The result was a gift of a million dollars to finance a five-year campaign against hookworm disease, which was vigorously initiated in 1909 by the Rockefeller Sanitary Commission (RSC) under the guidance of Wickliffe Rose, a Southern educator who organized and directed it, and with the collaboration of the health authorities of eleven southern States. Mr. Gates, who was Chairman of the Commission, watched

with expectancy and growing enthusiasm the successful progress of this coordinated attack on a widespread disease, which marked the first venture of private philanthropy into the field of public health. Such concerted action to weed out a damaging disease over a great area seems never to have been attempted before. Dr. William H. Welch, the leading figure in American medicine, in accepting a position on the Commission, said that "both the purpose of the gift and the opportunity created are unique in the annals of preventive medicine."<sup>7</sup>

This innovation was destined to have important consequences. That governments, under certain conditions, would accept private aid to operate public services opened up an unlimited field of action to funds of the magnitude of those of the R.F. Mr. Gates' imagination was already encircling the earth. He saw an opportunity for a great venture in the field of "health and hygiene," one of the most neglected and undeveloped "elements of civilization."<sup>6</sup> The plan devised by Mr. Rose of mobilizing the health authorities of the Southern States in a simultaneous and concerted drive against a common destroyer seemed to him capable of unlimited application. The R.S.C. became to him only a pilot experiment. A questionnaire sent at his request to tropical countries throughout the world showed that the disease belted the globe on both sides of the equator and threatened a third of the population of the world. "After due consideration," he wrote in his unpublished memoirs, "we determined to organize a new and world-wide agency to attack this and other curable or preventable diseases, and to promote universal health."

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#### 7. Flexner, S. & J.T.

\*"Professor Morey, in his summary of the elements of civilization, reduced them to six: means of subsistence; government and law; language and literature; philosophy and science; art and refinement; morality and religion. To these I venture to add two more: health and hygiene; reproduction and eugenics." (Gates unpublished memoirs) (SM p. 481)

#### 6. Gates.

Thus it was that Mr. Gates suggested to the trustees of the R.F. at their first meeting that the extension of the war on hookworm to other parts of the world would be one of the most productive lines of work which could be undertaken, not only on account of the direct benefits resulting from the elimination of the disease, but also because he hoped that it might lead to the promotion of "other lines of educational and humanitarian work."

The trustees agreed to this proposal with enthusiasm.<sup>8</sup> Five of the eight men selected to be trustees of the R.F. had been members of the R.S.C. from the beginning, including both its chairman, Mr. Gates, and its executive secretary, Wickliffe Rose. The hookworm campaign, now in its fourth year, had given convincing proof of the magnitude of the problem, the feasibility of its solution, and its educational and social repercussions on the life and activities of the community, which may have seemed of particular importance to a non-medical board.

It seems worthy of comment that only one of the trustees was a doctor of medicine, the others being distinguished educators, lawyers, and business men, in keeping with the principle, still respected, of having a lay board with possibly a few specialists in fields of primary importance, but with emphasis on general ability and balanced interests. If, therefore, in its early period, the R.F. was, as Raymond B. Fosdick has said, "captured by the doctors," it was due to no fifth column boring from within. Dr. Simon Flexner, Director of the Rockefeller Institute, was the lone medical trustee for many years. His incisive mind, broad knowledge, and habitual caution, however, made his opinions particularly influential in scientific

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8. Fosdick, R.B.

matters. Mr. Gates said of him, "On medical questions his counsels have been practically decisive on all our Boards."<sup>7</sup> When the matter of financing a great hookworm campaign had first been broached to Mr. Rockefeller in the fall of 1908, he had with his usual caution asked Dr. Flexner to satisfy himself that this disease, previously so little heeded, was in fact as disastrous in its effects as it was painted. Flexner's quiet investigation confirmed Dr. Stiles' statements. "Communities afflicted with this scourge," he said,<sup>9</sup> "sink into a collective torpor that makes any cultural, social, or economic improvement almost impossible."

Buttressed by medical authority, the trustees of the Foundation, at their first meeting, made the decision to extend the Southern hookworm work through a world-wide agency, and turned to Mr. Rose as the logical person to prepare a plan of operation. Mr. Gates, "as the originator of the idea," drew up a preamble and resolutions creating a new agency, which was to promote universal health and to advance the science of medicine throughout the world.<sup>7</sup> A month later the plan was approved and the resolutions adopted by the trustees; the International Health Commission (I.H.C.) of the R.F. came into being on June 27, 1913.

It may be remarked that the I.H.C. was the R.F. for almost a year and a half, until a second agency was created at the end of 1914 to promote medical education in China. It is clear that, in the beginning, the Foundation was not really casting about for a suitable program with which to initiate its work, but that such a program already existed and was looking for suitable

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7. Gates

9. Flexner, S. & T.J.

sponsorship.\* It is true that Mr. Rockefeller in his characteristic way declined to have it definitely stated in advance that the Foundation would extend the work of the Sanitary Commission to foreign countries, although this was highly probable. "I feel increasingly," he wrote Mr. Gates, "that even in order to get the charter, we should not commit ourselves to any specific line of work. This hookworm enterprise can be used effectively as illustrating the kind of thing such a charter would make possible."<sup>10</sup> But Mr. Gates' conception of the Foundation as long as he lived was that it should be a sort of holding corporation accomplishing specific purposes by means of nearly autonomous commissions or boards held loosely together more by their financial ties to the parent organization than by a policy of central planning and administration<sup>11</sup>. Mr. Gates, therefore, and Jerome D. Greene, Secretary of the Foundation, who was of the same mind, had no list of alternative projects to present, and the trustees were unanimous in their approval of Mr. Gates' motion; no other fields of possible activity were on the agenda at that meeting or for some time to come.

The trustees had reason to be satisfied with their decision. The entry at that time of the greatest private philanthropic agency into the field of international public health was to have consequences over the years

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\*This is evident from a passage in Gates' unpublished memoirs: "After due consideration we determined to organize a new and world-wide agency to attack hookworm and other curable or preventable diseases, and to promote universal health. It seemed best to make this new organization a subordinate agency of the R.F. Accordingly, I drew up and . . . presented to the Foundation a preamble and resolutions which were duly adopted, and the work of the I.H.C. was duly organized under them. These resolutions establishing the I.H.C. were prepared by me by request as the originator of the idea of extending the southern hookworm work through a world-wide agency for advancing the science of medicine."

10. Source Book for a History

11. Gates

and in every quarter of the globe which could hardly have been imagined by Mr. Gates himself. The moment was opportune since governments, in spite of more than sixty years of intermittent debate, were still unable to agree on concerted action against any disease of international concern, and the I.H.C. was almost universally welcomed as a neutral collaborator in a field hedged with political embargoes. Even the fact that the R.F. almost immediately found itself operating in a world at war was in certain respects not an unqualified misfortune; wartime conditions and dislocations created unlooked-for opportunities and permitted patterns of collaboration which became permanent features of future programs.

Furthermore, hookworm disease was a fortunate choice of target for a global campaign to promote health and well-being. The disease occurred mainly in neglected areas of human backwardness and need, "retarding," in the words of Mr. Gates' preamble, "the economic, social, intellectual and moral progress of mankind." The program to eradicate hookworm never led to such dramatic victories as malaria nor to such fruitful discoveries as yellow fever, but it was far superior to these as an entering wedge for a program of health protection and health promotion. It was loaded with individual responsibility and social implications. These were commonly ignored in the sanitary practice of that day, which was mainly concerned with treatment of disease and sanitation of the environment. This was reflected in the resolution creating the I.H.C., which called for the eradication of hookworm disease by treatment and cure, to be followed up, so far as possible, practicable, "by the establishment of agencies for the promotion of public sanitation and the spread of the knowledge of scientific medicine." That was a fair resume of the whole <sup>content</sup> compass of public health in 1913, but it was not enough. The hookworm was perpetuated by unsanitary habits of individuals,

and unless these were corrected there was little hope of eradicating the disease. Hookworm presented an educational problem far more difficult and time-consuming than the medical one, and there was no provision in the rural public health machinery of that epoch for the education of people in healthy habits of living. It was this lacuna, which was only beginning to be recognized in the first decade of our century, that made hookworm control the best approach to the promotion of adequate rural public health services, and led to the choice of an educator rather than a doctor to direct it.

The trustees' enthusiasm for the project was supported by the experience of the R.S.C. in eleven Southern States, to which they referred in the preamble to their resolution: "The Sanitary Commission. . . . has ascertained that the diagnosis of the disease can be made with ease and certainty and that it can be readily cured and easily prevented; has found that the people, physicians, state boards of health, county and municipal officers are eager to cooperate in all helpful ways, and that, following the treatment and cure of this disease, an intelligent public interest is awakened in hygiene and in modern scientific medicine and in practical measures for permanent public sanitation."

The trustees, therefore, had had the good fortune to hit upon a health problem of unsuspected proportions, a new and highly promising approach to its solution, and an unusually favorable opportunity to enter the international field. They had also found the man to do it. Wickliffe Rose, not an M.D. but a professor of philosophy and mathematics at Peabody Normal College in Nashville, Tennessee, had come to the attention of Mr. Rockefeller's General Education Board when he became active in directing an effort to secure an endowment for his college. He soon abandoned academic life altogether to become the executive of the Peabody Fund which was cor-

cerned with improving education in the Southern States, and managed this so successfully that he was chosen from among several possibilities to head the R.S.C. in 1909. Four years later no other person was considered for the directorship of the I.H.C.

But although Mr. Rose was a layman in many of the professional aspects of his new job, he was able to call upon four competent and interested consultants whom the trustees had elected to the International Health Commission from outside the membership of the R.F. and who at important junctures were to give him invaluable aid. They were perhaps the most distinguished Americans of their time, in their several fields, and one measure of the quality of Rose's mentality and character is the respect he won and retained from men of this caliber. General William C. Gorgas, the sanitarian of the Panama Canal, was familiar with the health problems of warm climates to which the I.H.C. was to devote its major attention for many years; it was Gorgas who had surmised that it would cost no more to keep people healthy in the tropics than to keep them warm in the Dakotas. David F. Houston, Chancellor of Washington University in St. Louis, had long been interested in the burden laid by disease on education, agriculture, and economy; he was one of the original ten members of the R.S.C., and though an educator by profession entered President Wilson's Cabinet during the war as Secretary, first of Agriculture, and then of the Treasury. Walter H. Page, Southerner by birth, crusader by temperament, and editor by profession, had been engaged all his life in movements to better the lot of the common man. More than a literary figure, he was a fighting liberal, and eagerly associated himself with the Rockefeller educational and medical agencies because he considered that ignorance as a cause of disease and disease as a cause of ignorance were among the greatest obstacles to the

democratic way of life. He was now Ambassador to Great Britain, but he willingly accepted membership on the I.H.C., as he had previously done on the R.S.C. and the G.E.B.

Rose's strongest support came steadily from Dr. William Henry Welch, who was not only the dean of American medicine but also, in President Hoover's words, "our greatest statesman in the field of public health." Returning from Germany in the golden period of discovery in bacteriology, pathology, and immunology, Welch was the outstanding propagandist in America for the new science of medicine. Nominally a pathologist, his interests had the widest imaginable range and his influence grew with his years, not only in the medical sciences but in the hygiene movement. He became President both of the American Medical Association and of the Maryland State Board of Health. His activities at times went far afield. It was Welch who persuaded Theodore Roosevelt to appoint Gorgas as Chief Sanitary Officer of the Panama Canal,<sup>12</sup> and he threw the weight of his authoritative opinion behind Stiles when people ridiculed his hookworm discovery. He had been the first person consulted about the Rockefeller Institute for Medical Research and was President of its Board of Directors for thirty-three years; he was one of the group invited by Mr. Rockefeller to organize the R.S.C. Welch must have represented to Gates the embodiment of his most ardent aspirations because of his dedication to "the spread of the knowledge of scientific medicine." His greatest contribution, as he himself summed it up at the age of eighty,<sup>13</sup> was "certain pioneering work" by virtue of which he had impressed the scientific approach upon "an army of teachers, investigators, pupils, associates, and colleagues." His most valuable contribution to the R.F. was to be in the field of education in medicine and public health.

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12. Flexner, S. & T.J.

He became a member of the I.H.C. at its inception and took interest and satisfaction in the rapid development and diversification of Rose's program abroad. His active collaboration was indispensable to Rose when, almost immediately, it became necessary to create professionally trained personnel for all this new kind of work, since none existed ready made.

How far Rose or any of those who so confidently planned the "promotion of universal health" throughout the world were fully cognizant of the delicacy and strangeness of the mission is hard to tell. Nothing like it had ever been imagined before. It broke ground in a number of new fields, for, as Welch said, <sup>if</sup> it was a new venture for philanthropy, it was no less new to medicine and public health and to international diplomacy. The great powers had consistently refused to permit intervention in their internal affairs on the part of an international health authority of their own creation. Now a private organization without advance preparation or consultation, with no foreign experience and, as it turned out, with only incomplete knowledge of its task, was about to cross frontiers and attempt to establish a front against disease around the world, first by campaigns of treatment and sanitation, to be followed by the establishment of permanent agencies for the promotion of public health and scientific medicine. Mr. Gates' enthusiasm for his plan and Mr. Rose's serene confidence in its feasibility rested on nothing more solid than the revelation of a world need, which, however, remained as yet generally unrecognized.

This in brief was the background of the I.H.C., and these the people who conceived, approved and interpreted the unusual preamble and resolutions which created it. With slight changes in name and with some mutations of program and structure under its four successive directors, the I.H.C. functioned in every continent and in almost every country of

the world for thirty-seven years, from 1914 to 1950. Hookworm, as everyone knew from the beginning, was never an end in itself, but out of it, as from a seed planted at the appropriate time in hospitable soil, grew a spreading and fruitful plant which has scattered its own seed to the ends of the earth. This book will attempt to describe its parentage, development and achievement. Its evolution has in many ways paralleled and influenced, deliberately and in unpremeditated ways, the progress of the science and the art of public health in general, from its embryonic stirrings as an avocation of curative medicine through a long period of carefully preserved independence to a final fusion of aims in a recognition of their interdependence and of the indivisibility of the conception of health.

Comp. 16

## Introduction

*from C. 16*

A compilation such as this of the projects and expenditures of the Rockefeller Foundation for malaria in 55 states and colonies over 35 years makes an impressive record of far-flung and multiform activity. However, only to those who can read between the lines will it convey any intimation of the ambitions, frustrations and rewards of the early staff, sent forth with confidence and a certain simplicity to wage war against the King of Diseases, whose protean nature and resources were as yet unsuspected. The way the International Health Commission, forerunner of the International Health Division, became entangled in this tremendous problem, for which its knowledge and weapons proved at ~~once~~ <sup>the time</sup> to be inadequate, was as follows.

Wickliffe Rose, a college professor and a distinguished leader in education in the South, had been chosen by Mr. Rockefeller's advisers to organize the hookworm campaign of the Rockefeller Sanitary Commission in eleven Southern States in 1910. Rose, a layman, was wisely put in charge because the medical and sanitary problems were so simple that they could be handled by young doctors and sanitary engineers with a minimum of special training, but the promotional and educational aspects of hookworm control were more subtle and difficult, calling for a leader experienced in methods of teaching and in the ways of the South. The results were so encouraging that when the Rockefeller Foundation was created in 1913, the Trustees decided that no program offered more promise than that of extending the hookworm work, under Rose's guidance, around the world. The British no sooner heard of this than they invited him to begin in any or all of their tropical colonies, and since there was no precedent to guide him in this

sort of thing, Rose set out to visit as many as he could in order to acquaint himself with their political, economic and health situations.

Passing through London early in 1914, he met Sir Ronald Ross who had become famous by proving, some 16 years before, that malaria was not contracted through exposure to night air coming off the marshes, but could only be transmitted from person to person by mosquitoes. Ross had been fuming with choleric impatience ever since because so little use of his discovery had ever been made to control malaria. Gorgas had waged war against the anophelines in the Panama Canal Zone, but at a cost prohibitive to the ordinary tropical community. A more practical, and about the only other example, was Dr. Malcolm Watson's work in Malaya, where the rubber planters, almost sunk under the economic burden of malaria, had been persuaded to finance some experiments in Anopheles control. Ross must have realized that in his encounter with Ross he was presented with the opportunity of a lifetime. He painted a grim picture of malaria, dwelt on the feasibility of its prevention, and urged Rose to visit Watson on his way around the world. This Rose did, and came away with a double impression - <sup>of</sup> the gravity of the disease and the fact that something could be done to control it.

Now the criteria governing the selection of a disease suitable for attack by the IHD were that it should be of global importance; that measures were known for curbing its ravages on a large scale at reasonable cost; and that little or nothing was actually being done about it. Rose was already convinced of the first; in his report he wrote: "Malaria is to be regarded as presenting the most serious medical and sanitary problem with which we have to contend." It was clear, too, that literally nothing was being done, in the United States or anywhere else, to put a stop to it. The question

remained "whether the various known measures, such as quinine treatment, screening and drainage operations, can be effectively employed . . . at a cost which will not be prohibitive." Rose set to work at once to find out.

Always anxious to involve government at all levels in his projects, Rose asked the United States Public Health Service, which had been gathering data on malaria in the United States since 1912 but had no money, whether it would not like to invite the Rockefeller Foundation to collaborate with it and State and local authorities in some experiments in a few selected areas to find out what would be the most effective way for a rural community to protect itself against malaria, and what this would cost. Under the direction of Public Health Service officers, these experiments were begun in 1916 in two or three Arkansas and Mississippi villages and succeeded beyond expectation. Malaria was greatly reduced by one or a combination of measures at reasonable cost and the villages were so pleased that they continued the work at their own expense. During World War I the same methods were used to protect Army encampments and key industrial centers from malaria, and by 1922, the anti-anopheline drive had been extended to 163 counties in 10 States with very satisfactory results, even though no major drainage operations were attempted.

Mr. Rose was pleased. He was unwilling to tackle diseases whose epidemiology and control were shot through with unknowns which might require protracted investigation before preventive action could be made effective. It had not been the extent of our ignorance in the field of public health which had led to the creation of the IHD, but the lag between the existing knowledge of disease and its application; and Rose felt there was enough knowledge lying idle to keep him busy for a long time. He had a working arrangement with the Rockefeller Institute and several university laboratories to do whatever research might be needed to answer questions arising in the course of field operations, and he applied his remarkable abilities to procure the widest

possible extension of the novel idea he had hit upon of helping rural communities organize their own efforts to lift the burdens of endemic disease. He set up a training station in Leesburg, Georgia, to teach his young "malariologists" the techniques of making <sup>a</sup> malaria survey and applying the standard, well-tried methods of obstructing the transmission of the infection. By 1923 he felt secure enough of his grounds to accept the invitation of Italy to collaborate in its age-old conflict with the disease, a move which rapidly led to similar agreements with malarious countries all over the world.

Mr. Rose resigned in 1923 to become director of the International Education Board and was succeeded by Dr. F. F. Russell, a distinguished medical scientist. It was time for a medical investigator to take over. The program in Italy was running into unexpected difficulties. The measures which had worked so well in Arkansas and Mississippi were not as successful in the highly malarious Mediterranean area. Everything was different - climate, people, mosquitoes and even the malaria parasites. When it was attempted to drain their breeding places, the Anopheles continued to breed abundantly in the drainage canals. The plasmodia survived the most intensive treatment with quinine. It was clear why the Italians had failed to adopt the simple American measures. In the Orient and the tropical jungles and savannas of Africa and South America it was already evident that the situations were even more complex and difficult. These were not problems which could be turned over to the Rockefeller Institute for solution, they had to be solved by the men in the field who alone knew all the epidemiological factors involved.

Dr. Russell turned at once to investigation. The IHD had not been planned as a research agency; he was forced to transform it into one. The staff had devoted itself to administration, leaving the obscurities to be cleared up by

others; now it assumed both functions. The IHD began to think for itself. For the first time field observations and experiments in widely scattered areas were coordinated and brought to a focus on parasites, viruses, plasmodia and mosquitoes; they were supported by laboratory research and statistical analysis, and guided and counseled from a central post of command which had the whole vast battle-front in view. This was the structure Dr. Russell planned and built, convinced that programs of disease control without concomitant research are tethered to tradition and hence completely static. This is taken for granted now, but in those days (not so long ago at that) health departments rarely sported epidemiologists, and research by a tax-supported health agency was strongly discouraged because "it did not save lives."

As in yellow fever, the new approach enabled the IHD to clarify many of the multiform and often paradoxical aspects of malaria which had confused the world. Survey methods were worked out and standardized to permit the comparison of one area with another far away. A long-continued study of the host-parasite relationships in man and animals revealed a new concept of immunity, and provided a scientific basis for the evaluation of drugs. Control measures were based on the bionomics and behavior of the local anopheline vectors, but too little was known about them since they are active only by night, and rest immobile and inscrutable throughout the day. It was found possible to establish self-perpetuating colonies of most of the dangerous species, adapted to a life of captivity in the laboratory. This has become one of the most important ways of studying anopheline biology, since the old method of transfixing them with pins was unproductive. One of the basic discoveries was that many wide-ranging and apparently homogeneous forms such

the maculipennis of Europe were really complexes composed of several species almost or exactly alike in appearance, but so different in physiology and behavior that some might be dangerous vectors of malaria and others completely innocuous. It was this discovery which provided a rationale for malaria control by antimosquito measures in the Mediterranean basin and many other areas where it had not previously been attempted or even advocated by malariologists, due to the inexplicable inconsistencies of the vector species in transmission of the disease.

In control, as in research, the IHD pioneered in many fields. It was the first to make practical application of Paris green <sup>and</sup> plus DDT <sup>as</sup> ~~or~~ anopheline insecticides, leading to the substitution of mosquito control for intensive treatment campaigns as the basic method of interrupting transmission. The elimination of the malaria parasite from the population of Sardinia, and the eradication of Anopheles gambiae from Brazil and Egypt were achievements which emboldened WHO to propose a coordinated campaign to rid the world of malaria. The new standard malaria team of doctor, entomologist and engineer was developed to bring into collaboration on the spot three professionals who had usually operated independently, if not at cross purposes. Such a team was indispensable, for unlike yellow fever and hookworm, there could be no standardization <sup>of</sup> tactics in the control of malaria. Mr. Rose's eager young administrators, despatched overseas after a few weeks' indoctrination at home in the officially approved methods of disease prevention and control, were no longer adequate. Every malaria problem was in many aspects unique, and no manual of procedure could be furnished by New York. The planning had to be decentralized, and the experts assembled at the scene of action. At a time when hookworm disease had long ceased to offer any surprises, and yellow fever campaigns envisaged nothing more than a reduction in the numbers of Aedes aegypti mosquitoes

below a certain critical level, malaria had induced a profound mutation in the character and objectives of the IHD, transforming it from an efficient and well-oiled machine into an institution for advanced studies in epidemiology, and the application of science to the control of disease.

## II. THE ISOLATIONIST PERIOD IN INTERNATIONAL HEALTH

In September, 1947, cholera broke out in Egypt, a country which lies on a shortcut from the Far East to Europe, and has often in the past acted as regional distributor of pestilences arising in the Orient. This time, however, the U.N. had created, only the year before, a World Health Organization which, though as yet unratified by a majority of the member states, boldly took the initiative through an Interim Commission, and rallied seventeen nations to the aid of Egypt in its fight against a common enemy. Quantities of vaccine and other supplies were flown in, false rumors of spread to other countries were squelched, reliable information of the progress of the epidemic was broadcast locally and abroad, and experts were sent to advise the Government. "It is noteworthy," states the official report, that "the mortality was seven times less than during the previous [cholera outbreak], and in spite of increased speed and development of international traffic, not a single case of cholera occurred abroad as a result of the Egyptian epidemic."\*

It is perhaps even more noteworthy that no such joining of forces to combat epidemic disease at its source had taken place before during the 500 years of the modern era. In former centuries the great pestilential diseases -- cholera, plague, smallpox, typhus, yellow fever -- swept unhindered across the civilized world at unpredictable intervals, leaving wide trails of death and misery in their wake. It is true that until about 1880 when Pasteur and Koch revealed the role of microorganisms in infection, these epidemic diseases were able to move behind a smokescreen of ignorance, crossing oceans and penetrating the most elaborate defenses as though they did not exist. Yet the increase in knowledge had little effect upon the

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\*Quoted by Goodson p. 173

international situation until well into our own century. For example, plague, starting in China in the middle nineties, pursued an unhurried course from country to country around the world in both directions, taking several years to reach the Western Hemisphere. It appeared in the Hawaiian Islands in 1899, and in March, 1900, entered the port of San Francisco, which was so incredulous and unprepared that the presence of the disease was angrily denied by the civil authorities, courts and newspapers for almost a year, although people died by the hundreds and the plague bacillus had been recognized at once by the City Board of Health. Pestilential diseases were still not handled as world problems but had to be faced by each country individually according to its lights, and usually not until people began to die and the terror to spread. The point is that even in the year 1900 there was no international system of epidemic intelligence nor any machinery by which the more qualified nations might attempt to scotch any of these epidemics in the making or, as in Egypt, interrupt its progress at some natural bottleneck in its path.

One more epidemic catastrophe was in store for the world -- the pandemic of influenza in 1918, which must have caused the death of over 20 million people, with great dislocation of essential services and consequent economic loss. In rapidity of spread and prodigious mortality it resembled the Black Death of the Middle Ages and inflicted the same feeling of complete insecurity and impotence. "The realization of the utter helplessness of man in attempts to control the spread of the disease depressed me beyond words," wrote Victor Vaughan. It is not likely that the most perfect international organization, had one existed, could at that time have prevented the universal dissemination of a virus with such extraordinary aggressiveness. Nevertheless the occurrence seemed a shocking anachronism in the 20th century and was appalling in its demonstration of man's unpreparedness and ignorance.

No less ruinous than the great pestilences, though far less spectacular, were the more sedentary killers -- endemic diseases such as hookworm, tuberculosis, typhoid fever and malaria, which had succeeded in infiltrating every hospitable climate or environment by means of commerce and migration. Firmly rooted and domestic in each community, they were entrenched in the habits and usages of the common people, causing no general alarm and provoking almost no organized resistance. Thus they were more dangerous in the long run than the epidemic diseases, causing more disability and death; yet they were tolerated, only a generation ago, with almost fatalistic acquiescence. When, in July 1854, the alarming news spread throughout the land that 54 cases of cholera had occurred in New York City, the Scientific American caustically noted that as many deaths from consumption took place in that city every week.

Even less public concern was aroused by malaria and hookworm disease, the chief enemies of the rural populations which made up the great majority of the people of the world. Malaria did not gather like a storm in the distance and sweep devastatingly over wide areas, leaving death and ruin in its wake. It was at home everywhere, constantly and destructively at work. The present generation in America can have little idea of the situation in our own country 50 to 100 years ago, or indeed of the huge tax on life and property which malaria still levies in a great part of the world. It is surprising to read, in Lemuel Shattuck's famous report to the Massachusetts Sanitary Commission in 1850, that the most common infectious disease of all was malaria, and he was speaking of New England. Year after year it upset the life and customary activities of every town and almost every family in the United States. In the Middle West in the 1850's, "malaria," says Dick, "was the disease of the young and caused more deaths than any other illness." In California it took part in the gold rush, and

impeded the subsequent agricultural development, yet Charles V. Chapin,\* reporting a survey made at the request of the American Medical Association in 1913, said that although there were millions of cases and thousands of deaths annually from malaria, almost no preventive measures were being taken; and this was equally true abroad. Malaria was racking the peoples, virtually unchecked, in the endemic regions of every continent of the world.

Hookworm too lay like an incubus upon a belt 5,000 miles in width, stretching around the Earth on both sides of the equator and embracing a population of not less than a thousand million people. The leading role played by this blood-sucking parasite in undermining the health and economy of our Southern states was suddenly revealed by the surveys of the Rockefeller Sanitary Commission in 1910, and an inquiry set on foot immediately by Mr. Gates showed it to be a factor of first importance in "retarding the economic, social, intellectual and moral progress of mankind."\*\* Almost no populated, agricultural area of the tropics or subtropics was uninfested and, as in our South, the gravity of the situation was hardly recognized, and little or nothing was being done to relieve its effects or stop its spread by migratory labor from India and China, in spite of the simplicity of its treatment and control.

The situation, then, when Chapin made his survey of state health services in 1913, was that both endemic and epidemic disease still flourished mainly because of human ignorance and negligence. We were as unprepared for the one as for the other. The endemic afflictions were accepted almost as part of the normal predicament of humanity, and the physicians were content to treat the victims and ignore the causes of disease. The epidemics easily penetrated hastily improvised defenses and burned themselves out after

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\*Chapin, Report etc. 1915

\*\*Annual Report Rockefeller Foundation 1913-14, p. 12

consuming the susceptible elements of the population. What was lacking was any sense of responsibility or organized effort on the part of the community to put a stop to such a senseless waste of human life, either in a hookworm and malaria-ridden county of our Southern states, or in the larger community formed by the nations of the world.

Chapin doubted whether communities such as the rural counties of the United States could be expected to work out their own salvation. "Some outside agency," he said, "must at least point the way." What "outside agency" he had in mind he did not say -- probably the Federal Government, whose intervention, however, did not become effective until some twenty years later when the Social Security Act of 1935 provided Federal aid for properly organized local health services. Chapin may have been thinking of a voluntary health agency such as the Rockefeller Foundation, but in that case he was speculating on the future, since the Foundation had barely been organized when he wrote his report, and had no program as yet in the United States. There was a modest handful of other volunteer agencies in 1915 which, begun locally on a small scale, had expanded into national organizations, but each was concentrated on a special field of health such as tuberculosis, venereal disease, mental hygiene or child health. Only the Rockefeller Foundation at that time, and for many years to come, was international in scope, and was unrestricted in its interest in every field of health. <sup>But</sup> Chapin, ~~besides~~, had been frankly critical of the Rockefeller Sanitary Commission in its relations with state and local governments, pointing out the dangers of an alliance between a large philanthropic agency and a public authority.\*

In any event, Chapin's prediction proved to be sound, not only with respect to small communities such as the counties in the United States, but

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\*See Chapter 3, p. <sup>48</sup>

also at the international level where all attempts to obtain effective multilateral action in the field of public health had foundered on reefs of ignorance, suspicion and national pride. Actually, the history of the international health movement goes back a long way. The beginnings of the recognition of world health as an international responsibility are to be found in the fourteenth century in the primitive quarantines established (in vain) against plague. In subsequent centuries as trade expanded, international sanitary conferences were held again and again to work out some modus operandi; they were entirely fruitless until, in the light of the twentieth century, the old attitudes were at last seen to be preposterous. Groups of nations then set up permanent offices for the exchange of information on quarantinable diseases that might affect international traffic, but these offices were not allowed to concern themselves with the health conditions behind the frontiers of the member countries.

In the end, it was an outside agency which "pointed ~~at~~ the way." In Winslow's words: "The more modern concept of an international health program which involves cooperation in building up within each nation of the world a sound and effective program of disease control and health promotion was first demonstrated by an organization which was neither international nor national, but representative of the vision of a private social service organization -- the Rockefeller Foundation. In the year 1913, it established an International Health Commission which, under various names, has functioned for nearly forty years, and has played a major role in the development of cooperative action in this field."\* How the Rockefeller Foundation came to assume this role becomes clear when we consider the stage of development which had been reached by both national and international health agencies at the time the Foundation was created.

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\*Winslow: International Health, 1951.

The early inaction of nations and communities in the face of the continual menace of disease from within and from without was due in large part to ignorance and to utter confusion in medical theory, which resulted inevitably in the adoption of purely empirical measures or of no measures at all. Not until the eighties or nineties of the last century -- a time within the memories of people still alive -- was there any definite knowledge of the causes of the commonest infectious diseases, and the way in which they spread. They were variously ascribed to the wrath of God, sinister conjunctions of the planets, or some unhealthy constitution of the atmosphere, and medical opinion was in sharp disagreement as to whether they were communicable at all from the sick to the well. An expanding epidemic seemed to be of the nature of a climatic phenomenon against which little could be done except to bar the doors until the storm should blow over. For long centuries the individual felt utterly helpless under the onslaught of these mysterious influences\* which were as unsubstantial as they were fatal and irresistible.

When the great discoveries of Pasteur and Koch in the last quarter of the nineteenth century revealed the role of microscopic organisms in the causation of infectious diseases, they were hailed by Dr. William H. Welch in 1886 as "belonging alike to the department of pathology and to that of hygiene," but in the latter prediction he was to be greatly disappointed. The new knowledge was seen at once to be vital to medicine, but it gave little impetus to the organization of measures of prevention and control. In 1915, Welch wrote, "The revolutionary discovery of the causes of the great

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\*Hence the term "influenza"

epidemic scourges of mankind was first applied to surgery. . . then to therapeutics." Not until much later (for reasons to be examined in a moment) was it put to use in the field of preventive medicine and public health.

When therefore, in 1913, the Rockefeller Foundation came rapidly to the decision that the most productive line of work which it could undertake was in public health on an international scale, it was because the Trustees felt the urgency of this situation and the possibilities which it offered.\* Diseases known to be preventable were killing millions of people every year, were obstructing the development of vast areas and were spreading without hindrance along the trade routes of the world. Whether the Foundation would be able with the means at hand to accomplish some sort of revolutionary change in the world attitude on these problems was not debated. Mr. Gates, in whose bold imagination the scheme had taken form was possessed of an enthusiasm which communicated itself to all the Trustees. The plan of action and its execution were confidently entrusted to the wisdom and energy of Wickliffe Rose, who was then bringing to a successful close a large-scale campaign against hookworm disease in the Southern states -- an experiment not only in the eradication of a deeply-rooted parasite, but also in the more delicate operation of working out an acceptable form of collaboration between public authorities and a private philanthropic institution.

Mr. Rose's plan was ambitious, but on the whole rather simple and reasonable. It was to activate in all countries, and as far as possible simultaneously, official health programs designed to render conditions

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\*As shown by the minutes (Source Material, p. 565: "The urgency of the needs at hand presented a moral obligation which could not be deferred.")

unfavorable to the maintenance and spread of the principal diseases which were doing such damage in the world. The plan embraced both endemic and epidemic diseases, but the endemic were the more important; for even the most active and destructive epidemics had somewhere their endemic bases where they maintained themselves permanently and where they could be most effectively restrained. That many, at least, of the most dangerous and widespread parasitic enemies of man were subject to control had been repeatedly demonstrated, although on a relatively small scale. Mr. Rose was deeply impressed by the feasibility and even simplicity of the measures which, in the few areas where they had been applied, had successfully routed such apparently well-entrenched diseases as hookworm, malaria and yellow fever. That such knowledge should exist and be lying idle was intolerable to men of the character of Mr. Gates and Mr. Rose.

The plan involved of course the strengthening of health services everywhere, for it was of equal benefit to those countries in which the diseases were already established and must be rooted out, and those exposed to invasion from abroad, whose best defense was not the usual resort to quarantine, but instead a permanent effort to make and keep themselves non-infectible through sanitation and education. The nations were to be stimulated, in short, to clean house.

The establishment and maintenance of a universal epidemiological intelligence service, to keep track of the occurrence and movements of epidemics everywhere, was a natural corollary of the plan, but was a function which no private organization could assume. It demanded also a degree of voluntary collaboration among the nations which in 1913 was unattainable. It had to await the creation of the Health Organization of the League of Nations, when the International Health Commission, or as it was then called<sup>9</sup>

the International Health Board, took advantage of the developing spirit of teamwork to subsidize and foster such a service.

Mr. Rose felt secure, then, in offering to every government the cooperation of the I.H.C. in the solution of their outstanding health problems. It seems to have been taken for granted by the Trustees, without much preliminary exploration, that most if not all of the governments faced with such problems would accept this proffered financial and technical collaboration. In this judgment they were upheld by the event, but a modern observer, considering the long and discouraging history of the international health movement up to that moment, and the scanty furniture of medical knowledge of the time, might well consider the whole project, sound and opportune as it seemed, extraordinarily venturesome both from the technical and the diplomatic angle. The depth of our ignorance concerning the epidemiology of the diseases to be attacked was of course unsuspected, but it was a matter of dismal record that all attempts by the powers over the past fifty years to set up an agency of their own to accomplish what the Rockefeller Foundation now proposed to do had completely failed. In view of the havoc wrought by all these diseases, and the universal dread of the world-circling epidemics, we may well wonder why an international approach to their understanding and control should have been so long delayed. Why was this a pioneering movement in the second decade of the twentieth century, <sup>so late and so unique,</sup> and above all, why did it fall to a private philanthropic organization to be the "ground-breaker," in Welch's phrase, "in this global attack on disease"?

The answers to these questions must be sought both in the technical field, where the painfully slow evolution of medical knowledge set limits to accomplishments in public health, and in the inhibitions natural to international politics. The lack of any substantial agreement on methods by the doctors during what we may call the epidemic era was complicated by the irreconcilable attitudes of governments on matters touching national pride and sovereignty. The latter were probably more important as obstacles to progress than the former, though less easy to understand, under the circumstances. It is true that in the economic and political spheres it has often taken global wars and acute economic crises to force sovereign nations into collaboration, and even in science this has not been easy in the past. No group is of more ancient origin or more internationally minded than the astronomers, yet no world-wide association was achieved to promote their common interests until 1919, and this is the oldest among the scientific unions. Nevertheless in matters affecting the general health, it is strange that nations took such a very long time to come to a working arrangement for the solution of problems common to them all. In a world divided on questions of every sort, there could be only one opinion as to the desirability of promoting health in every part, since in that at least the world is an organism and is indivisible. Even the humanitarian motive seemed to be lacking. "Solicitude for the welfare of people all over the world", said Conant, \* "is a novel element in recorded history," and he saw in public health one of the unifying forces of the 20th century, unknown to former generations.

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\* Conant, J. B. --in Simmons, 1949.

The history of the international health movement falls into two epochs--the prolonged early period of isolationism which took the form of barricading ports and frontiers against the real or imaginary threats of epidemic diseases from abroad; and the period of international health conferences, at which for over 50 years the nations tried to reach agreement on some more aggressive form of joint action against the common enemy. The story has been told in interesting detail by Neville M. Goodman,\* whose researches enable us to understand very clearly the static situation into which Mr. Rose projected his novel plan in 1913.

The natural reaction of countries and communities to threats and rumors of epidemics had always been to shut themselves off from any communication with suspected or even potential sources of infection; an act which bred hostility, not solidarity in the face of danger. The measure was introduced by the Venetians during the great pandemic of plague known as the Black Death which brought the Middle Ages to a dismal close. This tremendous epidemic, which embraced the entire known world, was deemed by contemporary observers to be perhaps the greatest single calamity visited upon the human race since the Flood. Invading Italy from the Orient in 1347, it had reached the furthest confines of Europe by 1350, destroying by conservative estimate one-fourth of the population of the world. In the hope of putting a stop to the repeated introduction of plague from the Levant, the Venetians established a permanent quarantine station on an island in the lagoon, where they could isolate the sick, destroy contaminated articles and merchandise, and detain the well for an arbitrary period of 40 days, said to be based on the period which Christ and Moses spent in isolation in the desert. The practice rapidly spread to the rest of Europe and by

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\* Goodman, International Health Organizations, 1952.

the 19th century measures along these lines were practiced in most of the seaports of the maritime world, though without any uniformity or co-ordination, and with no possibility of recourse except by retaliation against barbarity and extortion. ^

The Venetian initiative is celebrated as the earliest official action to be taken to protect a community against disease which threatened from without, and as such it was the beginning of the long and dilatory process which has led to the WHO of today. All mechanisms in the beginning are apt to be crude and inefficient; this one was unusually ill-adapted to its end. It had the defect of all attempts at isolationism-- it was unilateral and purely defensive. Unfortunately the enemy was unknown and invisible, an exhalation which filtered through the stoutest barricades like a breeze through a lattice. No one knew how diseases spread or were transmitted nor was there any reliable information of their occurrence. Any successes attributed to quarantine, before the age of microbiology, must have been almost purely accidental. \*

This was due rather to inherent defects than to ignorance. That the great pestilences no longer strike terror today in seaports around the world is not because of any modern perfection of quarantine measures. As John Snow once pointed out, diseases spread no faster than the speed of human travel, but in all ages they have contrived to move faster than man's attempts to head them off. This was true of plague in Magellan's day when a good ship took three years to circumnavigate the globe, and it is true today of influenza which starts from no one knows where and seems to break out in several different parts of the world at once. ^ The acceleration of travel has been a constant problem

to Health Officers. There is no longer any such thing as a remote part of the world. Toynbee points out that the U. S. is now the size of Attica in 500 B. C. ; no section is more than a day's journey from the Capitol. But disease circumvents quarantine partly by speed and partly by guile, in the form of unsuspected carriers and inapparent cases. All five of the dreaded quarantinable diseases have gained entry into the U. S. in our own century. As early as 1892, before apparently healthy carriers of disease were known, Dr. Welch warned "that quarantine is at best an uncertain and often insufficient protection against cholera, and that far greater safety is to be sought in measures which render the city or locality unsuitable for the multiplication of the germs of the disease." This has remained the modern tactics of defense against all communicable disease. \*\*

Quarantine at least provided an opportunity to relieve public apprehension by a display of official energy. Doubtless for this reason, and because no other solution presented itself, the quarantine era, with all its arbitrary savagery and injustice, its burdensome consequences to trade and intercourse, and its invitation to corruption and exploitation, lasted for more than five centuries with little change except to become, like the Barbary pirates, more and more vexatious as trade and travel increased. Unfortunately, as an obstacle to the spread of disease it proved a complete failure each time it was tested. Typhus and smallpox had long made themselves at home in all countries; plague and cholera came and went at will, and yellow fever for 200 years outmaneuvered the most experienced and alert health officials to sweep in appalling epidemics over defenseless populations on both coasts of the Atlantic Ocean. ^ No Cato rose to demand that the enemy

be destroyed in its permanent home until Gorgas who had routed it in Havana and Panama, proposed to the Rockefeller Foundation the eradication of yellow fever from the Western Hemisphere; but we were already in the 20th century.

If governments took no concerted action throughout this long period and considered that the sacrifice of national sovereignty which was involved outweighed the dangers from disease, some of the blame must inevitably attach to the medical profession, to which the civil government and the public turned for advice and help in times of peril. The doctors by logic and tradition were the authorities on disease, and automatically assumed the leadership when the necessity arose of combatting it. In this sense public health was a province of medicine, but in its simple beginnings, it was a peculiar branch of that art concerned entirely with epidemics. In such emergencies, doctors were impressed into public service, much like volunteer firemen, an obligation which they accepted with courage and devotion, but one to which their knowledge and their weapons were always unequal. Between epidemics, physicians were not concerned with improving the personal and environmental conditions which affected the health of the people. Such activities require permanent health organizations, and until the last hundred years, they were literally no man's job either in Europe or the United States. There were no permanent Boards of Health in Britain or America until late in the 19th century, and these were staffed in the beginning by laymen, or by physicians without special training who bestowed upon their sporadic duties as part-time health functionaries what little time they could spare from their practices.

It was hardly to be expected that these ad hoc health officials, who were no more than amateurs when faced with problems of disease prevention, would in general take any interest or initiative in promoting inter-governmental conventions and activities which belonged in the sphere of diplomacy rather than that of medicine. This was in no sense a sign of provincialism. Physicians in their own field have always been the most internationally minded of professional men, and wherever they are found, are united by the identity of their interests, so that cultural, ~~and~~ <sup>and ideological</sup> racial contrasts between peoples, which have been a bar to political understanding, have <sup>meant nothing to students of human pathology,</sup> ~~only~~ drawn physicians together <sup>by</sup> a common and inexhaustible curiosity. It has been said that the Middle Ages owed much of their cultural unity to the medical profession which constituted the most numerous group of scientific men, and through succeeding centuries of growing nationalism and political division, medicine preserved its global outlook to the extent of holding on to Latin as a means of communication until well into the 19th century, and in the days before medical journals, keeping knowledge at an even level throughout the western world by travel and correspondence. "A physician," said Paracelsus, "does not learn by sitting behind the stove, but by traveling about in other places to see what is being done."

This cosmopolitan outlook of the great practitioners of medicine was in striking contrast to their lack of leadership and of positive action with respect to the overwhelming problem of the world's health. This was a field outside of their interest and competence. Professional specialization in public health is a recent development. It was <sup>still</sup> in its tentative beginnings in 1913 when the Rockefeller Foundation came upon the scene, and its evolution was never rapid. The snail-like pace of

the international health movement, in as far as it was due to the tardy participation of medical men, is easily explained. It was a reflection of the situation within each country. For although keeping people well was certainly as important, <sup>and much less expensive</sup> ~~if not more so~~, than curing their diseases, it was a function which was assigned to physicians by default, and has always found them uninterested, unorganized and unprepared. <sup>handling</sup> Furthermore, as advisors to government in the ~~hardship~~ of epidemic and endemic diseases, the medical profession labored for a long time under another handicap which was even more serious; the causes of the communicable diseases were unknown until the discoveries of Pasteur and Koch toward the end of the 19th century. Their mode of spread was an enigma which led to such a diversity of interpretations that it embarrassed all action. Governments were called upon to erect defenses against an enemy whose nature was unknown and an object of contention among physicians. The debate turned on the moot point of contagion. Did epidemics arise from decaying organic matter which corrupted the air -- the "miasmatic theory" -- or did they spread by contact from the sick to the well? To the man in the street it seemed obvious that epidemic diseases were contagious; thus Boccaccio, in a well-known passage in the Decameron, wrote of plague that, "communicated from the sick to the hale, it spread daily like fire when it comes in contact with large masses of combustibles". But the doctors from their wider knowledge were aware of the many exceptions which destroyed this plausible theory. They were baffled by inconsistencies which could not be explained away. Even in the greatest epidemics only part of the population fell ill, and it was common knowledge that survivors were not attacked a second time. There were numerous cases of exposure

without infection; and of infection without any apparent exposure; and of epidemics bursting into flame without the introduction of a case. No hypothesis of contagion could fit such phenomena. The explanation had to wait for the long-delayed discovery of germs, of the processes of immunity, of human carriers and insect vectors of disease.

In the meantime, the leading physicians were on the whole anticontagionists and therefore held that quarantine was as senseless as it was impracticable and inhuman. To attempt to stem an epidemic by roadblock was to "fight the wrong war at the wrong time in the wrong place." This is one of the best examples of expert opinion which <sup>was</sup> can be incontestably right for reasons afterwards shown to be completely wrong. The civil authorities were placed in a dilemma. Public pressure for an ever more rigid quarantine was countered by authoritative medical opinion which considered it futile. To the authorities it was clear at least that epidemics, for whatever reason, followed the routes of travel, and the quarantines were maintained, in spite of their oppressive character and undeniable inadequacies, for the first 75 years of the 19th century.

The quarantine situation, however, became acute for the British and other maritime nations in the early 1800's as a result of the discovery of steam and its rapid impact on manufacture and foreign commerce. The new railways and steamships speeded up trade, and the industrial revolution gave it (great) volume. By 1835 England was producing 60 per cent of all the cotton goods used in the world. Any impediment to trade such as arbitrary and destructive quarantine measures now resulted in very serious economic losses. Just at this time a new and terrible threat to the western world gave the whole

question unprecedented urgency. Asiatic cholera which had always been confined to India and the Far East, now overwhelmed Europe in three successive waves and in a short time had reached the U. S. and Canada. This was a particularly discouraging test of quarantine which in spite of timely warnings, failed to keep the disease out of ports considered models of quarantine efficiency. Even now no joint machinery was set up to study the phenomenon; instead, in 1831, the British sent a commission to investigate the disease in Russia, the French sent a similar commission to Britain, and the Italians made an investigation in France. The studies, carried out mainly on the atmosphere, were fruitless; there was no evidence at all that cholera was spread by "communication of the infected with the healthy." It was the unanimous opinion that cholera was caused by respiration of impure air when a "dense population lives in the atmosphere of its own excrements and refuse."\*

It was clear that the measures to be taken were not isolation and quarantine, but sanitation and slum clearance. There were areas in the great cities of England and America where living and working conditions were no better than those of the Orient where the pestilential diseases were supposed to be perpetually incubating.

Edwin Chadwick, a lawyer interested in social problems set in motion a campaign for sanitary reform which swept England and spread over the world, and is known as the Great Sanitary Awakening. It was not a medical movement but a humanitarian crusade; it was based on the filth theory of disease and called for engineers and sanitary inspectors

<sup>quoted by</sup>  
\* Winslow 1943, Conquest of Epidemics, p. 256.

rather than doctors. Chadwick's famous report led to the creation of a General Board of Health in England in 1848, but there were no physicians on it in the beginning. The sanitary measures had reduced sickness and death, as indeed they might, considering the squalid and verminous environment in which the poorest people lived, but the health problems which he had uncovered did not seem to Chadwick to involve the medical profession. It was however, the initial step of the great public health movement to follow. \*

The importance of Chadwick's sanitary drive to the international health movement was that the British now had a substitute to propose for quarantine. Let the countries clean up their slums, install sewers and provide good drinking water, and they need not fear the importation of any disease. Cholera had proved the futility of quarantines; let them all be abolished and substituted by medical inspection at the ports, and sanitation of the community.

On the other hand, the new speed and volume of travel threatened the Mediterranean countries, more exposed than northern Europe, with increased danger of epidemic invasion from the East. The crawling pace of the old sailing vessels was a certain protection in this respect, acting as a sort of automatic quarantine between one port and another. Every spurt in travel from the galleon to the jet plane has increased the menace of communicable disease everywhere and has compelled a revaluation of the international health situation. The exposed countries of the Mediterranean and Central Europe were disturbed by the events of the early 1800's, and clamored for more stringent barricades.

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\* "The humanitarian movement... culminating in the Public Health Act of 1848 in England... has been one of the great agencies in promoting the better health movement... (but) it was less a movement on the part of the medical profession than it was on the part of philanthropists." W. H. Welch, 1915. Quoted by Flexner: *Life of W. H. Welch*, p. 362.

Thus the demand for an international conference <sup>on</sup> ~~to regulate~~ quarantine came from both sides. To some countries it still seemed premature to debate questions of disease whose answers were unknown even to the doctors; to others it appeared ruinous to postpone a discussion of problems which 400 years of individual and uncoordinated action had aggravated rather than solved. Twelve nations finally met in Paris on July 23, 1851, to attempt to reconcile their conflicting interests--an important date in our history since this was the first formal international discussion on problems of quarantine and world health. Each nation was represented by one doctor and one diplomat. The object was to strike a balance between the necessity of preventing at all costs the inroads of plague, cholera and yellow fever, and the legitimate demands of maritime commerce for a reform of the corrupt, unreasonable and ineffective blockades due to international quarantine. The British were unswervingly anticontagionist, and were for the complete removal of quarantine, a proposal in which medical theory and commercial interests happily coincided. The Mediterranean powers, more exposed and with vested interests in an established and <sup>even lucrative</sup> self-supporting service, solidly supported quarantine. The conference had agreed not to waste time debating scientific theories but to attempt to solve practical administrative problems. Unfortunately, practical solutions depended on scientific agreement and this proved impossible. "The picture," as Goodman remarks, "was one of nations driven to negotiation by a common danger, but unable to agree because of the limitations of scientific knowledge."

The doctors played a curious role. Their acute differences of

opinion and interminable debates on the nature and origin of disease served only to obscure the issues. The argument was removed to the realms of hypothesis and we can understand the thick fog which settled upon that first international sanitary conference in Paris and excluded any scientific illumination of the questions under discussion.

There was one constructive proposal by Spain, that a permanent jury be created to pass on questions arising out of quarantine procedures; this was not approved, as being an infringement of sovereign rights. This insurmountable obstacle was raised thus early to defeat any suggestion of international control. Not for 56 years was it possible to get approval of any sort of permanent committee, yet this was essential to any possible success of such a meeting. "Experience showed," wrote Boudreau many years later, "that if international conferences were to achieve their object. . . some neutral agency must make a business of following up the matter so that the convention or agreement secured would not become a dead letter."

The conference lasted six months without coming to an agreement on any important point except one, namely, that the doctors should be banned from the next meeting, if there should ever be one. Medical testimony was so conflicting as to be an obstacle rather than an aid to the discussion. With the doctors out of the way, questions such as the possibility of conveying cholera in drinking water could be decided by majority vote in a businesslike way. But even had the doctors been able to agree that cholera or plague were or were not contagious, the diplomats had very definite instructions from their governments on the question of abolition or retention of quarantine and could not have come to any agreement, whatever the medical opinion might have been. As

the conference adjourned, the French Minister of Foreign Affairs announced that all the delegates had been awarded the Legion of Honor.

Although the first conference led to so little, it set a precedent for consultation. The ice was broken and nine more conferences were called during the next 50 years by one nation or another to consider some new development in the constantly troubled situation--the approach of cholera or plague; the opening of the Suez Canal in 1869 with its short cut to the Indies; the Mecca pilgrimage and its dissemination of disease. The miasmatists were in the majority and enjoyed the greater prestige, but the opposition always prevailed since they refused to ratify the proposed conventions.

Astonishingly foresighted proposals were made and turned down. In the 3rd Conference in 1866, called to consider the cholera pandemic of 1865 spread by the pilgrims to Mecca, the resolutions proclaimed that prevention is better and cheaper than attempting to stop an epidemic once started. Greater attention, thought the delegates, should be paid to the endemic foci in India where "it is not impossible that cholera might be wiped out or at least its epidemic character limited." This anticipation, by 3/4 of a century, of modern programs of eradication led to no concrete action.

At the 4th Conference in 1874 a permanent International Commission on Epidemics was recommended and unanimously approved but it was never ratified. A number of governments including the British did not accept the idea. "There is a certain plausibility about it", said the *Lancet*, the leading British medical journal, "but ... we must confess to want of faith in the value of cooperative international scientific work."

\**Lancet*, 1874, cited by Goodman p. 57.

The doctors had now come back in force to the Conferences and were a majority of the delegates.

The U. S. finally took part in the Fifth Conference, and became host to the nations in Washington in 1881. Cholera had reached America 4 times since 1832, but yellow fever was the most important and enigmatic problem. No variation in quarantine technics could keep it out, yet no other measure was at hand, for sanitation had been a failure. Benjamin Rush in 1800 had vehemently opposed all measures of quarantine and compared it to the attempt to check plague in Moscow by placing an icon on the city gate.\* But the impatient public blamed each advent of the dreaded disease on the laxity of the port authorities and to their inadequate precautions. They were always the whipping-boys when there was trouble. The Staten Island quarantine station was destroyed in 1858 by angry citizens after an outbreak of yellow fever ascribed to the negligence of the station, and the proceeding was upheld by the Court as an "act of salutary and well-intentioned violence." The Americans and British now wanted a permanent intelligence service in the shape of compulsory notification <sup>of epidemic disease</sup> but this collided with an unyielding national pride. The need seemed never to be sufficiently compelling to outweigh political considerations of amour propre and national sovereignty.

However, rather suddenly in the last quarter of the 19th century came a blaze of light from the laboratories of France and Germany which illuminated the dark and difficult road up which the nations had been stumbling. Pasteur and Koch opened windows upon a new world -- a microbiological world of organisms invisible to the naked eye. In rapid succession the germs causing some of the most dangerous diseases were discovered: leprosy, pneumonia, typhoid fever, malaria, tuberculosis,

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\*Winslow, Hist. of Am. Epid.

cholera, diptheria, plague and many others. Disease turned out to be a form of parasitism; each had an individual cause and separate identity; <sup>it</sup> communicability from person to person was established. "Before 1880 we knew nothing", said Sedgwick, "after 1890 we knew all." By the end of the century the miasmatic era was over.

~~This did not have too much effect on the international conferences which were now being held at almost regular intervals. The politicians had established the veto.~~

The effect of the new discoveries on medicine was far-reaching. There was much scrapping of tradition and physicians became greatly preoccupied with diagnosis and pathology. But the impact of the bacteriological era was mainly upon the laboratory, leaving therapeutics as unprogressive as before, and even impoverished. It was at this time that the Rockefeller Institute for Medical Research was founded at the "earnest recommendation" of Mr. Gates, who was shocked, upon reading Osler's Theory and Practice of Medicine in 1897, to find how little science had as yet permeated medical practice. The old theory and practice had suddenly become obsolete without much that was new in treatment or medical care to take its place, even of the communicable diseases.

The effect of the new knowledge on the physician's role in hygiene and preventive medicine was practically nil. The doctor, focusing on the internal causes of illness, remained uninterested in problems of public health. As late as 1934 Sigerist<sup>2</sup> could write that public health was "no doubt at once the most important and the least developed field of medicine. The historian has before him the great discoveries of the 19th and early 20th centuries and can see what tremendous progress

<sup>2</sup> Sigerist: American Medicine, 1934.

was made in the knowledge of diseases. He cannot understand why this knowledge was not used to prevent them." The answer seems to be that in the new world of microbiology the doctors found extensive applications to medical investigation, but neither their training or experience prepared them or inclined them to explore the preventive and sanitary aspects of the new science.

Into this vacuum were drawn the biologists and sanitary engineers under the leadership of William T. Sedgwick, Professor of Sanitary <sup>Science</sup> Service and Public Health at the Massachusetts Institute of Technology. Sedgwick grasped the opportunity at once and for a brief period dominated the public health field by developing the practical applications of bacteriology to the destruction of the agents of human disease in the environment, a scientific substitute for Chadwick's indiscriminate attack on filth. He called this the "seed time" of public health and tried to interest the indifferent doctors in the new approach by offering courses in sanitary biology to premedical students, but failed entirely to draw them in. Public health thus took the great forward step from epidemic control to environmental sanitation under non-medical impulsion. For a while sanitary engineering and medical <sup>placard</sup> control of communicable diseases comprised the whole of public health practice. Thus in the resolutions creating the International Health Commission, its aim was defined as the "establishment of agencies for the promotion of public sanitation." Only when health was finally seen to be dependent, [after sanitation], on habits of living and personal hygiene, making education and preventive care of dominating importance in its conservation and promotion, was public health restored as a special field of medicine rather than of engineering. The physician resumed his ancient responsibilities, a movement which Sedgwick lived long enough to witness and unselfishly

to support.

Meanwhile, at the International Conference of Health, the flood of knowledge breaking out from the laboratories, and the growing self-confidence of the medical delegates were wearing down the political factions clinging to traditional concepts. Dr. Welch had vigorously promoted the development of public health laboratories, one of whose most important functions was the *clarification of the sources and modes of infection.* ~~identification of communicable diseases as a basis for the new science of epidemiology.~~ Thus at the same time that quarantine at the borders was being overshadowed by environmental sanitation within countries, it was also greatly weakened by the discovery that disease germs could be carried by apparently healthy persons and by insects which easily penetrated the barriers.

It was now time for the nations to adjust their international practice to the new situation. The first step was taken in the Americas. The time was ripe at last for concerted action. The Second International Conference of American States, convened in Mexico City in 1901, resolved to create, by treaty, a permanent office to act as agent for the 21 Republics. It was named the International Sanitary Bureau and was formally set up in Washington in 1902. It thus became the first of all the international health organizations. Its budget was \$5,000, and its simple function was to act as a center of information through which the American Republics could keep each other informed about outbreaks of epidemic disease. It was to encourage "in all proper ways" i. e., without infringing national sovereignties or wounding national pride, the sanitation of yellow fever ports after the model established by Gorgas in Havana.

This timely and sensible move on the part of the American Republics had effective repercussions in Europe. The 11th International

Sanitary Conference held in Paris in 1903 took two important steps which would have been considered premature at any earlier date. A convention was drawn up (the first modern sanitary agreement ever made among nations) unifying previous agreements in the light of contemporary knowledge; and it was moved to ask the French Government to establish a permanent International Health Office in Paris, the well known Office Internationale d'Hygiene Publique which was created in 1907. Considering the incredibly cautious attitude of previous meetings and the glacier-like progress of the international health movement over the preceding half century, this action deserves special notice as the forerunner of the irresistible world health movement of today.

However, its functions and authority were strictly limited. Any positive action was out of the question in such a highly sensitive and political area. The new organization was given no supranational powers. It was to collect and disseminate, but not to verify information; it was to record and interpret, but not to enforce regulations; it was as far as possible to bring quarantine within reasonable bounds. <sup>by negotiation, not by authority</sup> It was not to concern itself with health conditions inside countries; it could take note of situations and events only when they emerged from behind political frontiers. The machinery was rather cumbersome, too, because periodic revisions of sanitary conventions and other activities required ratification by all 46 members. By the time a convention had been ratified, it was in all important points out of date.

Nevertheless it was a useful instrument within its limitations. It was not in any sense a common effort against disease; although the members of the Permanent Committee were with few exceptions medical men, the importance of the Office was diplomatic. Within a few years

the American organization, in recognition of its regional character, changed its name to the Pan American Sanitary Bureau and agreed to act as a regional bureau of the Office. But unlike the PASB, which was autonomous, the Permanent Committee of the Office was a political body; that is, the members were delegates appointed by their governments and voted according to instructions. The U. S. was a member of both.

It was upon this stage that the R. F. entered in 1913. No one had ever ventured to occupy <sup>the</sup> a field which <sup>seemed to</sup> offered such an obvious opportunity to the Trustees. The plan, as worded in the resolution, was the "promotion of public sanitation and the spread of the knowledge of scientific medicine." The new agency was to be world-wide in its operation and to attack "curable or preventable diseases and to promote universal health."\* It is clear that only a private organization without the shadow of any political interest could at that time have ingeniously proposed to operate with this objective across national frontiers.

It also seems probable that the IHC could hardly have been launched with success at any earlier period. The crucial discoveries which permitted effective work of this type were very recent. Time had to be allowed to consolidate the gains of the bacteriological era, to build and staff a new kind of laboratory and to select and train a new type of personnel. Organized public health had begun as a humanitarian, not a scientific movement. "The impulse (of benevolence) alone," wrote Welch in 1915, "would not have been sufficient. It is of vital importance that health activities should be based upon accurate knowledge of the cause and of the spread of disease." There was only just enough knowledge in 1913 to begin on. It proved insufficient for anything but the

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\*Gates, Personal Memoirs.

most rudimentary activities in the treatment and prevention of hook-worm disease. When in the natural course of development other <sup>less understood</sup> diseases such as yellow fever and malaria became the targets of scientific attack, the IHC found itself embarking on a vast program of research in laboratory and field which had not been foreseen in the beginning.

It came about in this fashion that the IHC ushered in an era of international collaboration and for the next 37 years continued to play a major role in a constantly widening field of activity. Alone at first, it paved the way for the multiplicity of agencies which have followed it in the broad domain of the promotion of world health. But though in Welch's words it broke completely new ground in both philanthropy and medicine-<sup>1/</sup>, it did not spring fully grown and fully armed from any one brain. It had long roots reaching into the past and its debt to the persons and circumstances which influenced its birth will have to be taken up in another chapter.

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1/ Footnote on Charles IV expedition. (See Schiaffino, ref. 11)

Actually, the IHC was not entirely without an antecedent in its plan to extend a helping hand around the world for the purpose of coordinating a general attack on diseases which greatly affected the well-being of humanity.

The most picturesque of these was the mission sent out by Charles IV of Spain to disseminate the knowledge and application of Jenner's discovery of cowpox inoculation for the prevention of smallpox, first experimented in 1796. This procedure had reached France, Spain and the U. S. by 1800. Charles IV undertook to send out a scientific mission to go completely around the world carrying the protective virus to all Spanish lands, and all races and peoples en route.

The royal order was given Aug. 3, 1803, and a military surgeon, Dr. Francisco Javier de Balmis set sail from <sup>La</sup> Coruña for America on Nov. 30, accompanied by 3 doctors, 2 assistants, 3 male nurses and the Directress of the local orphan asylum in charge of 22 nursing babies to conserve the virus during the long journey, passing it from arm to arm. All arrived safely in Venezuela where the expedition divided in two,

one part going South to cover S. America, while De Balmis himself, after attending to the needs of the Caribbean area and Central America, crossed Mexico and sailed from Acapulco to the Philippines, where he arrived with the virus still alive and potent. Continuing on around the world he reached Lisbon August 15, 1806, two years and 9 mos. after his departure from Coruña.

The 2nd expedition was not so fortunate. It was shipwrecked at the mouth of the Magdalena R. but all the babies were saved. The group visited Colombia, Ecuador and Peru, and was preparing to go on to Chile and Buenos Aires when they learned in Lima that the vaccine had already reached the Rio de la Plata.

This expedition was a great feather in the cap of Spain. It was the first time such a global and humanitarian concept had actually been carried out. A scientific commission had gone around the world to promote a simultaneous attack on one of the great pestilential diseases of the age and to instruct backward and isolated peoples in the use of a new preventive measure of the first importance.

### Chapter 3

#### The Roots of the International Health Commission

It is usually difficult to put one's finger on the exact point of origin of a rapidly spreading and successful movement and to say, this is where it all began. Currents, great and irresistible in the end, derive from numerous sources, large and small, each of which seems in retrospect to have been indispensable to the event. The International Health Commission (IHC) of the Rockefeller Foundation (RF) had its remote origin in the various philanthropic movements organized after the Civil War to aid the Southern States to recover from the devastation caused by that conflict. These unofficial agencies were accomplishing what the Federal government had been unable to do in the "reconstruction" of the South. As Abraham Flexner has pointed out in his history of the General Education Board, the feasibility of cooperation between unofficial and governmental agencies revealed, thus early, the large opportunity open to private initiative in dealing with social and educational problems in a democratic society.

Many names well known to the South and later appearing on one or other of the Rockefeller boards were associated with these movements-- Robert C. Ogden, the New York merchant, who assembled conference groups annually to study Southern problems on the spot; Edwin A. Alderman, college president, who stumped North Carolina in the cause of tax-supported public schooling; Walter H. Page, who was always harping on the undemocratic nature of poverty and illiteracy; Widdiffe Rose, who obtained in these enterprises the special training and experience which prepared him for the directorship of the IHC. There were a great many more, Northerners and Southerners, giving time, thought and money to the cause of Southern rehabilitation; but the one who perhaps played the most decisive part in

its eventual and surprising outcome was a zoologist, Charles Wardell Stiles (1867-19<sup>41</sup>), who was quite unknown to Southern educators, philanthropists and crusaders when at the turn of the century he uncovered the worm at the core of the whole unhealthy situation.

Dypassing what seemed an inextricable complex of poverty, war-blight, ignorance, racial problem and politics, Stiles pointed to something visible and vulnerable, a bloodthirsty parasite known as the hookworm, which he denounced with rapidly growing conviction as the main cause of everything that seemed to be wrong with the South. Furthermore he held that it would not be difficult to eradicate this parasite completely by a well-directed and sustained attack. No wonder his evidence was convincing and his enthusiasm contagious to men frustrated by the enormity of a problem which had seemed so ~~inexplicable~~ <sup>insoluble</sup> in its deeprooted social and possibly even genetic causes. Here was something concrete which could be seen, handled and attacked. We must credit the health movement in our South which grew out of the attempt to control this parasite largely to the single-minded tenacity and evangelistic fervor of Stiles, in what was at the start a one-man war against the hookworm.

Stiles' first interest in hookworms, he tells us, dates back to student days in Leipzig, where he obtained his Ph.D. in medical zoology in 1890. A mysterious and sometimes fatal anemia had attacked the laborers engaged in digging the St. Gotthard tunnel in 1880, and an Italian physician, Dr. Eduardo Perroncito, autopsying the victims, had shown it to be caused by an intestinal ~~worm~~ <sup>parasite</sup>, Ancylostoma duodenale, which lived upon blood. This ~~parasite~~ <sup>worm</sup> had been discovered and named by another Italian, Dubini, some forty years before. ~~==~~ The characteristic anemia which often afflicted handlers of dirt and mud such as miners, tunnel workers and brick makers, <sup>also</sup> was well known; it had been observed in Egypt since the beginning of

history. August Hirsch had collected reports of it from different parts of the world in his famous "Handbuch der historisch-geographischen Pathologie" published in 1860-1864. Thus neither the worm nor the disease ~~was~~<sup>was</sup> new, but that one was the cause of the other was unknown until Ferroncito drew his shrewd conclusions from the post-mortems on fatal cases of "tunnel workers' disease."

Reading Hirsch's book, Stiles<sup>13</sup> was struck by the prevalence of "tropical anemia" in the Western Hemisphere. There were numerous references to this distinctive disease by English, French and Danish physicians dating from the beginning of the 18th century, indicating its wide extension in the West Indies, the Guianas and in Brazil, and Hirsch concluded that it doubtless occurred "if only to a slight extent, among Negroes in some parts of the Southern States of the American Union".<sup>14</sup>

Although the parasitic nature of the anemia was now recognized, Stiles could find no evidence that hookworm had been reported in the United States. Upon returning home in July, 1891, to enter government service in the Bureau of Animal Industry, almost the first thing he did was to examine the collection of parasites in the Bureau. He was surprised to find no hookworm specimens from man either there or in the helminthological collection of the National Museum, of which he became "honorary" custodian. The fact that many of our immigrants had come from hookworm areas in Europe, Asia and Africa caused him to suspect that this malady must surely exist in the United States but was being overlooked. The soil and climate in the South offered favorable conditions for the development of the worm, and in fact chronic anemia associated with the characteristic dirt-eating habit was well known among the children in rural areas.

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<sup>13</sup>Ref. 13

<sup>14</sup>HC, Coll. Papers 1949-4.

He expressed his suspicion both at the Army Medical School where he began to teach medical zoology in 1894, and in his first course on this subject given at the Johns Hopkins Medical School in 1897. Harvey Cushing in his life of Osler says: "I was at Johns Hopkins when Stiles was lecturing on parasites, and I well remember the skepticism with which his ideas about hookworm disease were met."<sup>\*</sup> Stiles says that his good friend Dr. William Osler took him roundly to task and maintained that a disease so easily recognized as hookworm could not have escaped <sup>detectin</sup> recognition if it were present. In every course he gave, Stiles made it a point to say: "Gentlemen, if you find cases of anemia in man in the tropics or subtropics whose cause is not clear to you, consider the possibility of hookworm disease." His theory, however, had remained undemonstrated and virtually unexplored when in 1896 he returned to Germany for two years as Agricultural and Scientific Attaché to the American Embassy.

During his absence an event occurred which resulted in the first and perhaps the most reverberating of the controversies in which the single-minded and rather belligerent scientist was continually getting embroiled. In 1899, the year after the Spanish-American war, a hurricane swept over Puerto Rico causing great destruction of property and loss of life. Colonel Bailey K. Ashford of the U. S. Army Medical Corps was in command of the general hospital at Ponce which was in the path of the storm.<sup>\*\*</sup> The hurricane spared the hospital but wrought havoc in the rural areas. Ponce, a town of 25,000, lay torn and bedraggled, while the cyclone had devastated fully two-thirds of the surrounding plantations. The refugees overflowed Ashford's wards and he opened a tent hospital which was soon full of sick and dying hombres, poverty-stricken agricultural laborers whose living had been suddenly destroyed.

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<sup>\*</sup>Ref. 26

<sup>\*\*</sup>Rev. 14

They were an exceedingly weak and anemic lot, and this was attributed at first to extreme under-nourishment amounting to starvation, since they had been subsisting almost entirely on sugar cane. They were now given their fill of rice, beans and codfish, but Ashford was puzzled by the fact that they failed to improve rapidly or at all, and they continued to die in discouraging numbers. Having listened to Stiles' lectures at the Army Medical School,\* he thought of hookworm. Blood examination showed no malaria, but an increase in certain elements, the eosinophils, which often indicates the presence of animal parasites in the body. Microscopic examination of feces disclosed at the first try "eggs of A. duodenale in great numbers" and a dose of thymol "brought away the parasites". Ashford cabled his chief in San Juan on November 24, 1899: "Have this day proven the cause of many pernicious, progressive anemias of this island to be due to Angylostomum duodenale", which was Dubini's hookworm, although Ashford in his excitement had got the gender wrong. Here was a revelation which Ashford thought would stir the hemisphere, if not the world, to precipitate action, considering how widespread was the disease in the tropics and how easy it was to remove the cause. He rushed an article to the New York Medical Journal but it was only tardily published in the following April† and caused no excitement whatever. He could not understand the vast indifference in which his report was swallowed up and quickly disappeared. It was more than four years before he could attract the slightest attention to the significance of his findings.

Ashford returned to Washington in January, 1900, with a bottle of his precious worms, but Stiles was in Europe. He explained to Stiles' assistant, Albert Hassall, that "there was something curious about the

\*Ref. 13

†"Hookworms in 19 cases of anemia in Puerto Rico, confirmed microscopically" New York Med. J., Apr. 4, 1900.

worms" and he wanted Stiles to examine them. He did not ~~have~~ <sup>leave</sup> them, however, but turned them over to the Army Medical Museum. <sup>Here</sup> ~~where~~ Stiles eventually found them, <sup>but</sup> ~~though~~ not until after he had made the discovery that the American hookworm was not the same species as the European form\*. It was on the basis of this incident that the subsequent dispute over priority in the identification of the parasite arose. Ashford had not [actually] published any description of the new worm; his contribution was of a different and more important category. He had shown for the first time that hookworm was a scourge of farm labor in a typical area of the American tropics. Dying of anemia in Puerto Rico had always been considered a "natural death"; now it was recognized as preventable, and a sign of someone's inexcusable neglect and ignorance.

<sup>much</sup> [Ashford was sent back to Ponce at his own request in 1901, where with the aid of Dr. W.W. King he finally stirred the authorities to some sort of action and was permitted to start a campaign against the hookworm. The deplorable situation which was disclosed led to more active measures, and the well-known Puerto Rico Anemia Commission began its historic career on March 6, 1904, a precursor by some five years of the campaign of the Rockefeller Sanitary Commission in the United States, and one of many roots of the IHC. The story is told in Ashford's memoirs, written some thirty years later\*\*. About the only measure which could be applied at once was free diagnosis and treatment on an all-inclusive scale, which brought relief to thousands of sufferers and, as Ashford said, "broke the back of the anemia". It was known that barefooted people contracted the disease by walking on moist soil contaminated by human feces, but to break the chain

\*Letter from Stiles to G. W. Smillie, June 6, 1938.

\*\*Ref. 14.

of infection meant revolutionizing the sanitary habits of the entire native agricultural population. Such a feat has never been accomplished anywhere by policemen, and the laws passed by the Puerto Rico government making latrines compulsory had no visible effect. It could not be expected that a dispensary campaign, through its brief contact with thousands of ambulant patients, would be able to modify ingrained habits which exposed the treated individuals to inevitable reinfection. For this reason the campaign in the United States, which began on the model of the Puerto Rican dispensary method, soon took an entirely different course and evolved into a system of permanent health centers. Ashford's pioneering work showed the potentialities of mass treatment of hookworm disease, and the shortcomings of any system which did not take into account the social factors responsible for the infection.

Stiles <sup>had</sup> returned to Washington in 1900 still curious, and unconvinced by the lack of medical evidence of hookworm disease in the United States. Only sporadic cases had been reported, almost as curiosities and in unexpected places. Dr. Blichdahn had found hookworms in a patient in St. Louis in 1893, and in 1897 Dr. Mochlau surprisingly enough <sup>Came</sup> upon five cases in Buffalo, New York. In 1901, however, Stiles received some worms from Dr. Allen J. Smith of Galveston, who had found eight of his eighty-odd medical students at the University of Texas infected with hookworms. These specimens upon examination turned out to be not only a different species but a different genus from the hookworm described by Dubini. <sup>They were</sup> ~~It was~~ like the parasite brought by Ashford from Puerto Rico, which Stiles procured from the Army Medical Museum, and on May 10, 1902, Stiles published his famous article "Description of a new species of hookworm, Necator americanus". "Americanus" was a misnomer, since the so-called New World parasite turned

out to be of African origin. For later, when Looss in Egypt examined some pygmies from central Africa at a music hall exhibition in Alexandria, he recognized from Stiles' description that the worms were not the European species but the "American". It was obvious that the hookworm had been introduced into America by slaves. The choice of the name "American Killer", however, throws light on the intensity of Stiles' convictions <sup>which were</sup> based on pure hypothesis and antedating <sup>ed</sup> any real knowledge of the importance and distribution of the parasite in the Western Hemisphere.

However, he had not long to wait. <sup>for proof</sup> In August he was transferred from the Department of Agriculture to the Public Health Service as Zoologist, and he went to work at once on Surgeon General Wyman, who was an intelligent, open-minded and vigorous man. Wyman authorized <sup>him</sup> Stiles to make a reconnaissance in the South, and <sup>Stiles</sup> he immediately set up a clinic in Columbia, South Carolina, and made rapid excursions into Georgia and Florida. In a week he had the confirmation of his prophecy: he found to his great excitement that every anemic, listless, pot-bellied child he examined was a victim of the hookworm. He had discovered the cause of the commonest disease in the Southern States.

On December 4, 1902, Stiles addressed the First Panamerican Sanitary Conference in Washington, which had met to organize an international health office for the Americas, later to be called the Pan American Sanitary Bureau. Stiles was an indefatigable, crusading lecturer most of his active life, but no speech that he subsequently made was ever <sup>so</sup> ~~as~~ widely heralded or fraught with such long-term consequences as this one. The message by itself would probably have caused little commotion: Stiles said that the so-called "poor white trash" in our South were not constitutionally lazy; their energy was being sapped by hookworms. It happened that a reporter

from the New York Sun was present, and, to make the best of a rather dull assignment, he elaborated on the lecturer's words and reported in humorous vein that a doctor in the South had discovered the germ of laziness. Loafing was only a disease. This diverted the New York office, and the Sun of December 5 headlined the discovery. The ridiculous idea was caught up by newspaper rhyesters and cartoonists, and a wave of amusement and ironic comment swept over the country. Stiles thought it a fortunate episode. Hardly anyone had heard of the hookworm before, and now it had become a topic of jocular comment everywhere. "This reporter" wrote Stiles afterwards "contributed an exceedingly valuable piece of work in disseminating knowledge concerning hookworm disease.....It would have taken scientific authors years of hard work to draw as much attention to this subject."

*Such attention was in fact long overdue.*

It seems incredible, as Osler remarked, that the physicians, teachers and medical investigators of our own century should have failed completely to identify the far from elusive cause of such familiar pathology, which had been carefully described by Ferroncito twenty years before. The effects of hookworm disease are not spectacular but insidiously chronic. "Year after year" (in Gandler's words) "and generation after generation, it saps the vitality and undermines the health and efficiency of whole races of people. In the course of a few summers a healthy family may become pale and puny; once industrious, they become languid and backward in work; once prosperous, they fall into debt; once proud and property-owning people, they are reduced to tenancy and poverty; the children, once bright and intelligent, become dull and indifferent, and soon fall hopelessly behind in school and drop out.....The 'poor white trash' of some rural parts of our South came to be considered a shiftless, good-for-nothing, irresponsible people."

The hookworm does not enter the body by the mouth in food or drink but pursues a more devious and rather astonishing route to the intestines, as Looss first showed in Egypt in experiments performed upon himself. The thousands of hookworm eggs which pass out of the human body in the stools each day hatch into microscopic larvae if deposited on moist soil and can penetrate the skin when barefoot children get the infected mud between their toes. Once in the blood stream, the larvae are carried to the lungs and propelled by the waving cilia up the escalators of the bronchi and trachea until they reach the throat, where they are promptly swallowed and thus reach the small intestine which is their permanent home. There they grow up, breed and lay a profusion of eggs in an uninterrupted stream, and live for many years, extracting their quota of fresh blood each day from the intestinal wall. This, in heavy infections of a thousand worms or more, amounts to a constant and dangerous hemorrhage and accounts for the symptoms of the disease. The one measure able to prevent the transfer of hookworms from one person to another is not only simple and practicable, it is usually considered a normal and indispensable accessory to civilized living; it is the sanitary toilet.

Chapter  
12

*How unnecessary and discreditable this situation was.*  
~~This was the story~~ Stiles set out to tell the South. He spent his whole time traveling and talking. He addressed state medical societies; he held clinics in medical schools, using students as demonstration material; he lectured in churches and country schools with his magic lantern and the little vial of hookworms he always carried in his vest pocket. He was John the Baptist preaching redemption by verminicide and sanitary repentance. He did not make much headway as a lone evangelist. He alienated the country doctors who should have been his main support by impugning their education and public spirit. He said they usually did more harm than good,

and his tone of sarcasm and superiority was especially irritating when it became known that he himself was not a doctor of medicine\*. He offended the modesty of the common people by the very subject of his exhortations. There was a certain prejudice in rural areas against pit privies since they were unpleasant places and were not "nature's way" of disposing of excreta. Stiles found that, at a conservative estimate, eighty per cent of the Southern rural schools and churches did not have any toilets at all, but the subject was not one to be discussed in public. After one of Stiles' addresses, the sheriff came to him and said that his talk had produced such public indignation that he felt it necessary to provide him with a bodyguard. Stiles made so many public addresses and wrote so many articles on sanitary privies that Dr. Harvey W. Wiley, the well-known chemist of the Department of Agriculture, gave him the nickname of Herr Gehsinarath, namely, Privy Councillor.

Meanwhile Wyman induced Senator Tillman, who had become interested, to introduce a bill into Congress giving the Public Health Service an appropriation of \$25,000 to finance a general campaign against soil pollution; but the Treasury Department, in which the Public Health Service was located, with an appreciation of the sensitiveness of the South, strongly objected to the bill and advised Wyman to drop the whole matter. There was a <sup>squeamishness</sup> ~~shyness~~ also about <sup>giving the subject</sup> ~~raising~~ publicity in educational matter distributed by the Government. Bulletin No. 10 (1903) of the Hygienic Laboratory devoted a section to a discussion of sanitary privies. Stiles says that when the manuscript was forwarded for publication, it was returned with the request that this portion be eliminated since the chapter was exceedingly undignified and the subject disgusting and "had no place in a scientific

\*Comment by BHW, Source Material p. 962.

article on public health". It took a good deal of argument to restore the material and get it printed as originally written.

On the other hand Stiles made some important converts who gave a needed impetus to his rather unproductive crusade. At a meeting of the American Medical Association in New Orleans in 1903, Stiles teamed with Dr. Allen J. Smith (who had sent him the first hookworms) to demonstrate the parasites and show the doctors some typical cases of the disease. There he met a young graduate of Tulane, Dr. Charles C. Bass, who had just started a rural medical practice in Columbia, Mississippi. Passing by an open door, Bass heard Stiles talking and dropped in to see what was going on. He listened a while, examined the worms under the microscope and took a good look at the anemic, pot-bellied cases on exhibition. "My God!" he exclaimed to himself, "that's what's the matter with the children in Columbia!" He bought a microscope before he left New Orleans and took it home with him. He was associated in practice with Hector H. Howard, a young physician like himself, and they discovered to their astonishment that hookworm was the principal disease of the community. Columbia became an active front—perhaps the first—in the long war against the hookworm, and both young men soon abandoned private practice to play important roles, as we shall see, in the development of the early program of the IHC.

Stiles' concentration of aim and intensity of purpose, combined with his extraordinary ubiquity, soon focalized the interest of a great many people influential in educational and health circles. One chance acquaintance who remained impressed with the importance of Stiles' message was Allen W. Freeman, worthy of mention at this point because of his activities,

both as collaborator and critic, in the developments which followed. Stiles, who had gone to Richmond, Virginia, to lecture at the Methodist Church, went to the Health Department to get help in adapting his lantern to the local current and happened upon Freeman. Freeman, two years out of Johns Hopkins Medical School, had decided on a career in public health, an unusual and courageous step for a young doctor in those days (1907), and was now Medical Inspector (under the famous Dr. Levy) of the Richmond City Health Department--probably the only full-time medical health officer in the entire South. Freeman accompanied Stiles back to the church to get better acquainted with him, and operated his lantern<sup>\*</sup> for him. They must have liked each other, for Stiles confided to Freeman that he had high hopes of a conspicuous donation from Carnegie to finance an educational and sanitary campaign against hookworms throughout the South, and asked Freeman to assist him. Freeman said that he thought typhoid fever a more important problem than hookworms in Virginia, but in any event the solution through rural sanitation was the same and he would be glad to help in any way he could. It is interesting to know that Stiles, frustrated by governmental inaction amounting in the higher spheres to uncomprehending opposition, was already exploring the possibility of private philanthropic support.

Stiles' most fortunate contact, which rapidly became an alliance, was with J. Y. Joyner, who deserves much more credit than he has ever received for the important developments to follow. Joyner became State Superintendent of Schools in North Carolina in 1902--the first full-time Superintendent in any Southern State. He immediately began a campaign for free common schools supported by general taxation, in which he was backed by a great Governor, Charles B. Aycock, who had been elected in 1900 and whose zeal for

<sup>\*</sup>Freeman, personal communication.

education, as he often said, originated in his recollection of his own mother having to sign a legal document with a cross. <sup>when appeared</sup> Stiles, <sup>on the scene</sup> when he joined the campaign in 1907, <sup>he</sup> had no difficulty in convincing Joyner that the hookworm was as great an obstacle to proper schooling as lack of funds.

The solution, unfortunately, was not a simple one. Treatment, even if it could be provided free on a large scale, would only give temporary relief, and Stiles wanted County Boards of Health on the lines of County Boards of Education, but with full-time employees to educate the public and exert continual pressure for home sanitation. Since there was little enough money for white schools and often none at all for Negro schools, this idea was seen to be unrealistic for the time being, since it would merely set up a rival organization to compete with education for the county's meagre funds. Stiles ~~agreed~~ <sup>and</sup> compromised on a sanitary campaign in the schools to protect the children and provide models for the community.

There was, besides, a principle ~~involved~~ which would have to be established before either school systems or health services could be advocated. This <sup>was the</sup> ~~had to do with the legitimacy of~~ <sup>ing</sup> ~~employment~~ of public money for any such <sup>socialistic</sup> purposes, and Joyner was in the midst of a battle on this point; it meant amending the State constitution and was a matter of top priority as Joyner saw it. <sup>This was why</sup> There was no public school system in North Carolina such as had developed north of the Ohio River, <sup>and</sup> ~~mainly for this reason~~, county schools <sup>had to</sup> depend entirely on funds raised by local taxes; ~~and~~ the poorer the county, the poorer the schools. There were thousands of one-room schools with ill-educated uninspired teachers who earned on the average \$150 a year, while the school year in some counties lasted forty days. The counties were always scraping the tax barrel when they got to the schools and the roads. The opposition to reform came from those who objected to being taxed at all to educate other men's children. The South was still the "land of cotton" with

Hendrick, Life of Page, p. 65.

its semi-feudal plantation aristocracy whose children went to private schools or had tutors, while the public schools were little more than charitable institutions. Education was not yet a function of the State, it was still a privilege of the well-to-do. *The same could be said of the protection of the public health.*

To learn by experiments and convince by demonstration, to train better teachers and attract them to the rural schools, to consolidate the one-room schools and improve the rest, Joyner had to have money from outside, and he turned for help to philanthropic sources. There were already various funds which had been set up by Northerners after the Civil War to help the South in its straits, and three of these--the Peabody, Slater and Jaimes Funds--had been established to provide better schools for both whites and Negroes. The distribution of these private funds, derived as they were from the North, required delicacy of approach and discretion in management if they were to avoid any suggestion of charity or superiority. Over the years methods of assistance had been worked out by their Agents, in collaboration with public officials like Joyner, which did not offend Southern susceptibilities or discourage the principle of self-help in local projects. Probably not enough attention has been directed to these early philanthropic experiments as schools of policy and personnel for the great foundations to come. Both Buttrick and Rose were intimately connected with the management of one or other of these funds for some years before they assumed positions of responsibility in the Rockefeller philanthropies; in 1907, Rose became General Agent of the Peabody Fund.

The funds in turn had become highly responsive to the needs and opportunities in their fields through an oddly organized <sup>activity to influence</sup> body of public opinion which had grown up about them, unique in the history of such

*movements*, yet, as Mr. Rockefeller Jr. once said, almost indispensable to the "conception and foundation" of the first great Rockefeller Boards. This took the form of an annual Conference on Education in the South, begun in 1898 and engineered by Mr. Robert S. Ogden, the manager of John Wanamaker's New York store and President for many years of the Board of Hampton Institute, a college for Negroes in Virginia. This Conference embraced everyone of importance interested in the regeneration of the South through education; and sought to keep the movement alive and to recruit new supporters in both North and South. The members of the Conference were Mr. Ogden's guests on a train which he chartered annually and on which they slept. This train<sup>es</sup>, known as the Ogden movement, traveled through the Southern States, pausing now and then to investigate some particular institution or locality, ending up in some large city such as Birmingham, Alabama or Winston-Salem, where a public hall would be engaged and meetings held for several days.

By 1901 these peripatetic conferences had become a fixture and were ripe for a more permanent type of organization. This was provided by constituting a large executive committee known as the Southern Education Board (SEB) which included such useful personages as bankers, railway presidents, editors, churchmen, politicians, educators, and those responsible for the management of the various funds. Very active as a working member was Walter Hines Page, then forty-Six, who had just resigned the editorship of the Atlantic Monthly in order to start a magazine of his own, the World's Work, which had a more popular audience and in which he could champion the causes he had at heart. Page deserves special attention here

<sup>es</sup>See footnote to p. 18  
<sup>es</sup>Ref. 17.

because it was he who actually set in motion the chain of events which led to the Rockefeller Sanitary Commission, and who later was to lend crucial aid to the International Health Commission at a critical moment in its early career. Page was eager and optimistic, a man of vigorous ideas and enthusiasms, and possessed of great sympathy for the condition of underprivileged people, especially the rural people of the South, whose low level of culture and prosperity were due in his opinion to grave inequalities of opportunity, incompatible with the democratic way of life. He had stimulated Aycock to take up the cause of schooling in North Carolina; it was he who coined the phrase "The Forgotten Man", the title of an address on Southern Education which he gave in 1897 at the State Normal College for Women in Greensboro, North Carolina. There was no such completely disregarded individual in the East, the Mississippi Valley or the West; he existed only in the South. There could be no democracy, <sup>Page</sup> ~~he~~ said, where one in four was unable to read or write. "Our civilization has been a failure", he concluded, for which he was denounced from the pulpit and attacked by the press as a "renegade". This only stimulated Page to greater activity and effectiveness as spokesman for the unpopular causes to which the S.E.B. now addressed itself. Most of the members were Southerners, but there were important exceptions, such as Ogden and Buttrick. Ogden, as Page wrote to Alderman, was a "fine, zealous merchant", but a modest layman in his approach to the intricate problems awaiting solution. "If he had known more about 'education' or more about 'the South, by gawd sir' he'd never have had the courage to tackle the job."

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\*Ref. 17.

Dr. Wallace Buttrick on the other hand, a northern Baptist clergyman in charge of the Baptist schools for Negroes in the South and a trustee of the Slater Fund (1903-1910), had both understanding and experience. Well-known to Frederick Gates, former administrative head of the American Baptist Education Society, and to Mr. Rockefeller also, through the latter's donations to Baptist Negro schools and colleges in the South, Buttrick's detailed knowledge, robust common sense, love of people and sound judgment won him the backing of the great Rockefeller donations soon to come. Shrewd, humorous and diplomatic, he won the confidence also of the Southerners and within a few years was recognized as one of the outstanding educational statesmen of his generation. Many members of the SEB appeared on the early Rockefeller Boards, whose interests lay mainly in the South.

The SEB was never incorporated and had no funds; it was frankly missionary in purpose, striving to awaken in the public a sense of the educational need and a willingness to be taxed to give the next generation its opportunity. When interest was aroused to the point of a request for funds, this was referred to one of the established agencies, the directors of which were almost ex-officio members of the SEB.

In 1900, one of Mr. Ogden's guests on the famous train was John D. Rockefeller, Jr. He attended the conferences and visited Hampton Institute, Tuskegee and other schools. On his return home he related his impressions to his father and they began to take under contemplation a project in the educational field, to follow that of the Rockefeller Institute which was then in preparations.

\*In a letter to Mr. Ogden, Mr. Rockefeller Jr. wrote "Whenever I think of the SEB and the magnificent future which is before it, I always remember that its conception and foundation were to a large extent the result of the Southern trip which I made as your guest".

As a result, the General Education Board was incorporated on January 12, 1903, and six of its ten members were taken from the SEB, including Ogden, Buttrick and Page. Mr. Gates was made Chairman, and he chose Wallace Buttrick to be Executive *Secretary.*

The charter of the GEB was broad enough to cover the nation, but its interests at first were almost restricted to the South. The GEB was an example to all subsequent Rockefeller Boards and Commissions, and cannot be ignored in any study of their origins and development. This was the original great private operating agency of its kind and Buttrick had first to define its field of action in relation to the various public services with which it hoped to collaborate. Out of his experience on the boards of various funds and philanthropies he developed his method of demonstration and contingent gift which has stood the test of time under the most diverse circumstances.

The creation of the GEB was enormously important to the SEB and at once made the latter more effective. Each understood the other's objectives completely and a sort of symbiotic relationship developed between the two organizations--an association advantageous and indeed almost necessary to both, for the GEB was a Northern institution well supplied with funds earmarked for the relief of the South's most urgent problem, while the SEB, without any endowment whatever, was composed of public spirited Southerners alive with plans and solutions. The fact that these men were Southerners and the GEB a private agency was important in that sensitive period.

2 For years, for example, Senator Blair of New Hampshire had been offering a bill to appropriate ten million dollars annually of Federal money for the encouragement of education in the South, but the South would have

none of it\*. The GEB and the SEB therefore were practically the two faces of the same coin. George Foster Peabody (not to be confused with the founder of the Peabody Fund) was treasurer of both and there was a great overlapping of membership between the two Boards. Mr. Peabody used to invite ~~the~~ both groups to his summer home on Lake George to hold their annual meetings together\*\* so as to thrash out a program which would seem feasible to the SEB and which the GEB would be willing to underwrite.

Both Boards naturally proceeded on the assumption that the educational problem was mainly economic. Thus the GEB <sup>had</sup> ~~was~~ liberally back<sup>ed</sup> ~~ing~~ Dr. Seaman A. Knapp in his county farm demonstrations in the control of the boll weevil, for the program of rural schools depended directly on agricultural prosperity. But the notion that the health of the children was for some reason far below par in rural communities and was also retarding the progress of rural education, began to crop up in the conferences and it was thought that something should be done about it. The Russell Sage Foundation was established in 1907 "to improve social and living conditions in the United States", and its administrative officer, John M. Glenn, was quickly made a member of the SEB. He came to Joyner's aid and helped him introduce the first school health services in North Carolina. Literature on the physical defects of school children was prepared and distributed to the schools stressing malnutrition as the principal cause of the anemic condition of the pupils, to be expected in the midst of so much poverty and ignorance. There was a good deal to be said for this, since the children from the farms ate mainly pork fat (sowbelly), cornmeal, and molasses. Collards, a cabbage which does not head, and "pot licker", a stew of vegetables and fat, were saving items,

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\*Ref. 19.

\*\*Ref. 18.

but could not stave off the pellagra or the anemia. It was not easy to explain, however, why the white children suffered more than the black. Then came Stiles with his hookworm theory and he confirmed it over and over in improvised clinics held in little country school houses here and there; dull, undersized, putty-faced children would get a dose of thymol and a purge, and ridding themselves of hundreds and sometimes thousands of pin-sized blood-sucking worms, would soon show a tinge of red in their cheeks and in a few weeks would be shouting around the playground, while the underpaid teachers complained that the boys were getting <sup>out of hand</sup> hard to manage. Stiles became the spearhead of Joyner's campaign in North Carolina, and they went around the state together in 1907, lecturing and demonstrating. Anemia in the children was an old story, but hookworm was news--to the teachers, the doctors and the public alike. Some agreed with Stiles that the anemia might be the cause rather than the result of the ignorance and poverty.

At this strategic moment, Theodore Roosevelt appointed a commission to report on the economic, social and sanitary conditions of American farms and of rural life in general. President Roosevelt was a Trustee of the Peabody Fund (1901-1914) and on one occasion had met with the SEB\* in whose program he had developed an interest, and this was doubtless in part responsible for the Commission on Country Life which began its survey in 1908. Stiles learned of this with eager excitement, and in desperation went to Dr. William H. Welch, asking him to intercede with the President to have him placed on the Commission so that hookworm might be made a subject of study\*\*. Welch had known Stiles for years and often consulted him on points of scientific nomenclature in connection with editing the Journal of Experimental Medicine. Welch must have come to a favorable opinion on the

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\*Ref. 18.

\*\*Ref. 23.

hookworm question; for he recommended Stiles to Roosevelt, who appointed him as soon as there was a vacancy on the Commission.

Two other influential members of the Commission on Country Life were Walter Page and Henry Wallace Sr., publisher of "Wallace's Farmer", and it turned out that Stiles was able to address himself first to the conversion of these two gentlemen. This was Stiles' greatest opportunity in the whole six years of his unrewarding labor. The Commission's train was traveling through North Carolina, and Page, Wallace and Stiles happened to be seated together in a smoking car, when a stop was made at a small country station and they noticed a miserable figure leaning against a post--thin, yellow, potbellied and apathetic. Wallace was shocked, and Page remarked that the so-called poor white trash of the South offered a pathetic spectacle of racial degeneration. Stiles turned to them with all the conviction he could muster and told them the debilitation was due almost entirely to the ravages of hookworm. The man, he asserted, could be rehabilitated and restored to circulation as a self-supporting citizen for about fifty cents' worth of medicine.

Page was greatly impressed. He was by nature an optimist, receptive to ideas and fertile in imagination; here was something which, if true, might radically change the whole outlook and headway of the movement in which he was so vitally interested. By the time the Commission had completed its job, Page, and the Commission with him, <sup>was</sup>~~were~~ convinced that Stiles had uncovered a situation of essential importance to any program of betterment to the South. He was immensely excited at the possibilities of a social regeneration so immediately practicable, and his sanguine imagination took fire. Stiles at that time was profoundly depressed by the death

\*Ref. 24. Mark Sullivan in "Our Times" gives an account of this episode obtained from Stiles and approved by him before publication.

of a wealthy benefactor from whom he had had hopes of obtaining two million dollars to finance a great campaign to combat soil pollution and hookworm disease\*, but Page told him to cheer up; this was not the only rich man in the country\*\*. Probably this was the precise moment of conception of the RSC with all the multifarious consequences that were to flow from it. Page was in a position to help Stiles materially. He was a member of the Executive Committee of the GEB, on which he was very active; and an intimate friend of Dr. Buttrick, Secretary and now President of the Board, who lived near him on Teaneck Road in Englewood. Page was also known and liked by the Rockefellers, and had begun to publish Mr. Rockefeller Sr.'s "Random Reminiscences" in the "World's Work" (1907-8). He wrote to Buttrick <sup>urging him</sup> ~~that he~~ <sup>to</sup> see Stiles at once. The Country Life Commission shortly held its final conference at Cornell University in the fall of 1908 and Buttrick, who had been invited, sought out Stiles and said "Walter Page has told me that you have something which I must know immediately."\*\*\* And Stiles sat down with Buttrick and talked to him most of the night about hookworm.\*\*\*\*

On his return to New York, Buttrick told Stiles' story to Frederick Gates, who was much interested. "My imagination", he wrote in his unpublished memoirs, "began to play around the alleged devastation and suffering caused by this disease." He consulted Dr. Flexner, the Director of the Rockefeller Institute, in whose knowledge and judgment both Mr. Gates and Mr. Rockefeller had the greatest confidence. Flexner had known Stiles at Hopkins and vouched for his character and scientific ability. He arranged with Stiles to give Mr. Gates a private demonstration in his office

\*Reported to have been Carnegie, but he was still alive in 1908.

\*\*Ref. 13.

\*\*\*Ref. 26.

\*\*\*\*Ref. 23.

in New York; it was "entirely conclusive".<sup>22</sup> After about forty minutes, Gates sent for Starr J. Murphy, an old friend, who was Mr. Rockefeller's personal counsel~~er~~ and his legal representative on all the Boards. When Murphy appeared, Gates said: "This is the biggest proposition ever put up to the Rockefeller Office. Listen to what Dr. Stiles has to say."

After Stiles' talk, which by this time must have been a masterpiece of cogency, Gates turned to practical matters of program and budget, but here Stiles was not prepared with any precise answers. He hazarded a guess that there might be two million cases in the South, although no adequate survey had ever been made; he had not formed a plan of eradication or an estimate of the cost. This unreadiness on Stiles' part, while it seemed curious to Gates, is easily understood, and throws light on the over-optimism which soon began to reign, and the subsequent unfulfillments which can in no way be blamed on Stiles. The identification of a visible and removable cause of illis which had seemed ~~so~~ deepseated and unyielding had led laymen to oversimplify a problem which still remained complex and difficult of solution, compounded as it was with ignorance, prejudice and custom for which unfortunately there was no drug available. The word "eradication" came to be incorporated in proposals and projects and later had to be explained away, but Stiles himself had no illusions on this score--he thought it might take two or three generations to weed out hookworm, and so it did.

It was agreed between Stiles and Gates that he should continue his studies of these broader aspects of the problem. At the same time Gates and Murphy made an independent investigation, seeking advice from educators and public men throughout the Southern States. <sup>Stiles'</sup> ~~the~~ five itinerant years which at times must have seemed lean and discouraging <sup>enough</sup> ~~to Stiles~~, now bore their fruit; in spite of the fact that common knowledge of the disease had

<sup>22</sup>Ref. 22.

<sup>24</sup>Ref. 24.

<sup>27</sup>Ref. 27.

not yet permeated even the medical profession, enough convincing evidence was found amply to confirm Stiles' contention that hookworm was the most common and disabling of all the serious diseases in the South.

"These studies", wrote Gates, "consumed much valuable time, but at length (Stiles) was able to report that his estimate of two million cases was not exaggerated. It proved in the sequel to be an understatement... I was now ready to present the matter to the Messrs. Rockefeller, Senior and Junior. They recognized the high importance of the subject and committed themselves to the needed funds for a campaign of extermination of the hookworm in the United States." It was characteristic not only of Mr. Rockefeller and Mr. Gates but of all the Rockefeller Boards and Foundations to spend "much valuable time" in preliminary studies before taking any important action. The handling of emergency situations was not to their liking. To Stiles, however, the delay of almost a year was discouraging and he thought he had failed to convince Mr. Gates and Mr. Rockefeller because they made no move.

In the fall of 1909 Gates invited Stiles to address the SEB which was meeting at the summer home of George Foster Peabody on Lake George. The Southern leaders present were enthusiastic<sup>t</sup>, and after the lecture, without preamble, Gates said to Stiles, "Mr. Rockefeller's office will support this work".\*\* Gates made up his board that evening.\* "Some weeks later", Stiles wrote, "I was a guest at his home in Montclair and far into the night we discussed details. He suggested the sum of fifty thousand dollars, and I replied that this would start the work but it would be only a drop in the bucket. He asked me to name a sum, and I suggested one million dollars."

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\*Ref. 22

\*\*Ref. 13

Shortly afterwards, on October 26, 1909, Mr. Rockefeller Jr. invited a small group to meet in his offices at 26 Broadway to consider the new project. It was a carefully chosen group, with emphasis on the educational aspect of the problems involved, half of the twelve members being educators.\*

no 11 Stiles and Page were there of course as prime movers in the matter, and Doctors Welch and Simon Flexner to advise on the medical program.\*\* The "Rockefeller Office" was represented by Mr. Gates and Mr. Murphy. Mr. Rockefeller Jr. read a letter from his father which said in part that he hoped the conference might "lead to the adoption of well-considered plans for a cooperative movement of the medical profession, public health officials, boards of trade, churches, schools, the press and other agencies, for the cure and prevention of hookworm disease. If you deem it wise to undertake this commission, I shall be glad to be permitted to work with you to that end and you may call upon me from time to time for such sums as may be needed, during the next five years, for carrying on an aggressive campaign, up to a total of one million dollars." Stiles had got his million. All were men devoted to the South and convinced by Stiles of the seriousness of the hookworm situation; they readily accepted Mr. Rockefeller's invitation commission. All twelve served for the full five years, retiring on December 31, 1914, when the Commission came to an end.

When the news of the formation of the <sup>Rockefeller Sanitary Commission (RSC) for</sup> ~~the~~ was given to the press, the Eradication of Hookworm Disease in the U.S. another round of caustic and ironic comment filled the papers. The Country Life Commission had made its report to President Roosevelt in January, 1909, emphasizing the blighting effect of hookworm disease on the South, and while no Congressional action resulted, it was given wide publicity. The report had a very unfavorable press in the "hookworm belt":

\*Seven, in fact, if we count Stiles who was Professor of Zoology in the U.S.P.H.S. The others were Alderman (Pres. U. of Va.), Houston (Chancellor, Washington U. of St. Louis), Frissell (Principal of Hampton Institute for Negroes), Welch (Johns Hopkins), Claxton (U. of Tenn.) and Joyner.  
\*\*Welch was then President of the American Medical Association.

(Title in RF  
Ann. 1913-14/13  
+ p. 11.)

*Roosevelt*

the Charlotte News called the Commission a "body of fanatics", while the Raleigh News and Observer, edited by Josephus Daniels, said "many of us in the South are getting tired of being exploited by advertisements that exaggerate conditions...The Country Life Commission has left a distinctly bad taste in the mouths of the people." Daniels complained that the Commission had come to Raleigh in November, and ignoring fundamental questions touching upon country life, as for instance a bad tenant system, the tremendous burden imposed on the farmers by the credit system, the lack of health facilities and schools, the employment of children in factories, it had placed undue stress on hookworm. "The Commission ought to have stayed long enough to learn the true conditions and not have broadcast preconceived notions".\* Now the South learned with indignation that although governmental implementation of the Report had been blocked by political action, an unofficial agency supported by a private individual was preparing to invade the South with worm medicines and purges. Hookworm disease carried a stigma and local pride was involved. Irvin Cobb remarked that it was a question whether the people down South wanted hookworm "dispossessed from their midst by a rank outsider from the North." Bishop Candler of Georgia was the most serious and influential opponent. He believed the gift to be a bribe to control education. "The Southern people", he said, "will not be taken in by Mr. Rockefeller's vermin-fuge fund." His opposition is believed to have inspired Georgia's Senator Hoke Smith to fight the federal incorporation of the Rockefeller Foundation in the Senate and defeat it. The Macon Telegraph asked: "Where was this hookworm or lazy disease, when it took five Yankee soldiers to whip one

\*Josephus Daniels, "Editor in Politics", 1941.

Southerner?" The newspaper humorists again had a <sup>field day</sup> ~~heyday~~ ("how much epsom salts <sup>will</sup> ~~would~~ a million dollars buy?") and Walt Mason had one of his liveliest inspirations:

He was a mournful looking wreck, with yellow face and scrawny neck, and weary eyes that looked as though they had monopoly of woe. Too tired to get his labors done, all day he loitered in the sun, and filled the air with yawns and moans, while people called him Laxybones. One day the doctor came, and said: "Brace up, my friend! Hold up your head! The hookworm, deadly as an asp, has got you in its loathsome grasp! But I will break the hookworm loose, and cook its everlasting goose! Swing wide your mouth, and do not cringe—" and then he took his big syringe, and shot about a quart of dope, that tasted like a bar of soap, adown the patient's yawning throat—"I guess I got that hookworm's goat!" One gasping breath the patient drew, and bit a lightning rod in two, and vaulted o'er his cottage roof: and then, on nimble joyous hoof he sped across the wind-swept plain, and burned a school and robbed a train. The doctor watched his patient streak across the landscape sere and bleak, and said: "It makes my bosom warm! What wonders Science can perform!"

The fourth estate is traditionally chauvinist, suspicious and not averse to playing on popular feeling to create news interest. Probably the resentment was not deepseated, and was exaggerated by the press. Some of the great papers took quite another stand. Josephus Daniels had found himself held by Stiles' glittering eye and had listened to his tale. "I got off on the wrong foot", he wrote in his memoirs. "Although the paper at first unwisely ridiculed the Commission, I afterwards had close touch with Dr. Stiles and learned from him the seriousness of the disease, and cooperated with him and the health officers in securing legislation to lessen the ravages of it."

The New Orleans Item made a wise prediction: "If the hookworm is fought and stamped out in the South, tuberculosis will be fought and stamped out; typhoid fever and malaria will follow..."

Amid the windy debate of press and pulpit the work began. The Commission had first of all to choose a director to manage the campaign. Stiles may have had aspirations for the post, and some of his friends have said that he was disappointed at being passed over, but from his own account we learn only that when Gates asked for his opinion, he said the country schools offered the most promising avenue of attack and this called for close cooperation with the educational machinery. A man widely known as a professional educator would on this account make the best administrative officer, and Stiles suggested Joyner. He went on to say that he thought the Federal government should be brought into the picture. Let the Surgeon General select officers of the Public Health Service born in the South and offer their services to the State boards of health with the understanding that the Government would pay their salaries and the RSC their expenses. Wyman approved the idea but <sup>his superiors</sup> Gates turned it down. "Had the plan been approved," wrote Stiles, "the entire scheme, since adopted, of cooperation between state boards of health and the U. S. Public Health Service would have been put into immediate effect."<sup>\*</sup>

Whether Stiles or Buttrick <sup>Joyner, his</sup> recommended <sup>name</sup> met with immediate approval. He had the confidence of Alderman and Page, both on the Commission, and was well known to most of the others through the SEB. Joyner<sup>\*\*</sup> was attending a NEA meeting in Chicago when he received a telegram from Page asking him to come to New York for a conference. Page met the train and took him to lunch with Mr. Rockefeller Jr., Gates, Buttrick and others, after which he went home with Gates to Montclair to talk things over, and found Stiles there. He was offered the position of Executive Secretary

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<sup>\*</sup>Ref. 13.

<sup>\*\*</sup>Personal interview with LWH.

of the RSC, which interested him greatly, but he asked for time to think it over. Back in New York, Buttrick took Joyner to the offices of the GEB at 17 Battery Place and showed him a room next to his own, with a wonderful view of the harbor, which would be assigned to him as his office. Joyner looked at him quizzically and said, "I am not the first man to be taken to a high place and offered the world." But Joyner was in the midst of <sup>his</sup> great ~~campaign~~ <sup>fight</sup> which was not yet won, and he felt that if he now abandoned it, he would be a soldier deserting his post. In doubt, he went to consult Alderman at Charlottesville, and then wrote to Mr. Gates that he could not accept the position. X

Mr. Buttrick then turned to other possibilities. In conversation with James H. Dillard, head of the Jeanes Fund for Negro education, Buttrick brought up the name of Wickliffe Rose, who at once apparently struck them both as the right man for the job.\* They knew him well, since Rose was the administrative head of the Peabody Fund, and similarity of problems had brought the three men into frequent and helpful association. From more than one point of view, however, the choice has always seemed a singular one. In its technical and especially its medical aspects, hookworm control seemed hardly the task for a layman, and Rose, of course, knew nothing about it. "Why the choice fell on Rose", wrote Fosdick many years later, "or by what intuitive process Buttrick saw in him the making of great leadership in the field of public health on a global scale, cannot now with any degree of accuracy be answered."\*\* And Rose was not free; like Joyner, he had unfinished business on his hands. <sup>He was about to become President of Peabody College.</sup> At the age of 47, he was well advanced in his chosen career, and this <sup>new</sup> undertaking would call for X

\*A. Flexner, "Funds and Foundations", p. 63.

\*\*Fosdick, "Story of the Rockefeller Foundation"

an abrupt change of course. Many of those who got to know Rose well have found it equally difficult to fathom why he should have been offered the job, and why he should have accepted it.

The first question seems easier to answer. It is not necessary to credit Buttrick with such extraordinary vision. <sup>imputed to him by Mr. Flexner</sup> Rose's leadership in the rural public health movement and in the global developments to follow was far in the future; the growing interest in hookworm was due solely to its calamitous effect on Southern education and agriculture. Gates and Stiles were agreed that "a man widely known as a professional educator would make the best administrative officer." Stiles' suggestion of Joyner had met with general approval, and when he was found to be unavailable, Buttrick the educator, rather than Simon Flexner the medical counselor, was asked to select someone else, although Buttrick was not a member of the RSC, and Flexner was. The Rockefeller Sanitary Commission, in fact, might easily have functioned within the educational and agricultural program of the General Education Board, and according to Joyner it was <sup>so</sup> planned at that time, <sup>with</sup> that the offices should be close together. Both hookworm and boll weevil were undermining education; and the GEB, which had supported Dr. Knapp in his farm demonstrations of boll weevil control, appeared ready to back Stiles' plan for hookworm control. Buttrick, therefore, was looking for a man in the educational field, of ability and tact, whose ideas were sufficiently like his own to make it possible for them to work together in a friendly atmosphere. It would have been strange indeed had he not picked on Rose. Buttrick and Dillard had Rose to dinner, and opening up the matter to him, invited him to become Executive Secretary of the RSC.\*

\*A. Flexner, l.c., p. 63.

Rose's first impulse, he has told us, was to decline; he had other plans, and this was definitely not in his line.\*\* His background was purely academic. Entering college late, he graduated from the University of Nashville at 27 and remained in Peabody College\*\* as Instructor in History and Mathematics, then as Professor of the History and Philosophy of Education until, in 1900, he went to the University of Tennessee as Professor of Philosophy. During his ten years at Peabody, Rose had become actively interested in securing an endowment for that institution and he was called back in 1904 as Dean, not to teach but to plan a reorganization under an endowment which now seemed possible through an arrangement with the Peabody Fund. The negotiations were successful, and in 1907 Rose was made Agent of the Peabody Fund to facilitate the transaction, which involved winding up the Fund when pending commitments had been fulfilled, and creating the George Peabody College for Teachers, of which Rose was to be President.

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Buttrick must have anticipated that Rose would not easily be persuaded to abandon all this to direct a five-year campaign against the hookworm, <sup>Beyond</sup> ~~that, in the future,~~ <sup>and</sup> ~~we do not know what~~ <sup>future</sup> ~~implications there may have been,~~ <sup>discussed;</sup> but Rose <sup>himself</sup> evidently considered it a break with the past, for he found the decision a crucial one. Dr. Simon Flexner records meeting him during this period at Lake George where the SSB was in session; they took a boat in the evening and rowed out into the lake, where Mr. Rose rested on his oars and with emotion told Flexner of his struggle.\*\*\* What arguments persuaded

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X

\*Source Book for a History of the Rockefeller Foundation.

\*\*These two institutions functioned practically as one. The University of Nashville was in financial difficulties after the Civil War and as a result of negotiations with the Peabody Fund, it was combined in 1875 with the new State Normal College, and in 1890 the name was changed to "Peabody Normal College and University of Nashville", the medical school being absorbed by Vanderbilt University. Thus Rose got his A.B. in 1889 from Nashville and his A.M. in 1890 from Peabody, and was finally Dean of both at the same time. This has caused some confusion to his biographers.

\*\*\*Rockefeller Foundation source book.

him we do not know, but that he had good, solid reasons we may be sure; Mr. Rose never acted upon impulse. At the same time he had an adventurous and pioneering spirit, always eager to explore the unknown. In a letter to a friend, written after his retirement, he said he had always wanted to know what was around the corner.\* Here was something which had never been tried before. In 1909 it was clear to informed persons that hookworm disease was holding back the entire progress of educational and agricultural reforms in the South, and that nothing commensurate with the effort expended and its high aims could be achieved until this roadblock was removed. "The economic prosperity of the State, the lives and health of the people, the education of the children are involved" wrote Rose, later.\*\* A campaign of extermination of the hookworm in the United States, as Gates envisaged it, seemed the next most important step.

Rose's name was presented to the Commission by Page\*\*\*, since Buttrick was not a member, and Rose was made Executive Secretary while Stiles was appointed Scientific Secretary, a skillful handling of a somewhat *delicate* thorny situation. The purpose of the work as incorporated in the by-laws was exactly as Mr. Rockefeller had stated it in his letter: "to bring about a cooperative movement...for the cure and prevention of hookworm disease." *(It is worth noting that Mr. Rockefeller did not use the word "eradication"; Mr. Gates added that.)* This Mr. Rose interpreted to mean "to stimulate and guide state and local effort in building up a system of permanent agencies which would take care of the whole problem of public health." This was <sup>later</sup> nailed to the masthead of the IHC when it was launched, and remained its basic principle to the end. X

\*Letter to Mrs. Parsons

\*\*Source material, p. 552.

\*\*\*Stiles, l.c.

Stiles was to deal with the medical profession (a task at which he had not been too diplomatic) and to control the scientific aspects of diagnosis and treatment. In his first report (1910) Stiles wrote: "I have continued the same work that I have been doing for eight years past, but more intensively. In all, I have given 122 addresses and clinics in nineteen states." In addition he had published 31 papers. "This coming year", he added, "I hope to devote less time to lecturing before local audiences and more time to experimental study." But Rose's emphasis was to be on teaching, not learning, and this was to characterize his attitude toward field investigation throughout his incumbency as Director of the IHC and its successor, the International Health Board. It is clear from his subsequent career that he placed the highest value on research, but he did not believe it to be a proper function of the health agency he was directing. Stiles did very little scientific investigation in the five years to follow, but his activity was prodigious. His success in gaining the cooperation of the doctors was not conspicuous, for this required more tact and patience than he possessed, but through his efforts the hookworm became notorious in the land, and we may echo Allen W. Freeman's opinion that we cannot picture the health movement in the South without referring to the work and influence of Charles W. Stiles. ? x

Wickliffe Rose was a man who lost no time getting into action. He opened offices in Washington on January 8, 1910, and the campaign began. "We organized with circumspection", wrote Oates, "so as not to affront Southern sensibilities more than necessary. The headquarters should not be in New York but in the neutral territory of the National Capital." One trouble was that in medical and public health circles, no one knew Rose.

The suggestion was made that he would do better to work through the State Boards of Education, which he knew well and which were in general more effectively established than the State Boards of Health, but Rose rejected the idea, for, as he told Ferrell, if the State had no health department, this might help to create one; and if it had a weak one, this would strengthen it. His first step was to call a meeting in Atlanta of outstanding physicians and representatives of Boards of Health of the twelve "hookworm" States. Some 300 attended and Rose was gratified. The tone of the meeting was "serious, hopeful and aggressive." Rose's modesty and sincerity won the respect of the doctors, and eleven of the States<sup>\*\*</sup> invited the Commission to start its work at once; only Florida abstained. Florida was unique among the Southern States in levying a special tax earmarked for public health which produced an annual fund of \$75,000. The State had already started a hookworm campaign in October, 1909, just before the HSC was organized, which took the form of a cash bonus to physicians of \$3.00 for each hookworm "cure" reported, and the physicians were naturally opposed to any free clinic system. The Health Officer was very courteous, but he had plenty of money and did not see the need of an outside agency. On the other hand a request for assistance was received from California which was declined. The invitation was motivated by the heavy infection of the coolie labor imported from India by the rice growers, but the Commission felt that the problem was too exotic and circumscribed to threaten the prosperity of the State. California promptly handled the situation by excluding the Indian as it already had the Chinese.

Mr. Rose went from State to State selecting local directors for the work and giving the signal to go. Allen W. Freeman, now Assistant

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

<sup>\*\*</sup>A munificent appropriation for that time; the average public health budget of the other eleven "hookworm" States in 1911 was \$17,000.

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State Commissioner of Health in Virginia, fulfilled his promise to Stiles and put himself whole-heartedly behind the plan. He moved quickly, opening his survey on February 7, 1910; John A. Ferrell in North Carolina followed in March, and the other nine States were all soon at work. It was clear in the Rockefeller offices that the new venture had been safely launched and was riding high. Mr. Gates, as the individual chiefly responsible for a project without precedent and a director without experience, undoubtedly had his anxious moments. He wrote to Rose in April: "It is a great personal relief to feel that the work is in hands so able and energetic."

First came the surveys in selected counties in each State to awaken the people to the gravity of the situation. Bausch and Lomb devised a folding microscope for diagnostic examinations which could be stuffed into a saddlebag if necessary, and which proved exceedingly useful later all over the world. The results confirmed Stiles' gloomiest predictions. Every county was infected, except in the driest part of western Texas. In all, half a million children were examined, with an average infection rate of 39 per cent. Some incredible conditions were disclosed in isolated pockets. At the end, Walter Page wrote: "The hookworm has probably played a larger part in Southern history than slavery or wars or any political dogma or economic creed."

The next step was to tackle the parasite. This was done by county-wide campaigns combining publicity, free treatment and as much education as could be instilled in the public while it attended the clinics. The general procedure was first to get an invitation and a small appropriation from the County Commissioners, and try to obtain the support of the physicians through the County Medical Societies; then, to advertise the campaign by posters, lectures and in the newspapers, and conduct weekly

dispensaries in strategic centers in the county. At the start the majority of the doctors were not cooperative, either because they did not believe in the hookworm or because they feared for their practices. The handbills and posters said: "Come out, bring your family, stay all day and hear what the doctor has to say." It was a kind of picnic--almost a revival. The doctor would lecture from time to time and show his charts and worms. Then the people would sing hymns, eat their lunches, argue about the hookworm and make up their minds about being examined. There were always jokers with hands bandaged where the worms had bitten them, and rumor mongers reporting fatal poisonings by the treatment in counties far away. It took two weeks to get things running well, and then the ferment would begin to work and the number of treatments to pile up. In another four to six weeks the law of diminishing returns would bring the campaign to a close and the team would move on to another county, where interest had already been aroused by visits from the State director.

This scheme of mobile clinics was probably as useful as any which could have been devised to accomplish its particular ends, which were, to bring the people in, make them aware of their infection and show them how it could be relieved and prevented. The idea went back six years or so to the hookworm campaign of the Puerto Rico Anemia Commission, of which Dr. Bailey K. Ashford was the moving spirit. Ashford, an Assistant Surgeon of the Army Medical Corps, had, like Stiles, endeavored for years to arouse the authorities to take action against the hookworm. His efforts were seconded by Dr. Walter W. King of the U. S. Public Health Service, who was Chief Quarantine Officer for the Island, and the deplorable situation which they disclosed finally led to an allotment of \$15,000 by the legislative assembly in 1904 for the study and treatment of anemia. Ashford and King,

together with Dr. Pedro Gutierrez of Puerto Rico, were constituted the Puerto Rico Anemia Commission. A free clinic was opened at Bayamon in a small tent hospital borrowed from the Army, and proof was obtained in a very short time that the hookworm was a shocking scourge of agricultural labor, and that it could easily be eliminated by treatment. So important was this to the sugar industry, on which the national economy was based, that the campaign was rapidly expanded to cover the Island, and when the Commission was dissolved in 1911, it turned over to the Insular Health Department what Ashford termed "the most perfect-working and beautiful sanitary machine this Island has ever seen."\*

Ashford took a legitimate pride in the work of this Commission as the first organized attack on the hookworm to be made anywhere--the forerunner of the campaign in the Southern States and all that grew out of it. He was keenly disappointed, as time passed, that this seemed likely to be forgotten and he felt very strongly that it deserved more recognition than it ever received from the organizers of the RSC, <sup>(Especially Stiles)</sup> and from subsequent historians. In his memoirs, published some years after Rose's death, Ashford recounts the extraordinary impression his work made on Mr. Rose, who visited Puerto Rico in 1910; the campaign was then at its peak, with 59 well-distributed stations busily diagnosing and treating thousands of miserable victims of the infection. According to Ashford, "Mr. Rose left Puerto Rico a changed man, fired by a new ambition and a new mission. After he reached home, it did not take long to organize the RSC for work in the South on exactly the same lines as those laid down for Puerto Rico".\*\*

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\* Ashford, 1934

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Ashford unfortunately antedated Rose's visit by two years, placing it through some slip of memory in 1908; Rose did not get to Puerto Rico until May, 1910, by which time the work of the RSC had already been organized in six States. The point is of no great importance, since Rose and his colleagues knew of Ashford's work from its inception, although the RSC did not embark on its county dispensary plan until after Mr. Rose had gone to Puerto Rico and returned.

It was Ashford's contention, therefore, that not only had he been the first to discover hookworm disease in the Americas, but that his pioneering campaign to eliminate it was the prototype of the RSC and, as he put it, had "mothered that sturdy chap" the International Health Commission, which had set the pattern for the world. In spite of this, it must be admitted that most of the glory for the discovery of the American hookworm and its ravages has gone to Stiles, and the initiative in the long world war to suppress the disease has commonly been ascribed to the RSC. Even Ashford's merit as sole discoverer of the cause of the jibaro's anemia in Puerto Rico has suffered some eclipse with time; a recent history of the U. S. Public Health Service contrives to leave it uncertain whether the principal credit should go to Ashford or to King.\* On the face of it, Ashford has not received very generous treatment, and in tracing the origins of the International Health Commission, the influence of his discovery and his work must be taken into consideration, both for his sake and because it helps to explain a certain lack of continuity between the RSC and the International Health Commission which has hitherto received little attention. *As will be seen, the IHC did not adopt Ashford's mobile dispensary method.*

\*Williams, 1951.

Rose, I think, had he been alive, would hardly have contested Ashford's claims, since he was generous to a fault in bestowing credit upon others. These claims did, however, elicit an acidulous comment from Stiles in a lively, controversial paper published in 1939 entitled "Early History, in Part Esoteric, of the Hookworm Campaign in Our Southern United States".\* Stiles gave Ashford full credit for bringing hookworm to the attention of the American medical profession in 1900 as the cause of anemia in Puerto Rico, and for his "splendid record of work on this disease", but he pointed out that the U.S. Public Health Service had already begun a campaign against hookworm disease in 1903, a year before the creation of the Puerto Rico Anemia Commission, and that one of the methods advocated was the free clinic system, in addition to a campaign for better sanitation and discussion before medical societies. "Statements that the Puerto Rican plan was taken as a basis for the organization in the United States are based on insufficient premises", he wrote. In fact, however, the Public Health Service had been unable to obtain any specific funds for hookworm control, and was limited to "advocating" methods which it could apply only sporadically through Stiles' personal campaigning.

The point is hardly worth arguing now, for the transient free clinic did not establish itself as a public health measure for hookworm control. Ashford himself, whatever his enthusiastic predictions in the beginning, acknowledged in later years that treatment alone could never wipe out infestation. Treatment "breaks the back of the anemia", he wrote, and may solve the medical problem, but leaves "a social one of the very first order." Barefoot peons contract the disease by walking on moist

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\*Stiles, 1939.

soil contaminated by human feces, and to break the chain of infection means revolutionizing the sanitary habits of the entire native agricultural population. Such a feat has never been accomplished by police methods; the Puerto Rican legislature passed a law making latrines compulsory, but as usual under such conditions, many were constructed but very few were used. It could not be expected that a dispensary campaign through its brief contact with thousands of ambulant patients would modify ingrained habits which exposed the treated individuals to inevitable reinfection.

Wickliffe Rose was not impressed so much by Ashford's methods as he was by the unimagined destructiveness of the disease and the tremendous importance of its prevention. In fact, Stiles says that "Mr. Rose returned (from Puerto Rico) opposed to the plan of a clinic, which he did not think would work in the South, and it became necessary to convert Rose to the idea of a clinic by showing him that they already existed." The plan however took a different course from that of Puerto Rico. The mass treatment scheme, as developed by the RSC, was devised by Dr. W. S. Leathers, State Health Officer of Mississippi. The first dispensary was opened on December 15, 1910, by Dr. C. J. Cully of Leathers' staff, in Columbia, Mississippi—the town where Bass and Howard had popularized hookworm treatment six years before. Public response was so favorable that the other ten states followed suit and staged short, county-wide campaigns of free examination and treatment lasting six to eight weeks, for their propaganda value as a running start toward more intensive and permanent measures. But mass treatment unaccompanied by sanitary reform was relief work, and as such, contrary to a basic policy of the International Health Commission. Mr. Rose used it for its educational value, and in the hands of

ingenious field directors versed in popular psychology it was highly effective for its particular ends, reaching a pinnacle of success under Dr. B. E. Washburn of North Carolina, whose station (wherever it happened to be) always became a training school for beginners. But the treatment phase of hookworm control in the United States lasted a relatively short time. It did not hold the solution to the problem which it helped to reveal.

Reviewing, in 1915, the whole panorama of anti-hookworm activity as it had developed in the United States and abroad, Mr. Rose paid tribute to Ashford's historic contribution in carefully chosen words: "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."\* But he added: "It does not examine the whole population, but only those who apply; it cannot follow up its first treatments,.....until cure has been demonstrated; and it does not remain in one place long enough to effect conspicuous results in sanitation."\* The county treatment campaign did not contribute to Mr. Rose's comprehensive design, and so died with the ESC and was not resuscitated by the International Health Commission when it came upon the scene.

\*Rockefeller Foundation Annual Report 1915.

Mr. Rose appreciated from the beginning the merits and defects of the dispensary method. Its educational success was proportional to the intensity of infection; and where this was minimal, as in Virginia, the free clinic was often bypassed for a more direct approach to the fundamental problem of preventing soil pollution, leaving treatment to the local physicians. Mr. Rose's main objective, therefore, soon became the promotion of proper sanitation in the homes in order to break the chain of infection. This, the only sure method of prevention and control, was also the least feasible by campaign methods. Official and public interest in rural sanitation had to be aroused to the point of doing something about it in a collective way. Measurable results could hardly be expected within the life of the Commission; indeed, the task was not one which the RSC could successfully undertake to carry through to any conclusion. "If the infection is to be stamped out", Mr. Rose declared, "the State must assume the responsibility."\* The Commission could, however, reveal existing conditions and gauge the extent of the problem.

In 1911 a survey was begun of sanitary conditions in homes, schools, churches and mills. The schools, which should have been models for the rest of the community, were found to be the centers of greatest infection. In one county in Arkansas not a single school had a sanitary privy, and in sections of Mississippi less than five per cent of the schools had any closet at all. Convenient bushes served the purpose, the boys going in one direction and the girls in another. The lowest sanitary index

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\*Source material, p. 552.

recorded for any county was a rating of zero in Putnam and Sequatchel Counties in Tennessee; pollution of the soil was general and not a single privy, however rudimentary, existed in either county. The highest rating was given to Walker County in Texas with 54.6<sup>per cent</sup> of the houses equipped with acceptable facilities. No other county in any State approached this, the next best being a county in Kentucky, one in Louisiana and one in South Carolina, <sup>on a par</sup> all tied with a rating of only nineteen per cent. Of 287,606 farm houses surveyed, 142,230 (about fifty per cent) were without a latrine of any sort. This was a discouraging picture. Such sanitation is simple in theory, but in practice more difficult to bring about than almost any other health measure. It cannot be imposed, <sup>by law</sup> or financed out of public funds. It means persuading ignorant people to change ingrained habits, and it costs the individual householder money. Paradoxically it was this aspect of hookworm disease which made it the best approach to enduring results in rural public health. Before it could be conquered, every last person in the community had to appreciate the danger and be enlisted for the battle.

Any more detailed account of the five-year campaign of the RSC must regretfully be left to another pen. It will make a lively and interesting story, spiced with politics, prejudice and picturesque cantankerousness. It came at a deplorable juncture in our rural history which has almost passed into oblivion, along with its semifeudal aristocracy, the primitive simplicity of its way of life and the sacrifice of its youth to Necator americanus. Important to us is the experience gained and passed on to the IHC in dealing with people as individuals and communities, the successes and mistakes of a private agency engaged in a public service, and the emergence of certain general principles which proved immutable even under the most contrasting circumstances and adaptations of foreign experience.

In the spring of 1911 Mr. Gates suddenly determined that it was time to liquidate the RSC. He did this without warning or consulting Rose or Stiles, and the brusqueness of his decision caused surprise and criticism. The Rockefeller Foundation had now been in existence about a year, and Mr. Rose <sup>now also director of the International Health Commission,</sup> was in the Orient, exploring possible fields of action for the newly created <sup>agency</sup> IHC. Dr. John A. Ferrell, director of the North Carolina hookworm campaign, was transferred to Washington as his assistant, and Gates instructed Ferrell to draw up a plan for closing the work in each State as soon as it could be rounded out without abrupt derangement of programs in execution; but it was to be completed by December 31. Ferrell demurred, suggesting that he wait until Rose should return in June, but Gates was adamant; he had purposely precipitated the affair in Rose's absence. The Commission accepted his judgment and prepared to go out of existence; Ferrell proceeded to do as he was told. When Rose reached New York it was a fait accompli.

Mr. Gates' own reasons for the action are stated unequivocally in a letter which he wrote to Rose late in August:\* "To start a philanthropy like the hookworm work in the South", he said, "is difficult. To conduct it to conspicuous success is more difficult. But to stop it at the right moment when all that is true success has been achieved, that is the most difficult of all...The damage in stopping the work, whatever that be to workers or others, is as nothing to the damage inflicted upon society of continuing a work...with foreign means after a reasonable local enlightenment has created the local responsibility for self help...For that is to sap the foundation of character and social life itself." "So I say to Dr. Rose", he wrote to Mr. Rockefeller, "'well done, good and faithful servant. Thou

hast been faithful over a few things; we will make thee ruler over many things. Henceforth, the field is the world."

Mr. Rose, however, was deeply grieved and disappointed, and more than a little discouraged, feeling that there had been a major change of policy on which he had not been consulted, and he was tempted to resign.\* Still, it is difficult now to understand why Mr. Gates' announcement was such a bombshell; Mr. Rockefeller's donation had been explicitly limited to a five-year period, and this was now drawing to a close. It seems likely that Mr. Rose had not taken this too seriously. The important question after all was not the expiration of an arbitrary time period but whether the maximum benefit had been extracted from the funds available. Mr. Rose thought not. Many areas were still untouched, the campaign was in full swing and some \$200,000 remained unspent. Most important of all, what should have been the crowning stage of the campaign on which its permanent results depended--the demonstration of a safe, economical and generally acceptable way of avoiding the pollution of the soil by human wastes--had not been worked out to anyone's satisfaction. In spite of continual experimentation in all eleven States, the experts could reach no consensus on the matter; there was lack of agreement within the RSC itself, and the Commission was unable to recommend any of the various trial solutions to the problem. It was an unsatisfactory note on which to close, and Mr. Rose <sup>had</sup> made it clear in the memorandum which he left with Dr. Ferrell as he sailed to the Orient in February, 1914, that he was thinking in terms of two or three more years. "It will still require considerable time to complete the dispensary work...The time has come to make a survey to determine what the schools are doing...It seems to me we ought to put

\*Letter of Jerome D. Greene to Mr. Rockefeller Jr., Ref. 26.

forth every effort in the next two or three years to bring about definite results in the way of improved sanitation."

However, Mr. Rose made no formal objection. The RSC had undoubtedly accomplished its purpose of defining the problem and awakening public interest in its solution. Although the word "eradication" had been rashly inserted in the title of the Commission, neither Rose nor Stiles had thought of it as something the RSC could do in any stated period of time. Mr. Rose wrote as early as 1910: "The eradication of the disease is a work which no outside agency working independently could do for a people if it would, and one which no outside agency should do if it could." Nevertheless Mr. Rose had earnestly desired at least one complete demonstration, even on a small scale---that somewhere cure and prevention might embrace 100 per cent of the people and serve as a model of perfection after the Commission had withdrawn. In September, 1913, this attempt at eradication was begun on Knots Island, a remote fishing village on the North Carolina coast with little contact with the rest of the world. The plan was to treat and sanitize until the job was done. Ninety-four of the 567 inhabitants had hookworms and ninety were cured by Christmas. The other four stubborn old people would have nothing to do with the business. The sanitation campaign was, as usual, less successful. There was no reasonably attractive solution to the rural latrine problem except a septic tank installation, which was too expensive. Many people found "nature's way" less offensive than anything the doctors or engineers could suggest. Attempts to convince the recalcitrants ran into the law of diminishing returns and Dr. Ferrell finally convinced Mr. Rose that perfection was not worth the price. Mr. Rose accepted defeat in this particular battle with good grace because he knew the war was won. "I realize", he wrote to Ferrell, "that this cannot be made the definite demonstration which we had in mind...but without any effort on

our part now this movement is going to grow, and out of all the mistakes success will come."

The last year of the RSC overlapped the inaugural campaigns of the International Health Commission abroad, which were already in full swing by the middle of 1914. <sup>When Rose returned from the Orient</sup> These were naturally experimental in character and Dr. H. H. Howard in British Guiana had already reported the most encouraging success with a new intensive method of hookworm control by treatment and prevention which was reaching 95 per cent of the population at a reasonable cost, and gave Mr. Rose "a sense of accomplishment that closely approximates completeness."\* Mr. Rose wanted to try this out in the South before the RSC should be dissolved, with the idea of stabilizing the work in a few selected rural communities where he might "demonstrate completion." The plan called for "a full-time health officer, a reasonably heavy hookworm infection, cooperative people and a live teacher."\*\* It was a transition from dispensary work to a permanent county health service. Time was short, but this "intensive community work" was organized in twelve communities in four States during the latter half of 1914. The communities averaged about a thousand people, and while all infected persons were offered treatment, the emphasis was now on sanitation. The results were encouraging as far as they went, but the real value of the experiment was to demonstrate once more that to put a sanitary privy in every home was a long-term project and a task unsuited to a temporary organization.

The RSC was allowed therefore quietly to expire. Mr. Rose was unable to point, as he had hoped, to a single completely treated and sanitated community, but he felt sure, as did Mr. Rockefeller\*\*\* and his own Commission, that the main objective had been reached, and that "the medical profession and the public now generally recognize the prevalence of hookworm disease and regard its cure and prevention as an essential

\*Ref. 32.

\*\* Memo to Dr. J.A. Ferrell

\*\*\* Letter of Mr. Rockefeller, August 12, 1914 (R.F. Ann. Rep. 1922, p. 99).

part of public health work in the South.\*\* The press without exception had been won over, and the early levity converted into powerful support.\*\*\* State expenditures for public health in the hookworm belt had more than doubled between 1910 and 1914, and county appropriations had increased a hundred-fold. The movement was making headway under its own steam.

Furthermore, the status of the Commission as an agency of Mr. Rockefeller had been altered by the creation of the Rockefeller Foundation, to which its unfinished work could be referred. The Foundation, as Mr. Rockefeller pointed out, was "in a position by reason of its permanent character and endowment to continue, extend or modify the work."\*\*\* The International Health Commission undertook to round out the program of the RSC, although the area of its interests covered far more than hookworm disease, or the eleven Southern States.

It is pertinent to recall that in the same year of 1904, Mr. Rose as Agent of the Peabody Fund and Executive Secretary of the Southern Education Board was winding up both these enterprises as well. They too had accomplished their tasks of awakening the people to a need, and setting them on the path toward a permanent solution. All these movements had been carried successfully beyond the point of no return.

The abruptness of the liquidation of the RSC, however, caused embarrassment in the field. Men had begun to resign in 1914 because of the uncertainty of tenure, but there were 109 doctors on the RSC staff when it was dissolved, of whom only seven were taken into the IHC: and Walter H. Rowan  
Drs. H. H. Howard/ from Mississippi; Drs. John A. Ferrell, W. P. Jacobs, B. E. Washburn, P. W. Covington and W. H. Kibler from North Carolina.

\*Ref. No. 34

\*\*RSC 5th Annual Report, 1914, p. 21.

\*\*\*Source material p. 555. Letter of Mr. Rockefeller to the Commission.

The others found their way into private practice or were taken into State or local health services, many of which went on with the hookworm work.

The person who felt most violently outraged was Dr. Stiles, and he unquestionably received inconsiderate treatment. Although a member of the Commission and of its Executive Committee, he was not present when the Commission liquidated the RSC. Furthermore, there had been no anticipation of this action at the previous (January) meeting at which five of the members, including Stiles, had been re-elected for three years. Gates took full responsibility for this and Stiles found small comfort in the fact that Mr. Eliot, President of Harvard University, and Jerome D. Greene, Secretary of the R. F., regretted the move, and even Mr. Rockefeller, Jr. expressed his disappointment.\* Stiles was not taken into the IHC. His peculiar talents were those of parasitologist and crusader, not administrator; there was no room for him in the new program as Mr. Rose envisaged it. The RSC had given Stiles <sup>the</sup> ~~his priceless~~ opportunity <sup>which the Public Health Service had been unable to provide,</sup> and he had made the most of it. He had had an unlimited travel allowance for his indefatigable peregrinations and a laboratory with four assistants for his scientific work. All this was suddenly cut off by Gates' act, but he was still a highly esteemed member of the U.S.P.H.S., to which he now returned to continue his extraordinary career. In recognition of his achievement he was awarded an LL.D. by the University of North Carolina, an honorary M.D. by the College of Richmond, and received the degree of Dr. Sci. from Yale.

The accomplishment of the RSC has ordinarily been measured in terms of millions of people treated and thousands of homes

sanitated.\* Such a quantitative appraisal does not in any sense measure the value of this pioneering experiment, either to the South or to succeeding private agencies (including the R.F.) engaged in collaboration with governments and public services. Any joint enterprise between a large philanthropic agency and a public authority awakens certain apprehensions on the part of the people, as the General Education Board had discovered in the fields of education and agriculture. Most of these fears proved to be ungrounded, but such an association in the public health field carried with it an undoubted threat to local autonomy and initiative which Mr. Rose recognized from the beginning as the most important hazard to be faced and overcome. He took the greatest care to forestall criticism. The Commission refused to do anything except by invitation; and worked always in the names of the State Boards of Health. The "Director of Rural Sanitation", or similar official in each State, who took charge of the work, was <sup>nominated</sup> appointed by the Commission, but <sup>appointed</sup> nominated by the State Director of Health and became an officer of the State Board of Health. The Commission supplied funds for the salaries, but they were paid by the State. The most careful anonymity was preserved. Mr. Rose declined to give interviews; the county campaigns were waged in the name of the State and county with only the briefest

\*The final report of the RSC (see also R.F. Ann. Report, 1915, p. 96) showed:

1. Examinations and treatments: 579 counties "organized" for dispensaries and educational campaigns; 1,273,850 persons examined and 440,390 treated; 548,992 children examined and 39 per cent found infected.
2. Sanitary survey: 770 counties in eleven States surveyed; 250,680 rural homes inspected, of which 125,584 (50 per cent) were without privies; 0.6 per cent of homes had satisfactory provisions for prevention of soil contamination.

possible reference, where it seemed unavoidable, to the HSC, which was "lending support to the work". Mr. Rose said "The Commission will seek to hide itself behind its work and to keep to the front the local agencies through which the work is being done."

On the other hand, it cannot be denied that the virtually independent and centralized authority of the Commission was concealed rather than avoided. "It appears to an outsider" wrote Chapin\* in 1915 in a report to the American Medical Association on State public health work, "that while the Commission nominally acts through the State Health Department, it really carries on its work as an independent organization. Indeed, it could hardly be otherwise. It is difficult for an employee to serve two masters. It is scarcely conceivable that a successful campaign along definite lines for a definite purpose could be carried on under eleven different authorities. That definite and fairly uniform results have been attained in different States seems to be due to centralized organization and direction."

In compensation, the benefits were impressive. The Commission had brought health to thousands, had demonstrated an important preventable disease, showed how its cause could be removed, and brought about a marked sanitary improvement in countless dwellings and schools. "The indirect results" concluded Chapin, "will probably prove to be of far greater consequence. The great results of the work would appear to be the demonstration to the press and to the leaders of public opinion and also to the masses of the people of the South that great and immediate results can be obtained by the application of the principles of scientific medicine through the medium of an organized health service made possible by adequate appropriations. . . . (no 11)

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\*Ref. No. 33.

But great as these benefits are there are many who feel that it is dangerous to have outside agencies initiate and direct the activities of State and municipal officials. There is the constant fear that some group of over-enthusiastic and perhaps ill-advised reformers may by outside pressure bring about a one-sided diversion of funds, perhaps to lines of work of problematical value."

Mr. Rose was saved on the whole from such mistakes by his cautious selection of objectives, his insistence on setting a time limit in advance for every collaborative project, and his care not to involve government in eventual expenditures which it could not afford. The dilemma presented by Chapin is nowadays more serious and inescapable in the vast deployment of technical assistance. Where once the IHC was alone in its big field, there is now a multiplicity of international advisory health bodies which often find themselves in competition with each other to secure matching funds for their own specific projects from governments with small budgets and great needs. To secure a balanced and integrated program requires unusual objectivity and coordination. In his first report to the ESC, Mr. Rose laid down the fundamental principle: "An outside agency can be helpful only in so far as it aids the State in organizing and bringing into activity its own forces."

We have to conclude that the RSC was much more valuable as an experiment in collaboration between a governmental and a voluntary agency than it was as a demonstration of hookworm control. Rose summed up the material accomplishment by saying, "We have made splendid educational progress by treating the sufferers, but we have not materially changed the customs with regard to night-soil disposal."\* Future experience was to show that hookworm disease under mass attack has a reasonably short half-life, as the atomic physicists say, but its complete disintegration must be left to time and the slow operation of a rising standard of living. It is doubtful whether it has ever yet entirely disappeared from any region where it has once established itself. This characteristic of hookworm infection, far from being a misfortune, was actually a great asset to a movement for the promotion of rural public health, and made hookworm an ideal means to the end which Mr. Rose and Mr. Gates had in view. Rose's health program as "one of the best tools ever invented to shape country life"\*\*\* would have been much less effective if the RSC had been able to exterminate the parasite, as had been proposed, in one vigorous frontal assault.

The signal value of the campaign, however, lay in the educational experience it gave to its own officers and to the health authorities with whom they collaborated. Jonathan Daniels, son of the fighting editor who had helped rally the forces of common sense in support of the crusade, wrote: "It is hard to be sure now just what the RSC did, but what the startling discovery of the hookworm did to the worm was not as important as what it did to the State."\*\*\* To Mr. Rose and the Trustees of the Rockefeller

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\* Source material, p. 550.

\*\* Walter Page, l.c.

\*\*\* Jonathan Daniels, 1941.

Foundation, who were about to venture into the unknown field of international collaboration, the most encouraging fact about the RSC was that it had worked. In the face of doubt and opposition, it had succeeded in establishing fruitful relations with governments, doctors and the common people. This knowledge and experience constituted the initial capital of the International Health Commission.

People have always found it surprising that a layman like Rose, untrained and unknown in medicine or public health, should rather late in life have been able to construct such an instrument as the IHC and with it, in ways not tried before, to contribute to his era a new conception of public health, a new form of international cooperation and a new opportunity for private philanthropy. This chapter has attempted to provide an explanation. Mr. Rose's life did not begin at 47 when he suddenly came to public attention in a position of unprecedented scope and influence in health affairs. Though unknown in his new field, his character and unusual ability had already brought him distinction as an educator throughout the South under difficult and pioneering conditions. He had had a rich experience in the things that mattered for his future career, both as Agent of the Peabody Fund, the oldest, largest and most important Southern foundation; and as Executive Secretary of the Southern Education Board, which had brought him into intimate association with Mr. Buttrick during the constructive period of the General Education Board. The principles and policies which served him so well as director of the International Health Commission were adapted from those worked out in tackling the agricultural and educational problems of what was then an underdeveloped

area of our own country. Mr. Rose was no tenderfoot when he entered the field of international health. The International Health Commission was first seeded and strengthened in the soil of the South before it was transplanted overseas to attain its splendid maturity. The roots of a great tree are as deep and wide and ramified as the tree itself is broad and high.

Chapter 4 and Chapter 12 - (Hookworm)

Continuation by IHC of RSC Program

RSC - terminated December 31, 1914.

IHC - began intensive community hookworm work in U.S. March 12, 1914, (all expense paid by IHC)

Knott's Island intensive work - latter part of 1913 by RSC in N.C.

Gates had expressed his opinion that the Southern counties were in general too poor to pay for both schools and a whole-time health service at the same time, and since the GE had initiated a farm demonstration program to increase the taxable income, the schools should have priority, and a moratorium should be placed on efforts to obtain funds for county health work. WR went ahead, however, with experiments in intensive community hookworm control with the emphasis on sanitation, based on the experience gained by the IHC in British Guiana under Dr. Howard. A survey in the hookworm belt of the Southern states covering 287,606 farms showed that nearly half of them had no latrine of any kind, and a large proportion of the rest were of little value for the prevention of soil pollution. In only 0.6% of homes were

facilities satisfactory in this respect. Treatment was offered to persons found infected, and an effort was made to treat them all at least once to remove the bulk of the worms, but there was no insistence on a complete cure which was one of the goals in the West Indies.

The work of the RSC was closed down completely in December, 1914, and the IHC undertook to meet its unfulfilled obligations by continuing the mobile dispensaries for four to six months in four of the states (Alabama, Kentucky, Tennessee, Texas) where a few heavily infected counties remained untreated. By the middle of 1915 it was stated that treatment campaigns had been completed in all areas where the amount of infection justified that type of work, and the RSC thus became a nostalgic memory to the thousands who had swallowed its drugs and <sup>y</sup>pragatives and to the energetic staff of doctors and microscopists who had weathered the early incredulities and indignations to complete in a climate of appreciative cooperation a work which was to leave a lasting imprint

on the South. Its shortcomings were frankly acknowledged: the dispensaries did not examine the whole population, but only those people who applied, nor did they remain in one place long enough to accomplish measurable results in the way of sanitation. Rose summed up the real achievement in his report for 1915 as follows: "By the dispensary plan, 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 twenty million people were educated as to the importance of the disease and the methods of its relief and control."

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The RSC had once carried out one intensive piece of work toward the end of 1913 in a small village of 567 inhabitants on Knott's Island, North Carolina, in an effort to eradicate hookworm infection permanently.\* This was probably the first

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\* Described in Chapter 4, Annual Report 1915, p.46

attempt of the sort ever undertaken even in such a limited area, and it failed on the sanitary side, "as at the time the staff was unable to recommend a suitable type of latrine."\*\* The inoffensive kinds were too expensive for most of the inhabitants, and the cheaper ones were rejected for esthetic or other reasons by many families, which preferred "nature's way." Treatment, too, was not very effective since thymol, the best vermifuge available, had to be administered repeatedly in fairly large doses to expel every worm. It was realized that the campaign method was highly educational and brought temporary relief to heavily infected populations but could not "control," much less eradicate the disease.

The IHC, created in June, 1913 - a year and a half before the RSC was dissolved - tackled its first foreign job in March of the following year when Dr. Howard was sent to British Guiana. The dispensary plan was thrown overboard

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\*\* Annual Report 1916, p.79

and a new, long-term intensive program was adopted, which was to select a small central area to start with and then extend this peripherally as fast as sanitation and cure could be achieved until finally the whole colony was covered. These were the tactics later employed by Soper in Brazil in the eradication of the urban yellow-fever mosquito, Aedes aegypti. The success of the experiment in British Guiana made it a demonstration, and a detailed account of it by Dr. H.H. Howard was published under the title "The Eradication of Ankylostomiasis," as "Publication No. 1" by the IHC. This was revised, enlarged and brought up to date in 1919 (Publication No. 8) under the less pretentious title "The Control of Hookworm Disease by the Intensive Method."

The method had proved to be better adapted to native populations under colonial rule in the British and Dutch possessions where sanitary regulations could be enforced on both the well-organized plantations and in the free villages, than in the small, scattered farms and relatively

primitive rural communities of Central and South America.

Rose thought, however, that with modifications an intensive sanitary drive of this sort, complemented by treatments given in the homes, would produce lasting results in the hookworm belt of the U.S., already educated by the RSC to the dangers of the infection and to the "one simple preventive measure." As the final stage of that program, he started at once in the latter half of 1914 with intensive community work at twelve selected points in Virginia, North and South Carolina, and Louisiana, which were the first states to bring the treatment campaigns to a close. The new plan was considered wholly experimental and the communities were not asked to contribute to its cost, but the results of the first six months were so promising that state and local authorities in other Southern states were impressed to the point of asking for continuation of the work and of assuming from one-half to two-thirds of the expense.\* The IHC moved

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\* Annual Report, 1915, p.46

in during 1915 to take the place of the RSC and extended the intensive method to 59 additional communities making 71 in all in seven states which now included Kentucky, Mississippi and Tennessee in addition to the original four.\* By 1917 the intensive plan had been adopted by the other five states with a hookworm problem - Alabama, Arkansas, Georgia, Maryland and Texas - and 100 communities were taking part, contributing at least half the funds required.

No one thought any longer of hookworm eradication as practicable, even in limited areas, within two or three generations, and effective action merely to reduce its inroads on child health were seen to involve the whole mechanism of an organized rural health service. "The control of hookworm disease," wrote Rose in 1915 as his work spread around the world, "is an undertaking of enormous magnitude, and can be accomplished only by permanent agencies working over a long period of time...with proper disposal of human excrement...

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\* Annual Report, 1915, p. 101

"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 cooperation."\*

On the other hand, there were very important collateral results of intensive community hookworm work, wherever it was introduced, which became apparent before a year had passed. Sanitation was a measure taken not only against the hookworm but against all enteric infections - typhoid fever, dysentery, summer diarrheas of babies, and intestinal parasites; indeed it was found to cut down the sickness rate in general. People, shown the danger of flies in spreading typhoid, became active in screening which was an anti-malaria measure as well. It was an object lesson in

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\* Annual Report, 1915, p.45

disease prevention of a striking character by simple means, and its influence radiated into the surrounding territory and as far as the capital where it usually resulted in the prompt enactment of legislation to prevent soil pollution.\*

But most important of all, it was a bridge to a permanent rural health service. The first development was in North Carolina where, beginning in 1915, ten counties undertook to expand the soil-pollution campaign into a health program, gradually converting the staffs over a three-year period into county health departments aided technically and financially by the IHC. "The by-products of the work, one may venture to think, are even more important than the control of hookworm disease."\*\*

The control of hookworm disease was in fact not progressing very successfully. One of the assumptions made by Rose and

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\* As early as 1917, the demonstrations of the IHC had led to laws against soil contamination in Dutch Guiana, Nicaragua, Guatemala, Fiji, the Seychelles Islands, the Federal District and the States of Rio de Janeiro and Sao Paulo in Brazil, and by certain towns and counties in the Republic of Salvador and in the States of North and South Carolina. (Annual Report, 1917, p.112)

\*\* Annual Report, 1915, p. 107

his Trustees, in adopting the attack on the hookworm as the spearhead of the IHC program, was based on the genuine interest aroused by its activities, and their spread in such a short time throughout the hookworm belt of the U.S. and not on any measure of hookworm control, which was not attempted by the RSC. Dr. H.H. Howard, Rose's chief adviser in the technical and administrative aspects of hookworm work, was convinced, after only four months' experimental trial of his intensive method in British Guiana (March-June, 1914),\* that we had the necessary knowledge and weapons to control the disease and eventually eradicate the parasite, and he communicated his enthusiasm to the eager observers in New York. Our highly satisfactory position of strength with respect to such a formidable enemy as the hookworm was, I suspect, the foundation of Gates' firm persuasion that our knowledge outstripped our practice in public health, and of Rose's decision, in spite of specific authorization by the

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\* Annual Report, 1913-14, p.73

Trustees, not to involve the IHC in laboratory and field research, at least in the early years when rapid expansion of its international activities was the most important objective. Confidence in their scientific and technical preparedness permeated the entire staff, and was reinforced by the early and highly successful demonstrations of yellow fever and malaria control carried out with the tools at hand.

Hookworm was the simplest of the three infections, not able to disperse far and wide through the agency of some intermediate host like an insect, but easily located at every stage of its career - in the intestines of its victims or bound to earth in extremely limited areas around habitual foci of soil contamination. The obstacles to its control sprang not from ignorance of its biology and epidemiology, but from the inadequacy of our weapons and from human nature itself, rooted in custom and resistant to change. The lack of an efficient drug was not so important in the U.S. as it

was abroad, where colonial organization and estate agriculture made it practicable to treat to a cure. The principal handicap to intensive community work in 1915 was the failure to develop a satisfactory solution of the latrine problem for families with limited means. This was the objective on which the campaign was focused, both in the U.S. and abroad, as the most practical and effective way of lowering death rates and furthering public health in rural populations. The Kentucky type of concrete septic tank was too expensive; the box, barrel, or pail types which used water were far from automatic and required an amount of service which made them impracticable for general use; the ordinary pit privy which was by far the most common, became offensive and bred flies unless kept scrupulously clean and tight, and was often avoided in favor of seeking seclusion in the bushes. It might also contaminate underground water, and so diverse were the opinions of public health officials on the subject that the IHC, on this key point

of sanitation, was "not prepared to advise as to the type to be installed,"\* leaving it to the judgment of the local authorities responsible for sanitary measures.

This was a matter of such concern to the IHC and state health departments that Rose thought there was great need for more research on the disposal of human wastes in rural homes. He did not wish the IHC to undertake such investigations on its own account, probably because it had been created as an administrative organization, was in the early stages of a rapidly expanding program, and to assume research functions as well it would require a special staff wholly devoted to an attack on problems of indeterminate solution. Dr. Simon Flexner, Director of the Rockefeller Institute for Medical Research, was a member of the Executive Committee of the IHC, and it was his opinion that it would be an unnecessary duplication for the IHC to engage in investigations which the Institute was ready to carry out. The Institute was not

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\* Annual Report, 1915, p. 62

prepared to send expeditions abroad and Rose had appointed a special Commission of experts in 1915, who were not on his staff, to investigate the relative effects of hookworm disease and malaria on working efficiency in the Orient, one of his cautious previews before going in for a full-fledged attack on malaria. In the matter of hookworm prevention, however, Rose approached the Rockefeller Institute for a study of the types of latrines suitable for rural homes. Problems of sanitation must have seemed an anomalous (irregular) and inconvenient subject of research for the Institute which had never undertaken field observations and experiments of such character, but Dr. Flexner was as good as his word and assigned Dr. I.J. Kligler of his staff to carry out the investigation which was to cover several years and be paid for by the IHC. The viability of typhoid and dysentery bacilli and of the eggs and larvae of intestinal parasites in various soils was studied, and the extent of their dispersion around privies

under different conditions. The work was continued for about two years, when more imperative duties in connection with World War I made it necessary to discontinue it. No definite conclusions had been reached and the need of further inquiry was recognized. The National Conference of State and Provincial Health Officers, meeting in Washington in 1918, urged the Public Health Service to appoint a special commission to study the subject and make recommendations. It was a pressing matter, for Dr. Watson S. Rankin, State Health officer in North Carolina, had secured the passage of a law in 1918 requiring every residence to install a sanitary method of excreta disposal by public or private sewer system or a lawful privy. The problem was to define a lawful privy. An experiment station was established at Wilmington, N.C., which found the problem to be even more complicated than had been anticipated.

The RI never resumed its role of research laboratory for the IHB. The ad hoc investigations of problems hampering the IHB as its work spread into many lands and into other diseases than hookworm, were disturbing to the Institute which had a program of its own engaging the full time of its staff. Rose now turned to the universities for help, impelled by two reasons: first, a desire to get the new schools of hygiene started on programs of field research in public health, and second, a feeling that this was not a proper function of the IHB. In 1918 the School of Hygiene and Public Health at Johns Hopkins University, the first of the great schools that Rose was proceeding to develop, opened its doors and both Rose and William H. Welch, its first Director, felt very strongly that it should combine teaching with research in laboratory and field. Rose succeeded in interesting Dr. William W. Cort, then Associate Professor of Helminthology on its newly appointed faculty, in the deficiencies in our knowledge of

the hookworm, and financed scientific expeditions to the West Indies, Central America and China (1921-24) as well as laboratory studies in Baltimore, a mutually beneficial relationship which endured for 30 years, until the IHD went out of existence.

A great drawback in all the hookworm campaigns was the lack of an efficient drug which in a single nontoxic dose would expel the bulk of the parasites. Thymol was fairly safe but unpleasant to take, and required repeated administration to secure satisfactory results; oil of chenopodium, a worm medicine of great antiquity, was more effective but also more dangerous; and carbon tetrachloride, found in 1921 to be 100 per cent efficient for dog hookworms, by Dr. M. C. Hall of the U.S. Department of Agriculture, was untrustworthy in man, causing now and then unpredictable fatal poisonings in very small doses. All of these drugs, for want of something better, had been used in hundreds of thousands of cases and

had saved a great many lives, but the occasional fatalities due to the drug alone were depressing, and often a paralyzing deterrent to a campaign in full career. In 1925 Dr. Paul D. Lamson, Professor of Pharmacology at Vanderbilt University, began a vigorous study of this problem, at the instance of the IHB, which in the next 10 years produced a satisfactory solution.

Dr. Frederick F. Russell, who succeeded Rose as Director of the IHB in March, 1923, was a medical scientist as well as an administrator, and had been invited by Rose to join his staff in 1920 to help state and local health departments to develop laboratory services, in which most of them were weak. It was one of Russell's tenets that any active public-health laboratory worth its keep should, within its capabilities, be carrying on research as well as routine diagnoses and analyses. His observation of the IHB, in the course of his extensive travels, as it moved to the attack on hookworm in

various countries under the most diverse physical and social conditions, only strengthened his belief that the investigation of the difficulties and unknowns encountered in the control of this and other diseases should be carried out by its own staff rather than be farmed out to independent institutions. This would be a stimulus to the eager young men at the front and would produce a wide range of applicable knowledge. He was soon able to put his ideas to the proof.

In 1922 Rose had cooperated with Covington Co., Alabama, to establish a county health service and had set up a training base in Andalusia, the county seat, for his own staff and the new health officers needed for the almost explosive multiplication of rural health departments in the U.S. in 1921. To carry out this plan Rose loaned the services of one of his staff, Dr. W. G. Smillie, to become the full-time county health officer of Covington County, and organize the health unit and the training center in Andalusia. Rose selected Covington County

because it had both hookworm and malaria problems, and he brought in Smillie because in addition to public health administration and teaching, he had just spent four years in Brazil where he had had an opportunity to study striking examples of the power of hookworm infection to cause individual and community deterioration. Just as hookworm disease had served to enlarge and diversify the initial program of the IHC far beyond that of the RSC, leading it to develop schools of public health, fellowship grants, the strengthening of national and local health services, and field and laboratory research to support the educational, sanitary and therapeutic drives to curb the infection, so its control also gave rise to a combination of measures which if properly organized and coordinated, could become the core of a permanent rural health service. Hookworm infection infiltrated home and school, was always associated with typhoid fever, dysentery and infant diarrheas spread by the same ignorant insanitary habits, and

by its debilitating effects invited other diseases, so that its control and eventual eradication called for a program of maternal and child health, nutritional improvements, communicable disease control through sanitation, case-finding, immunization and treatment, and popular education in public and personal hygiene. An oppressive parasitism could thus become a stimulus to the sanitary and economic rehabilitation of a large segment of humanity. This was Rose's vision, and the training base for health officers in Andalusia was a careful plan to demonstrate in action the rounding out of intensive community campaigning against hookworm, to constitute a permanent tax-supported rural health service.

Russell, when he became Director the following year (1923), took immediate advantage of this set-up to further his own ideas. He completed the Andalusia center by adding a field unit for research studies in hookworm infection "to work out a practicable method of controlling hookworm disease

in the southern U.S. and establish certain broad principles in regard to the epidemiology of the disease,"\* a surprisingly frank acknowledgment of the hard fact that 12 years of campaigning with the sporadic help of enlisted agencies of investigation, had failed to discover satisfactory means to an end so easy in theory to attain. The 12 years had, however, brought about a striking transformation in the staff. The original small band of eager young novitiates had been salted by tropical experience and fortified by study leave in the new schools of public health. Their number had grown rapidly as the invitations from states and governments which flowed in upon Rose increased from 25 in 1915 to 62 in 1922. Recruiting was easier and could be somewhat more selective. The end of World War I released a number of high-caliber candidates, restless, foot-loose and conditioned by the Army

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\* Annual Report 1924, p. 193.

to the health care of large bodies of people instead of individual patients. Russell found himself at the head of a staff of some 80 doctors, engineers and public health nurses of varied aptitudes, training and experience, and enjoyed the advantages of a maturing organization which Rose had spent a decade in building up. He could hope to find in it the elements needed to meet almost any situation that might arise. The most important matter was the introduction of research into the program, and in Andalusia he had the good fortune to have Smillie who had been a fellow of the RI before joining the IHB and was both investigator and administrator, a combination of which Russell was in need, and which he sought in future appointments to his staff. He transferred Dr. F. C. Caldwell and his wife, staff members experienced in the diagnostic and research work of public health laboratories, to Smillie's command to devote themselves full time to hookworm investigation.

For the next ten years this modest unit explored every facet of hookworm control in a practical way, testing and improving diagnostic techniques, the contamination of ground water by different types of latrine and the relative effectiveness of various vermifuges. Its findings were useful to everyone concerned with a hookworm problem and bore out Russell's contention that field investigation was most productive when it formed part of a control program. He was to extend this concept of concurrent study and research until it permeated every phase of IHD activity, in yellow fever, malaria and the half-dozen other diseases later added to its repertoire, a major contribution to the history of the IHD.

TB, rabies,  
scarlet fever,  
typhus, influenza,  
nutrition,  
undulant fever

## Chapter 4 - Outline

IHC did not spring full grown from Rose's brain.

- : roots went back to Civil War
- : collaboration with government worked out by Agents of Peabody Fund
- : general aims and methods developed by GEB and tested by RSC

Program, too, an extension of RSC - "eradicating hookworm disease."

- : Trustees enthusiastic - cf. Page and Eliot
- : success one of policy - strategy sound, hostile opinion won over, methods feasible. Venture had worked, way to victory revealed, ignorance and opposition dispelled.
- : material accomplishment not great; hookworm undefeated; still a public health problem, no eradication. Rose under no illusions as to magnitude of task and long-term implications.
- : no adequate vermifuge
- : no satisfactory latrine
- : campaigns, even if intensive, not the solution

Gates completely satisfied. He had found a field for global activity.

- : no longer interested in RSC
- : Rose's world survey by questionnaire

Creation of the IHC, a new and unexplored idea, and its mandate.

- : Winslow, Conant
- : Gates' humane instinct and belief in scientific medicine
- : Greene's concept
- : Trustees' emphasis on research, education, demonstration


Execution left entirely to Rose.

- : decision was to attack hookworm at once; overwhelming problem; solution well understood; experienced staff at hand; quick results
- : medical education, GEB experience, lack of consensus in U.S., wide divergencies abroad; advisor appointed and survey begun in South America, projects postponed; separate division created in 1919.

Chapter 4 - Outline (cont'd)

- : public health education, urgent and new, not a reformation; steps taken at once
- : investigation turned over to RI, preferred by S. Flexner, in line with Gates' ideas
- : experience of RSC had revealed two needs: effective drug; practical and safe disposal of human excreta

c This carbon copy of the original has editing on it,  
the original doesnot. Original has been discarded  
and only the carbon has been retained

  
Reference Service

December, 1969

Mr. Rose and the Launching of the  
International Health Commission

It is clear that the International Health Commission - the IHC as I shall call it - did not spring like Minerva full grown and fully armed, and "with a tremendous battle cry" from any one person's head. The roots of the IHC went back to the Civil War; the fundamental principles which should govern collaboration between private enterprise and government had been laid down long before by the Agents of the pioneering Peabody Fund, of whom Wickliffe Rose had been the last, (they had been put to the proof by the RSC), and what were to prove its most successful strategies had been developed by the GEB in its experimental years. Their acclimatization to a foreign environment was to be Mr. Rose's principal task.

The program, too, of the IHC was rather narrowly restricted at first to a "demonstration of known methods of treating and preventing disease"\* and the IHC was directed "to extend to other countries and peoples the work of eradicating hookworm disease."\*\*

\* 38 p. 11 (RBF?), ↑ HF Annual Report, 1913-14, p. 11

\*\* 38 p. 12

*(Minutes of full meeting of Trustees of R.F., see)*

Debt to Peabody F.  
RSC

GEB

WR finally trans-  
planted it abroad

Program restricted  
at first to hook-  
worm by mandate of  
Trustees

The Trustees in their enthusiasm were convinced that this had

been shown to be feasible in our South and that Mr. Rose's method

would accomplish the same results anywhere in the world. "The

most efficient, workmanlike piece of organization that my mortal

eyes have ever seen," Page told Alderman\* and Dr. Eliot of Harvard

wrote to Mr. Gates that "the evidence seems to show the campaign

of the RSC against the hookworm disease is the most effective

campaign against a widespread, disabling disease which medical

science and philanthropy ever combined to conduct.\*\* It was, in

fact, the only campaign of the sort which had ever been conducted.

Nevertheless, in spite of the superlatives, the success of

the RSC had not been unqualified, as Mr. Rose himself had pointed

out. He was well aware that permanent health and educational

agencies and enduring social changes were required to eliminate

the hookworm, and these had not been established. The promising

campaign had been brusquely terminated in mid-career at a stage

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Enthusiasm of  
Trustees over RSC

Page

Eliot

Qualified success  
of RSC

Socio-economic  
improvement  
necessary

Campaign termi-  
nated in mid-career

when the people had been made aware of the problem, but were not yet engaged in any organized effort to solve it. Mr. Rose had

been disappointed in every attempt to demonstrate eradication in even the most limited area. There was no rapid and safe

vermifuge known for expelling the hookworm; the only drug avail-

able was one so ineffective that the tedious and often distressing repetitions of the treatment discouraged most of the patients

before they were cured. No satisfactory type of rural sanitation had been invented attractive enough to prevent soil pollution

around rural homes. The intensive community campaigns, hastily

inaugurated after liquidation was decreed, were far from being

the permanent sanitary and educational county health units which

Mr. Rose had in mind as the enduring results of the great campaign.

These were undeniable shortcomings and they had distressed

Mr. Rose. But Mr. Gates was no longer interested in the RSC:

it was enough that it had been proved to be a viable scheme and

that the movement which it set on foot appeared certain to persist.

No eradication  
anywhere

Drug inadequate

No satisfactory  
cheap latrine

Permanent rural  
health units not  
established

WR sure that  
ignorance and  
apathy had been  
overcome

Gates, impressed by govt. cooperation & coordinated attack, no longer interested in RSC

Mr. Rose's carefully elaborated plan of action; his sagacious handling of the delicate relations between private and public agencies in an area as sensitive as the post-war South; his vigorous and simultaneous attack on many fronts had suggested a vaster and more comprehensive design to Mr. Gates. His own private investigation in the South had left no doubt in his mind that Stiles was right about the devastating importance of hookworm disease, and from the chronology of events, it is clear that he did not wait for the RSC to demonstrate results. The first dispensary for hookworm treatment was opened in the South in December, 1910, but long before this he had congratulated Rose (in April) on his able and energetic action; he had asked him to make an inquiry concerning the prevalence of hookworm in the world, and a bill to charter the RF had been introduced in Congress. After consulting Mr. Rockefeller, he asked Rose to make a survey of the prevalence of hookworm disease throughout the world. This Rose did at once by questionnaire, making a report in 1911<sup>\*</sup>

Survey showed world importance of hookworm

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\* Publication No. 6 (1911), "Hookworm infection in foreign countries."

completely confirming what Mr. Gates somewhat disingenuously called his "fears."<sup>\*</sup> The disease belted the globe for some 30° on each side of the equator and ten hundred million people lived within the area of possible infestation. To men like Mr. Rockefeller and Mr. Gates, already engaged in organized support of a great network of Protestant missions spread throughout the unenlightened areas of the world, which frequently exercised medical as well as religious functions, the idea of a world-wide attack on a disabling disease, at once so universal and so neglected (ignored) as hookworm, must have come almost spontaneously and with irresistible cogency to them both. I think we are justified in concluding that it was not, as generally stated, the actual achievements of the RSC, which only later came to be justly appreciated, but the almost unlimited potentialities of Mr. Rose's scheme on a global scale which seized the imagination of Mr. Gates. "We determined," he wrote "to organize a new and world-wide agency to attack this and other curable or preventable diseases, and to

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Missionary outlook of Gates and JDR

Unlimited applicability of WR's scheme

World attack planned by Gates before RSC was half done

promote universal health." He easily convinced the Trustees of the new Foundation, at their first meeting, of the urgency and practicability of the plan which, it was agreed, presented a moral obligation not to be deferred.\* The IHC was created on June 27, 1913, and Gates hurried Mr. Rose abroad to look over the foreign field before the work in the Southern States was more than half completed. The problem had ceased to be a local matter; it was an international question of serious proportions.

Despite its deep roots and numerous antecedents in health and educational campaigns at home, the international aspect of the IHC was a concept completely new and unexplored. The "promotion of universal health," in Mr. Gates' resounding phrase, is something so desirable as really to make the whole world kin, so politically innocuous as to arouse no fears or competitions among nations, so within reach that no one disputed Biggs' declaration, already famous at that time, that within natural

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\* 26, 1865

Concept of IHC  
new and unexplored

limits a community - and now we add, even the world community - can determine its own death rate; this common aspiration of mankind had never provoked any effective international action.\* The venture of the RF was, as Welch said, "unique in public health as it was in philanthropy."\*\* Its immediate objective was what the world had been ineffectually discussing for fifty years, the enlistment of nations in a coordinated attack and a pooling of intelligence of the main preventable diseases. This was to be centrally directed, locally adapted and executed, permanently established. Its constant purpose was to further the establishment of the permanent agencies of sanitation and health education which the RSC, in its preliminary brush with the hookworm, had demonstrated to be necessary but which were almost universally lacking where peoples submitted passively to the incubus of that or any other of the great preventable diseases.

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\* OIHP & PASB, recently established, were merely bureaus of information at that time - see p \_\_\_\_

\*\* Several other large foundations had been established in the U.S. by 1913, but none was active in the international health field. The GEB (1902), the Carnegie Foundation for the Advancement of Teaching (1905), the Russell Sage Foundation (1907), and the Phelps-Stokes Fund (1911) were restricted in action to the U.S., while the Carnegie Institution of Washington (1902) was outside of the public health field, and the Milbank Memorial Fund (1905) did not engage in international work before 1913.

Unique in public health, philanthropy, and diplomacy (Welch)

International coordination in epidemic control had been discussed for 50 years

Thus, as Winslow has commented,<sup>\*</sup> the modern concept of an international health program which involves cooperation in building up within each nation of the world a sound and effective program of disease control and health promotion, was first put into effect not by governments in association for their mutual benefit, but by a private organization, attempting to realize a vision of social service on a hitherto unimagined scale. "Solicitude for the welfare of individuals all over the world," said Conant of the international health movement, "is a novel element in recorded history."

Visions come to individuals, not to organizations. Gates says in his unpublished memoirs that as the "originator of the idea"<sup>\*\*\*</sup> he was requested to present to the Trustees the resolution establishing the IHC. It was a humanitarian and a missionary idea. "Is there not something within us," he asked<sup>\*\*\*</sup> "... a sympathy which transcends national boundaries and finds complete expression only when it identifies us with all humanity?"

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\*\*\* 30 p. 15

Effective international health program initiated by RF (Winslow)

Gates' faith in  
potentialities  
of scientific  
medicine

Coupled with this humane instinct was a great belief in the  
potentialities of scientific medicine. As Foadick has said,<sup>8</sup>  
to him it was "the open road that led to a better future."  
The "Resolution", mentioned above, after pointing out the  
devastating character and wide prevalence of hookworm infesta-  
tion, about which little or nothing was being done, went on to  
say that "an intelligent public interest...in modern, scientific  
medicine" had followed the treatment and cure of hookworm disease  
by the RSC, and that, in extending this work abroad, the  
Foundation was prepared to follow it up with "the establishment  
of agencies for the promotion of public sanitation and the  
spread of the knowledge of scientific medicine." <sup>X insert 9a</sup> It could  
hardly have occurred to the proponent of this world crusade of  
sanitation and enlightenment that the rather complete information  
on hookworm prevalence which Mr. Rose had been able to obtain  
from 54 countries by questionnaire showed that the USA had been

See attached pg

Nothing better illustrates the venturesomeness which characterized the launching of the IHC and indeed all the bold initiatives of its career, than the background of this resolution written by Mr. Gates. For unlike the technical aid programs of today, it lacked any solid assurance of success based on American or any other previous accomplishment in the task to which it was committed. With all the caution of Mr. Rockefeller's temperament and the clear-headedness of Mr. Rose; with every carefulness of forethought and preparation; it was still an expedition of discovery into an uncharted region, pursuing an vision (inspiration) following an enthusiastic pursuing a well-defined ambition rather than a definite goal. Mr. Gates saw a tremendous opportunity for he had placed great confidence in Rose; and Rose trusted in his principles and his scheme, in which the demonstration of hookworm control by mass action was bound up "in a sure sequence" with public enlightenment and governmental action. But what Mr. Rose had to go on in the way of existing patterns, or useful knowledge of scientific medicine." (quoted on p. 9 -

"I could hardly ---")

the last to discover the hookworm, and to realize that it was itself a victim of the parasite. (But see footnote p. 52.)

Change

{ There may appear to be something paradoxical in Mr. Gates' almost evangelical enthusiasm for the diffusion of the knowledge of scientific medicine, and his scornful opinion of medicine

U.S. Behind many other nations

as taught and practiced in the United States and abroad, which he held to be "practically futile," adding that on reading

Osler's Principles and Practice of Medicine in 1897 he realized

"how woefully neglected in all civilized countries, and perhaps

most of all in this country, had been the scientific study of

medicine."<sup>\*</sup> His faith was in research rather than current

knowledge, and he prepared a memorandum to Mr. Rockefeller

"earnestly recommending the founding of an institution for

scientific medical research on the general lines of the Koch

Institute in Berlin and the Pasteur Institute in Paris"<sup>\*\*</sup>

The Trustees of the RF, when they came together for their second

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\* 23 p. 270

\*\* Gates' unpublished memoirs (source material p. 479)

Current knowledge deficient; hope in research

Urged JDR to create a research institute

meeting on June 27, 1913, to hear Dr. Rose's plan and to establish

the IHC, placed the emphasis on the advancement of public health

through "medical research and education," and merely included

"the demonstration of known methods of treating and preventing

disease."\*

The IHC, however, under Mr. Rose, took no part in

medical investigation of problems arising in hookworm control,

but stimulated and subventioned university laboratories to do

it, and it did not become a major interest of the Foundation

until some fifteen years later when in 1929 Dr. Richard M. Pearce

was made Director for the Medical Sciences - a new departure since

its policy was not to carry out research (as the IHC carried out

its projects), but to promote and support research in every

medical field, and not only in those in which IHC operated. As

for medical education, Mr. Rose, while appreciating its fundamental

importance, did not seem to consider it an urgent, or perhaps

even a proper function of his Commission. He appointed an

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\* 38 p. 11

Research and  
education stressed  
by Trustees

But IHC did no  
research under  
Rose

Promoted research  
by others and  
finally created a  
new MF division  
for making grants,  
not to operate

Medical education  
was surveyed by  
RMP, but no  
projects resulted

adviser and sent him on survey trips to South America, but he submitted no projects and in 1919 a separate division was created to take it off his hands; after ten years the field was abandoned entirely and the Foundation took no further constructive interest in medical education until it was reintegrated into its program by the reorganization of 1931. Thus only a part of Mr. Gates' vision was actually realized, and the IHC, instead of engaging at once in the uncertain task of seeking and spreading new knowledge of the cure and prevention of disease, adopted under Rose the more immediately practicable one of ironing out existing inequalities of distribution, beginning with the control of hookworm infection, about which everyone, including Mr. Gates, felt that all the essential facts were known. Furthermore, if we consider the various boards which had been established by Mr. Rockefeller at that time, it is apparent that there was a well adjusted balance of program among them which covered all of Mr. Gates' objectives and which must have given him satisfaction

Gates' vision realized by Rockefeller boards as a whole, not by one agency

since it was not accidental; he himself had been instrumental in bringing it about. All of them touched the great field of medicine and public health in one or another of its aspects. The RI for Medical Research was exclusively engaged in investigating the causes and nature of disease, and its treatment. The GEB, by its cooperation with American universities, had been helping them to raise the standards of medical education and research, while the China Medical Board was beginning a similar service to China, helping the Chinese to build up their own structure of medical education, research and public health. Now came the IHC with its program of bringing knowledge applicable to the prevention of disease to the service of governments and peoples. There was thus an essential unity in the program for human betterment which together they represented. As a matter of fact, although he had loaded the IHC with research, medical education, and the treatment and prevention of disease, a division of labor among almost

Great field of  
medicine partitioned  
among RI, GEB,  
China Medical Board,  
IHC

independent agencies always seemed the soundest plan to Mr. Gates and he looked with mistrust on increasing efforts to integrate the diverse fields of the RF under President Vincent and his successors. "To me, at least," he wrote in his Memoirs "it became clear that the subordinate boards of the Foundation such as the China Medical Board, the IHC, the Medical Education Funds, and perhaps others, might better have been incorporated and endowed independently." As far as I know, therefore, Mr. Gates was satisfied with the one specific objective based on the experience of the REC, to which Mr. Rose applied himself with extraordinary vigor in setting the initial course of the IHC.

Mr. Gates, because of the nature of his close relationship with Mr. Rockefeller and also for his bold imagination and forthright character, which he himself described as "eager, impetuous, insistent, and withal exacting and irritable"<sup>28</sup>

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\* 30 p. 1

Gates preferred  
independent Boards  
to integration

was naturally a dominating figure on all the Rockefeller boards; he was Chairman of them all. The Trustees of the RF were all distinguished men, of original and independent habit of thought, and we know from the minutes of the early meetings\* that they were anxious not to engage the Foundation

in a hurried undertaking; the suggestion was made that it might be wise to wait for at least a year before committing themselves to any program. Mr. Gates, however, conveyed such a sense of urgency and even moral obligation in the face of demonstrated needs that deferment on the grounds of caution

appeared to be unjustified and they readily fell in with Gates' motion to extend the hookworm work around the world.

Less evangelical than Mr. Gates, they agreed that due to the nature of the disease and the method of its prevention, the attack on hookworm offered the quickest way to the entree and sanitation of vast tropical areas. It is clear that they felt happy in the aptness of the proposal and in the

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The Trustees were averse to being hurried, but Gates conveyed a sense of urgency as to RF program

Trustees readily agreed that hookworm offered the best opportunity, especially under WR

choice of Wickliffe Rose as Director-General, whom many of them as former members of the RSC had learned to trust and admire.

To this Southern educator, known to but a small circle of colleagues, was given a broad mandate virtually unrestricted by directives, without precedent as to methods and approach, backed by almost unlimited resources. His ability had been tested in the RSC; he was now to direct the expenditure of some twenty million dollars in accordance with a rapidly expanding but carefully considered scheme of his own devising, for which there existed no pattern whatever. The imaginative idea had been Gates', but Rose was to put it into execution after his own fashion. Guided by his head rather than his heart, neither emotion nor enthusiasm ever carried him beyond the bounds of the eminently feasible. His logical and constructive mind, however, ranged to unlimited horizons. Half educator and half philosopher,

WR's mandate and  
constructive  
ability

WR's confidence  
in the power of  
science and  
education

principles which he deemed universally applicable gave him the confidence to proceed without hesitation on his uncharted way. He was not appalled by the size of any proposed activity; he liked the rapid multiplication of individual projects in a chosen field. The control of hookworm in itself was an enormous administrative and technical problem - it involved a thousand million people living in circumstances far less amenable to the educative process than the Americans of the South, and yet this was, and remained the only promising line of attack. He was concerned, like Walter Page, with the unevenness of progress and the inequalities of the world about which "little or nothing was being done." Not a religious man, Rose's faith lay in the power of science through education to bring about an approach to that rational order which was the goal of his Hegelian philosophy, and which he thoroughly believed would save mankind.

Eager to begin work at once, Rose was not at the moment concerned with the deficiencies in knowledge; he was rather impressed with the unnecessary lag in the application to great human needs of the knowledge we possessed. Knowledge lying idle was the basic reason for his selection of objectives, and while his imagination had unusual scope and flexibility, it was coupled with a keen sense of the practicable. He fought shy of problems, however urgent or important, for which we had no reasonably certain and prompt solution, and though he was at some disadvantage as a layman in discussing projects with doctors, he seemed sometimes to have a clearer conception than they of what was feasible. Rose, like Vincent, wanted measurable results. Since it appeared to him and to his Board that the almost incredible volume of preventable disease in the world was due to the ignorance or neglect of the most elementary scientific and technical knowledge

WR was most concerned about knowledge lying idle, and the volume of preventable disease

on the part of peoples and governments, its diffusion through survey and demonstration and what permanent agencies might be developed, constituted the core of the detailed plan which Mr. Rose now elaborated.

In arriving at a just appreciation of the difficulty of Mr. Rose's task, we must remember that not only his, but his staff's practical knowledge of the measures necessary to cope with the hookworm problem, and of public health organization and methods in general, was derived almost exclusively from the experience of the RSC with the conditions of rural life and the health services as they then existed in our Southern states. The mistakes and successes of the RSC afforded invaluable lessons in the tactical approach of voluntary agencies to officials, doctors, and people; while the campaign, though far from achieving the complete result which Mr. Rose had hoped for, even in a restricted area, had reached a vantage point from which Rose could

Invaluable lessons  
of the RSC

perceive the total problem in its magnitude and complexity, which demanded nothing less than a cultural change in entire populations. Furthermore, the RSC was an excellent example of the usefulness and indeed the need of bridging in some unofficial and experimental way the huge gap which ordinarily intervenes between fresh concepts and discoveries, and the subsequent modification of time-honored methods crystallized in governmental practice and legislation. Stiles' revelations and his own prodigious effort even under the aegis of the Public Health Service, provoked little reaction and secured no government funds at all until success was actually demonstrated by the RSC. But while the Sanitary Commission pointed out the uses and limitations of unofficial agencies in the field of public health, and confirmed certain principles of action; the special social and political environment in which it operated made it unsuitable as a model for the IHC. Under the Colonial regimes and tropical

Uses and  
limitations  
of unofficial  
agencies

Certain principles  
but not the methods  
of the RSC adopted  
by IHC

conditions in which the new work began, other methods and types of organization as well as new objectives were immediately adopted. Nor did the IHC absorb the personnel of the RSC; only seven of the 109 doctors were transferred and the unexpended money - some \$200,000 - which remained when the work was finally closed down, were lapsed; the IHC had already started with funds of its own. Not even in the U.S. was there any real continuity of program; the IHC merely closed down with reasonable speed the unfinished work of the RSC, but started nothing new. The county dispensary campaigns and surveys were dropped as soon as possible and hookworm control turned over to the states, (?) some of which were given small grants to encourage them to continue it. The IHC was already interested in a new plan of intensive community work, a method developed by Howard and Kibler in British Guiana and extended in 1914 to the U.S. During the last few months of its existence the RSC, because it had

Personnel of RSC  
not taken over by  
IHC, nor the  
unspent funds

No continuity of  
program between  
RSC and IHC

the experience and personnel, was allowed to initiate parallel experiments with the new method to find out whether it was adaptable to social and political conditions in (before or after Dr. Guiana?) the U.S. For example, Dr. Kibler, of the IHC, and Dr. Merrill, champion of the RSC, carried on intensive hookworm work in 1914 in adjoining communities in North Carolina, but the experiment died with the RSC and the State was given a grant of \$5,000 in lieu of continued collaboration. When projects like these were taken over at the end of 1914 by the IHC in order to terminate them, it could hardly be said (as was stated in a RF report\*) that "the RSC...was reorganized as the IHC and became a departmental agency of the RF." The continuity between the two was of another sort and consisted in a considerable interlocking of membership on the Rockefeller Commissions and Boards. Seven of the twelve members of the RSC and eight of the eleven Trustees of the RF were on the IHC, lending a certain consistency

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\* President's Review for 1922 by GEV

and coordination to the various programs, although they were in fact independent. There was an overlapping of a full year and a half in the periods of the two Commissions during which time they pursued different programs, for the IHC was created in June 1913 and Mr. Rose turned to his new task at once, handing over the administration of the Sanitary Commission to Dr. Ferrell, who brought it gently to a full stop in December of the following year. Transition from the dispensary to the intensive plan of work was completed in 1915<sup>\*</sup> and the IHC considered that it had then fulfilled whatever responsibility it had assumed for the program of the RSC.

What is less understandable is the failure of the IHC to tackle the most serious problem of all that were uncovered by the RSC, one that lay at the root not only of the prevalence of hookworm disease, but of all the other preventable diseases

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\* IHC Annual Report, 1915, p. 64

and health deficiencies as well - the almost complete lack of rural health services, both in the South and throughout the land, a field of public duty in which we were almost as far behind as many of the areas which we now proposed to assist. Mr. Gates had found the practice of medicine "practically futile" in the U.S.; he would have found organized health effort practically nonexistent. "The county health officer," wrote Stiles\* "is theoretically the most important and practically the weakest point in the entire public health organization of the U.S. I know of no way by which we can more quickly finish the work (of the RSC)... than by encouraging the development of a thoroughly efficient system of county health officers." Charles V. Chapin,\*\* after a survey of state health organizations made for the American Medical Association in 1913-14, wrote, "Most of the rural portion of the country is doing nothing. Health administration cannot be left to work out its own salvation. Some outside

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\* Report of the Scientific Secretary, 1910.

\*\* Chapin, Charles V., State Health Organizations, Journal of the American Medical Association 66:699-703, 1916.

agency must at least point out the way." Conditions were now ripe for such a development. The agency existed and in the end the promotion of county health units was to be its outstanding accomplishment, but during the critical period which followed the liquidation of the RSC, it took no action in this direction and it appears that no plan was ready for the transition to a new type of cooperative effort. Dr. Rankin, the energetic new Secretary of the North Carolina State Board of Health, proposed that the IHC help finance a number of county health units through the first crucial and experimental years, but the project was not approved. Both Rose and Ferrell were very much aware of the favorable opportunity created by the RSC for putting immediate pressure on the states to remedy the most conspicuous defect of the entire public health system. The delay seems to have been due, strangely enough, to Mr.

Gates, who thought the action premature. He was impressed by the slow progress of the GEB in the field of education and he believed that the South, for the time-being, would be unable to finance both schools and health centers. The educational system was in the midst of a fight for higher tax rates and the health centers would compete for the small funds which could be secured. Riding with Buttrick through the South, Gates turned to him from looking out of the train window, and exclaimed at the favorable climate and the abundance of fertile soil. "This is a favored section of the world;" he said, "it must be enriched so that it can properly tax itself to support education and public health."<sup>\*</sup> That was why the GEB sponsored agricultural agents as well as schools, and for helping to provide the basis of prosperity was given the right of way. Mr. Rose, therefore, was compelled to mark time in the U.S., while he was expanding his work as rapidly as he could abroad.

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\* 19 p. 211

"The attitude assumed by the IHC toward this work," he wrote in his first report,\* "is that assumed by the RSC in its cooperation with the Southern States, namely, that the bringing of this disease under control in any country is a work which no outside agency working independently could do if it would, and one which no outside agency should do if it could." The Commission hoped to "cooperate with the governments of foreign countries in organizing and making effective their own agencies." In this spirit the Commission accepted invitations from eleven countries during its first year. The new objective was a considerable advance over the concept of eradication of hookworm disease which the enthusiastic proponents of the Sanitary Commission had inserted into its title, but which Mr. Rose had had to interpret finally as an ultimate objective to be secured only by permanent agencies working over long periods of time. It has generally been assumed that the pilot experiment

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\* 38 p. 42

of the RSC had provided Mr. Rose and his medical staff with a fairly clear picture of what such permanent agencies should be like. It has not been brought out, I think, that the picture was a negative one and consisted almost entirely of things to be avoided in any constructive effort to build sound health organizations abroad.

We are fortunate in having a very complete and accurate account of the status of public health in the U.S. just at the time Mr. Rose was being called upon to present a blueprint of his international program. In the fall of 1913, Dr. Charles V. Chapin, an outstanding leader in public health and communicable disease control, was invited by the American Medical Association to make a comprehensive study of the activities, equipment and accomplishments of the various State Boards of Health.\* The objectives of the investigation were to educate the public to a realization of the "enormous advances" in scientific medical knowledge during the last

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generation (Mr. Gates to the contrary notwithstanding) and the possibility of using such knowledge in the prevention of disease. It was hoped by the A.M.A. that a comparative study of the state health organizations and activities might be of service to the states in setting up standards, discovering weak points and obtaining legislation. The report proved to be a bombshell, completely unexpected by the rather conservative A.M.A. Its publication was delayed for three years and when after much discussion it finally appeared in 1916, it caused a furor of criticism from many of the states. It is said that one state health director procured as many copies as he could lay hands on and had them burned, and in fact this critical and objective report is little known and almost impossible to find nowadays. The facts are worth presenting in brief.

In this report Dr. Chapin attempted the first rating ever made of health organizations. He listed 35 activities

adding up to 1,000 points. Thus the states were for the first time compared with each other and with perfection, and this was doubtless what pained them the most. The highest score was obtained by Massachusetts with 745 points, although she fell below ten per cent in eight activities, and was marked zero in eight. Six other states "passed" with 500 points or more, and the rest trailed far behind; seven were below 100 and New Mexico brought up the rear with a flat zero. Chapin attributed this discouraging situation to inadequate appropriations and unqualified health officials. In per capita expenditure for health Florida was first with 15.2 cents, the only State to assess a tax for health, but the money, some \$75,000, was spent in unorthodox ways and the State was far from the top on Chapin's score card. Pennsylvania followed with 12.7 cents, while Massachusetts (4.95 cents) and New York (2.87 cents) were well down the list which ended ingloriously with

Stiles' remark  
more political than  
sanitary

Tennessee at 0.73 cents and Arkansas with half a cent; New Mexico had never made an appropriation at all. Only seven states appropriated more than five cents per capita for health, the majority of these (Vermont, Nevada, Montana and Idaho) because the divisor, namely, the population, was so small and not because the dividend (the budget) was in any sense adequate. In Idaho, for example, most of the work of the Health Department was done by one sanitary inspector, who was also dairy and food inspector, inspector of drugs, "humane officer," and sealer of weights and measures. He also examined local water supplies, enforced the hotel law, inspected slaughter houses, markets, groceries and restaurants, and also barber shops and bathing places. His staff consisted of four clerks and a chemist. Montana had a total appropriation of \$15,000, most of which was spent on food inspection to which it seemed to attach undue importance. Nevada was one of the states from which Dr. Chapin was unable to obtain any satisfactory breakdown of the expenses. But even the

Leathers in Miss. (三)

great and prosperous State of Illinois could not be held up as an example to anyone. The State Board of Health was the Examining Board for Physicians and spent all its time and much of the budget examining and licensing doctors, midwives and embalmers. Few cities and almost no counties possessed health departments and there was no adequate water and sewage law, or collection of vital statistics. The most conspicuous service rendered was lodging house inspection in Chicago, peculiar activity which absorbed over \$10,000 annually of a meager budget. A considerable number of states were unable to furnish any classified analysis of the expenditures and it is not surprising, when Chapin found it so difficult to discover for just what the health department money was spent, that legislators doubted the wisdom of increased appropriations.

The control of communicable diseases should everywhere have been the most important of the health department's

activities, yet the results were uniformly discouraging. Malaria was a disease of first importance in many states, with literally millions of cases annually, but until 1915 almost no preventive measures were attempted. Nearly every state health department was obliged to devote a great deal of time to smallpox which had been very prevalent for the past eighteen years, but vaccination was not enforced in schools, and several boards of health in desperation at not securing the needed legislation, abandoned isolation of cases entirely, to shock the public into some reaction. Epidemiology, as practiced in the U.S., concerned itself with smallpox, paying little attention to the numerous outbreaks of typhoid fever and diphtheria, or to tuberculosis and venereal disease in spite of their prevalence. Epidemiology, as a science and university discipline in America, had to wait for Wade Hampton Frost of Johns Hopkins, who in 1921 became our first Professor of Epidemiology. Diagnostic laboratories, the

most essential part of the machinery for the control of communicable disease, could not obtain support from the state budgets.

But lack of funds was not the chief defect which Chapin found in the American public health system. "A review of public health conditions today" he wrote, "indicates that by far the greatest hindrance to progress is the terrible incubus of politics." Health officers were selected with no regard for fitness or training, and in fact there was little to encourage a man to prepare himself for the position or to accept it if it were offered. "Yet, it is an expensive and dangerous experiment," he said, "for a state to try to educate its high officials after it has placed them in office. The untrained health officer does not lead; he follows either reformers with fixed ideas or politicians with an ax to grind."

No quarter  
he knew it  
more

The history of public health organization in the U.S. gives a clue to its peculiar development. Public health measures began to be taken in cities and towns long before the states felt any obligations in the matter, and the provocation was usually the threat of some serious epidemic. As late as Chapin's day, half the states, instead of an adequate health appropriation, had "epidemic" funds which were only to be employed in case of a serious epidemic of some exotic disease; thus in Connecticut it was specified that it was to be used only against cholera or yellow fever. When the emergency arose, it was natural that a committee of prominent citizens should be appointed to take charge in order to organize resistance by quarantine and fumigation. They called upon the physicians after the invasion had taken place, for aid in their special field of competence, the treatment of the victims when preventive measures had broken down. In time these ad hoc committees became permanent

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committees when their value was seen, and this was the origin of the Board of Health as distinguished from the single executive health officer of today. In the absence of trained men - and medical men as a body were not skilled in preventive medicine - a committee of citizens who could consult together was the logical means of carrying on sanitary work; thus Lemuel Shattuck's report in 1850 led to the establishment of a Board of Health in Massachusetts in 1869, the first to be organized for general purposes, though Louisiana had created a board in 1855 for quarantine purposes. Because of custom and continued lack of trained men, Boards of Health persisted long after they had become obsolete, but even in 1913 it was recognized, as Lenin once said, that committees are excellent for settling on a policy, but the worst means in the world for carrying it out. Chapin insisted that public health work required special training and a health officer who would devote his whole time to it. "This secures

efficiency and fixes responsibility," he said, "and Boards of Health should be unpaid so as not to attract politicians."

Very little had been done for rural people, yet in 1910 over half the population of the U.S. lived in the country or in little towns of less than 2,500. The hookworm campaign had awakened the South, "but had left those engaged in it with less certain ideas as to the best means of control."

Chapin concluded that sanitary science was still largely in the experimental stage, with an immense number of problems waiting for solution: for this reason he was particularly concerned at the lack of provision for research in almost all the states. This Chapin penalized severely on his score card in spite of the objection that research does not save lives and should not be given credit. "There are so many problems to be solved," he argued, "that the department which takes no share in their solution should have a lower position than one which does."

Mr. Rose himself had made a survey of state systems of public health in the hookworm belt<sup>\*</sup> some four years before Chapin's and had uncovered an even more primitive situation, which gave him few examples to go by in the missionary work he was about to undertake among so-called backward peoples of the earth. The average health appropriation in 1911 for the eleven states was \$17,000, Virginia's magnificent \$40,000 (which included the purchase and maintenance of a tuberculosis sanatorium) being offset by Arkansas' lack of any appropriation whatever. The State Boards of Health usually consisted of a panel of practicing physicians with an ill-paid lay secretary who did the work. The Boards varied from that of Alabama, which was made up of the entire State Medical Association, to Kentucky's, which by law was required to have on it one homeopath, one osteopath, one eclectic and the rest allopaths, as physicians of the regular school were then called. The State Medical Societies as a

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rule were influential in choosing the members of the Board, and only North Carolina is mentioned as having a sanitary engineer. But if the States were so poorly served, the counties in general had nothing to show except a part-time physician paid a few hundred dollars a year to attend the sick inmates of the county home, jail and convict camp, and, in fact, in Dr. Rose's State of Tennessee the law, dating from 1835, prescribed the appointment by each county court of a "jail physician or health officer," who constituted the entire health service of the county. Mr. Rose found that, as a rule, the doctors employed by the RSC to carry on the hookworm campaign, were the first full-time health officials a state had ever had. The county health officer on the other hand, if there was one, was a practicing physician paid an insignificant sum to look after the community interests and give warning of any obvious threats to the public health. "It is not his fault," said Rose, "that the

service is ineffective. The work is not going to be done until the man is paid an adequate salary for his services and is required to devote his whole time to the work."\*

Mr. Rose felt that he had put his finger on the fundamental defect of the state and local health systems - the fact that public health was an avocation and not a profession.

A so-called health officer without special training, who could spend on his public duties only the dull moments snatched from his medical practice, would never succeed in eradicating hookworm, typhoid fever, diphtheria, or any other preventable disease.

As a by-product of the hookworm campaign, twelve counties in three states appointed full-time health officers with salaries of \$2,000 to \$2,500. The five or six in North Carolina developed independently of the state and of the RF, which failed, as I have said, to come to their support during this critical period. These improvised health units represented

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a laudable initiative, but as isolated experiments in a new field, they lacked money, trained personnel, and coordination. As Chapin pointed out, health administration, at that stage, or indeed at any stage, cannot be left to work out its own salvation. Eventually the state and the RF in combination moved in to their support with counsel and financial aid. The weaknesses, however, of such complete decentralization were plainly displayed and may have accelerated the development of the stronger partnership system which followed, in which the Federal Government later took an important part, as the Public Health Service developed into a truly national health agency.

Mr. Rose then faced his new job with a number of general principles founded on experience and of policies which he had reason to believe would prove successful, but with very little specific guidance in the more technical aspects of sound public health practice. He was a member of the GEB

which was now twelve years old and had thoroughly explored the functions of an endowed agency in a democracy. Its aid had been conditioned always on self-help and local responsibility. Mr. Rose was determined to foster this principle by undertaking no work without an invitation from the highest governmental authorities; by working with government through existing institutions rather than creating new ones; by training and utilizing local personnel; by adaptation of each project to locally recognized needs but excluding individual charity and relief; by preserving all possible anonymity on the part of the IHC so that credit for results obtained might go to the local health authorities; and by securing in advance by mutual agreement a just and increasing contribution of local funds to the budget so that after a period of years the program could be absorbed without shock into the national health system. This meant keeping the annual cost within local economic possibilities.

Mr. Buttrick's method in the educational field was by demonstration, and the experience of the RSC had taught Mr. Rose that an unofficial agency should not undertake the solution of health problems; it should find out and then demonstrate how problems could be solved. Mr. Rose departed from this principle in the great yellow fever campaign which, like the hookworm campaign, failed in its immediate objective, but this was an admitted deviation from program though undertaken for the most cogent reasons, and like the hookworm project, was completely justified in the event. Mr. Rose was aware of the two principal defects which Chapin had uncovered in the American public health system and which would be even more disastrous in a foreign program: the incubus of politics and unqualified personnel. He placed his trust in the complete disinterestedness of his enterprise, and he did his best, not always successfully at the start, to secure a staff of the highest technical competence.

The IHC was actually non-political to a point which seemed ingenuous to more sophisticated peoples, and its intentions were seldom taken at face value in the early years. One could sense the puzzled curiosity of diplomats and officials in their efforts to probe under the surface to discover the real reason for this unheard-of generosity which apparently expected no return. No good case could be made for Yankee imperialism, but there was usually suspicion of some subtle form of commercial penetration, especially as the Commission was considered to be in a fairly direct line of descent from the Standard Oil Company which was already operating in almost every country in which the Commission became interested, and which in far-off lands and isolated posts, promptly took our staff like adopted children under its wing. This led, in northern Argentina, to an embarrassing incident when Standard struck oil in an area where the "Rockefeller Commission" had just completed a

malaria survey. The Argentine government promptly requested the Foundation to withdraw its "Commission," which was as understandable as it was unjust. There was also a general misunderstanding at first of our objectives, and the field staff discovered that, while we never entered a country without a formal invitation, we frequently found that we had got there under what might be termed involuntary false representation. Expectation would run high that millions might be dispensed to hospitals and charities, and disillusion sometimes caused resentment and criticism. The IHC lived down these misconceptions by exemplary behavior and solid accomplishment, and soon was esteemed and trusted everywhere it went.

The quality of the field staff was undoubtedly a large factor in the prompt acceptance locally of a mission which in those early days usually encountered a certain probationary coolness among people who had only the vaguest notion of its

WR met cool reception  
as Trustee at first  
visit

character and purpose. Mr. Rose himself engaged the first members of his staff, particularly those who were to go abroad, but as it grew this duty was turned over more and more to Dr. Ferrell, a medical man, and his Assistant Director-General. Mr. Rose admitted that he disliked asking personal and what to him seemed embarrassing questions of a candidate, whose character he tried to judge by friendly conversation. He had a quiet fund of humor and his smile would pucker his whole face and go far to establish informal relations with the most reticent and timid. What was requisite in a man who was to represent the RF abroad was friendly interest in other people, a capacity to adjust to new situations and unfamiliar modes of thought and action, a willingness to live under strange and often uncomfortable circumstances amounting occasionally to hardship, and an ability to work with the persons and materials which presented themselves.

Mr. Rose well knew that the man must also have had an adequate technical training, broadened if possible by a

certain exposure to the humanities, but there was no great supply of such men in those days. Public health was not established as a career in the U.S.; it was not an important or even highly respected branch of medicine; there were no schools; anyone who devoted himself to preventing disease was a pioneer. Young and able doctors were not easily persuaded to give up the prospect of medical practice in a settled and friendly community to go to tropical lands to raise the health standards of people living under backward and often primitive conditions. There was no lure of scientific investigation of tropical diseases, since Mr. Rose did not believe this to be a function of the IHC, nor was there even the bait of relatively high salaries to tempt young men in the precarious situation of recently graduated doctors, for Mr. Rose was parsimonious in this regard and wanted the career itself to be the inducement. One of the greatest obstacles seemed to be disinclination to expatriation even

under the most favorable circumstances. No competition developed for positions on the IHC. It was necessary for Mr. Rose to visit the few outstanding medical schools which included some preventive medicine and hygiene in their curricula, and try to talk recent graduates into volunteering for a service which seemed to him to offer a rare opportunity. Many were interviewed to find one willing to leave the U.S. and some were frankly scandalized at the suggestion. It was the unusual type (cranks as well as geniuses) of person who was attracted by the proposal, and this was perhaps what saved Mr. Rose from making more mistakes than he did, for mistakes were made as was inevitable when too much reliance was placed on first impressions. He always had the greatest confidence in his young doctors, whom he picked for character, taking their technical competence for granted if they came well recommended. They took off for foreign lands with the knowledge they had recently acquired in medical school, for

they received a minimum of training and no briefing whatever on what they would find when thrown suddenly upon their own in a strange land. It was exciting and there was already some prestige connected with belonging to the RF, but they were more ignorant than they knew or than Mr. Rose suspected. They needed missionary zeal to carry them through, but it was not the inner illumination of Bishop Heber's crusaders:

Shall we whose souls are lighted  
By wisdom from on high,  
Shall we to men benighted  
The lamp of life deny?

It was rather the valuable precept which Mr. Rose learned from Aristotle, his life-long adviser: "The thing you would like to do if you only knew how, you learn by doing it."

But while there was little formal instruction in public health offered in the schools in Rose's time, since it was a discipline which opened the door to no recognized profession, there was nevertheless a striking evolution taking place in its basic philosophy which amounted to a mutation

in its sudden effect on both theory and practice. The essence of this change was a shift of attention from the environment which had always been considered the chief source of human ills, to man himself who was discovered to be the reservoir of most of his infections and an accomplice in his own premature elimination by disease. This was one of those rather abrupt and momentous forward strides which seem to be characteristic of human progress in any field. Before 1900, the discovery of germs carried and transferred in food and water, in the air we breathe, and even by the insects that bit us, brought the bacteriologists, biologists and engineers to the rescue, and a great movement got rapidly under way to clean up the environment, and provide the external conditions which make for wholesome and at the same time for decent and comfortable living. Sanitation reduced the death rate at once in a surprising way and still remains the best developed of all the measures to protect the public health; it is upheld by enforcement of the law and the exercise of

police power, and can never be replaced. To it, however, was now added the concept of the need for individual effort, and the recruiting of everyone in the war against disease. Man became an object of attention as well as the environment.

This line of thought was started by a new look at the tubercle bacillus. In 1900 tuberculosis was the leading cause of death in the U.S. In large cities, 250 people of every 100,000 died of it each year, as compared with less than 30 now. Sanitation was useless; bacteriology could offer only diagnosis; isolation removed the advanced cases, but the tuberculin test showed that 80 per cent of our adult population had already contracted the infection as they grew up. In other words, thousands of persons were exposed for every one who came down with the disease. There was evidently in operation a natural resistance factor of enormous efficiency, and it was possible that it might be cultivated and increased by proper diet and living habits. The National Tuberculosis Association

was formed in 1904 to sponsor a new line of attack which was to have far-reaching influence on the entire public health program. It was a layman's organization, the first time citizens had mobilized to investigate, and educate the public in the control of a major disease. Millions of children were taught to learn and practice healthy habits, and since this involved housing, nutrition, fresh air and whatever else might prove to be sources of resistance and well-being, it was a return to environment in the positive sense of improving rather than correcting it; "the principle" as Whipple put it, in 1917, "that public health is concerned not alone with disease, but with all environmental conditions which make for wholesome, decent and comfortable living;" and social and economic factors turned out to be integral components of the complex picture of public health. The tuberculosis associations successfully promoted public health nursing services which now found an entree to the home through

the well child before it became sick. Stripped of certain technical aspects, the control of tuberculosis was seen to be a matter of education. The idea spread to the whole preventive care of mother and child, to mental hygiene, to venereal disease, to carriers of infection as in typhoid fever, and to all the other ills in which personal hygiene plays a role. As Chapin said in his famous 1915 report,\* "the plan of aggressive public health education was scarcely thought of ten years ago; it is now considered the cornerstone of prevention."

Government, as Bertrand Russell observes, from the earliest times, has had two functions - the negative one of preventing private violence and protecting life and property; the positive one of "facilitating the realization of desires deemed to be common to the great majority of citizens."

In public health, unfortunately, all the emphasis was on defense; the attack, by promotion of health and well-being, had never been considered an obligation of the community,

although health is as much an asset to society as illness and untimely death represent a loss. According to René Sand,<sup>\*</sup> the name "positive hygiene" was first used by the German hygienist, ~~Max~~ von Pettenkofer, in 1882, but it dropped out of use for a quarter of a century. Curiously enough, a distinguished sanitary engineer, George H. Whipple,<sup>\*\*\*</sup> who more than anyone represented the environmental aspect of public health in this time of change, had the insight to resuscitate the word in 1917, in a phrase echoed perhaps unwittingly by the WHO, and now familiar to health workers everywhere. "Health" wrote Whipple, in an attempt to define the new conception of an ancient theme, "is something more than the absence of disease - it has a positive quality... We should strive, as the Bible says, not only that we may have life, but that we may have it more abundantly. Bacteriology and sanitation (are) now to be supplemented by physiology and hygiene. We must follow Hygieia of the

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Greeks as well as the Sunites of the Romans."

Mr. Rose and his Commission were in the forefront of this movement. He had discovered for himself the interdependence of sanitation and education in the control of hookworm, and of the two, he had no doubt which was the more important. In his first report\* he wrote, "the whole work is essentially educational," and then he repeated it "for the sake of emphasis." From the start he was aware, also, of the use which might be made of an attack on hookworm disease as an entering wedge which could be expanded into the essentials of a complete health service. It was an epitome of a modern health program. "No disease," wrote Walsh, "could lend itself better to this broad and far-reaching purpose." The question now arose: how to get started?

In the original plan which Mr. Rose had drawn up for the Trustees, he had divided the countries of the hookworm

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\* 38 p. 68

belt into six groups:

1. The U.S. and possessions
2. Latin America
3. The British Colonial Empire
4. The French Colonial Empire
5. The Dutch Colonial Empire
6. The Far East

It appeared on looking at the map that, outside of Latin America (Spanish Main), the whole of the tropics except Abyssinia and Siam belonged to one or another of the powers and "enjoyed" some form of colonial government, so that access would have to be sought through the European capitals. A great part of the more heavily infested areas belonged to the British Empire, and there were two immediate advantages in beginning there: the similarity of language, traditions and sympathies, and the singular coincidence, which were this a historical novel, would seem implausible in the extreme, that Walter Page whom we last saw in a little railway station in North Carolina, gazing with Stiles at the miserable state

of a hookworm victim and now a member of the IHC, had become U.S. Ambassador to the Court of St. James. Page was highly influential, too, with Earl Grey and other members of the Cabinet, and quite ready to lend his influence to Mr. Rose.

Rose wrote to him at once at the very end of June, 1913, as soon as the IHC was established, asking his advice on the desirability of making a trip to London, and his help in preparing the way. Page cabled on July 14, "Everything ready. Come..." Rose had been expecting letters and documents from the State Department to smooth the way in England but these did not come immediately, and impatient of further delay, he sailed from New York on August 2 on the S.S. CARMANIA, arriving in England on Sunday the 10th.

The speed with which Rose went into action once he had made up his mind was constantly surprising and disconcerting his associates. Whether at this time or later, Mr. Rose came to the conclusion that it was not wise for the IHC to use the good offices of the U.S. Government, no matter how freely

tendered or how convenient the occasion, in approaching foreign nations or in solving difficulties which might arise in the course of the work. It seemed better for a private agency to avoid any appearance of official connection or sponsorship, and this course, adhered to with few exceptions throughout the future history of the organization, undoubtedly gained for the field staff an added confidence and esteem.

For the evening after his arrival, Mr. Page had accepted an invitation for Mr. Rose to attend a dinner given by Sir Thomas Barlow to some 150 physicians attending the 17th International Congress of Medicine just then closing its sessions. Sir Thomas was Physician-Extraordinary to H.M. King George V and was President of the Congress. This afforded Mr. Rose a very useful introduction to British medical circles and also gave him an opportunity to explain the spirit and aims of the Commission to an important group of medical men from all over the Empire. Among those whom

he met was Dr. F.M. Sandwith who had worked with Looss in Egypt on the life history of the hookworm; he took an immediate interest in Rose and saw that he met the men who could be of future use to him.

On Wednesday came the crucial moment for Mr. Rose. Mr. Page had arranged a dinner at the Marlborough Club to whom he had invited the two men who could, if they pleased, open to the RF the doors of the British Empire: the Right Honourable Lewis Harcourt, Secretary of State for the Colonies, and Lord Crewe, Secretary of State for India. Mr. Rose found himself sitting between them at dinner. There were others too whose attitude might go far to make or break the novel project: Sir Thomas Barlow, Sir Malcolm Morris of the London School of Medicine, Dr. Andrew Balfour, Director of the Wellcome Research Laboratories, Sir Thomas B. Robinson, Agent General for Queensland, Sir Richard Havelock Charles, of the Indian Medical Service, and others from the Colonial Office.

Mr. Rose had 70 lantern slides which showed the life history of the hookworm, views of rural life in the southern U.S., and the effects of the parasite on the people. He explained that the IHC was prepared to extend the work to other countries where the infection might be prevalent. He was a modest man, almost shy, but his diction was polished and fluent, and lacked peculiarities of accent. He could speak with great clarity and confidence, and had what Dr. Welch termed "almost unrivaled power of telling statement and of persuasion." His case was simple and convincing, and perhaps it was not a disadvantage that he was a layman addressing himself primarily to laymen. The task was not a technical one; it was to get the RF accepted and going.

The knowledge of the existence of hookworm disease in the British West Indies was not a discovery of the IHC. The problem had concerned the Colonial Office for many years; treatment with thymol had been introduced as early

as 1896, and there were printed papers on the subject dating from about that time.\* In 1907, a memorandum on the prevention and cure of hookworm disease had been drawn up in the Colonial office and a small committee appointed by the Earl of Elgin, then Secretary of State, to consider the problem in the colonies. This committee consisted of Sir Patrick Manson and Professor J.S. Haldane, who addressed a questionnaire to the Governors in the British West Indies asking for information on the prevalence of the disease. From the reports received the committee drew up a series of recommendations which were forwarded to the colonies, urging "certain simple, well-understood, inexpensive measures." These measures suggested were very much like those applied by the RSC two or three years later: sanitary regulations with penalties for noncompliance, instruction in the schools,

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\* Nor was the awareness of hookworm infection limited to the West Indies. Answers to the questionnaire sent out by the RSC in 1910 were received from 54 countries, including Colombia, British and Dutch Guianas, Egypt, Natal (Africa: infection of Indian coolies), Ceylon, India, Malaya, Fiji (infection in Indian coolies), and southern China. RSC Annual Report, 1913-14, p. 41.

and dispensaries for free treatment. However, colonial medicine in those days, and for many years after, was almost purely curative in nature, restricted to the treatment of illness in dispensary and hospital; there was no provision for organized community public health measures in the British Colonies. In contrast, Shryock\* points out that the Spanish Government had provided a fairly comprehensive system of health officers and Health Councils for its American Colonies from the 16th century on. Whatever the results may have been, it showed at least a concern for the public welfare lacking in other colonial powers at that time. There was no general-medical service in Great Britain uniting the outposts of empire; each colony had its own, and the Colonial Office could only act in an advisory capacity. No hookworm surveys were made and in fact the only colony in the West Indian group to take active measures and attempt to see them through was British Guiana, a fact which was destined

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to play a role in the brilliant success of the first demonstration to be staged by the IHC.

Mr. Rose's audience at the Marlborough Club dinner comprised, therefore, a group of scientists, physicians and government officials who already knew much more about the hookworm than any similar group in the U.S. After he had finished speaking, some of the medical officers present described conditions as they had seen them in Africa, India and Ceylon, the Malay States, Australia and the Fiji Islands. Finally Mr. Harcourt asked if he might say a word. During the dinner he had posed questions covering the work in the States, conditions in the colonies, and the objectives of the new Commission. Now he spoke appreciatively of the work which had been done, of the "convincing demonstration" which Mr. Rose had given, and of the generous action which would make it possible to extend the work to other countries. He extended an urgent invitation to the Commission to visit

the colonies, offering all the facilities of his office and assuring the Commission of the hearty cooperation of the local governments. "I should not wonder," he said in conclusion, "if in the future, we come to look back upon this evening and the gathering around this table as the beginning of a new day in the administration of our colonial affairs, and of a better civilization for all countries in the tropics."\*

Mr. Page, as he listened, must have passed some of the happiest moments of his life, and Mr. Rose at last saw the IHC sliding safely down the ways, ready under its own power to circumnavigate the globe. After dinner, Sandwith approached Rose and asked if he was pleased at the outcome. "I am very much gratified," said Rose. "You ought to be," said Sandwith, "you have got much further in one evening than we have been able to go at all."

It only remained to work out details at the Colonial Office. A large advisory committee of eminent men was

appointed, more to give prestige to the Commission than to suggest or guide its activities. Under the chairmanship of Lord Bryce, letters were written to all the colonies, and it was decided to work first in the British West Indies, then<sup>e</sup> in Egypt, Ceylon and the Malay States, leaving India with its complex conditions until some experience had been gained. He decided to visit them all as soon as possible in that order. Mr. Rose was never one to show his emotions; nevertheless, one can read something of his satisfaction between the lines of his diary. Nothing displeased him in England. He found the countryside beautiful - "a domesticated land." He was invited to dine at Christ's College in Cambridge and thought he had "never met a company of more genial, interesting, and companionable men." He received many invitations, but he was not tempted to linger. He was anxious to get on with his work, and with his first objective thus happily accomplished, he sailed for New York on August 26, having been in England 16 days.

His diary peters out at this point and we do not know what he thought about on the boat. Gates' magnificent idea must now be brought to earth and put to work. He had scored a diplomatic success, but he had made commitments without any machinery whatever for carrying them out. He had no staff as yet or even an office.

As far as I know, he had never been to the tropics or in a British colony. Neither the RSC nor the peculiar American system of State Boards of Health furnished workable blueprints for the eradication of hookworm disease or the kind of permanent agencies he knew must follow to complete the job. Certain principles had developed out of his experience and he had confidence that they were valid under all conditions, but like the fixed stars, they were no substitutes for sailing orders. And while it is true that he was engaged in a task essentially educational for which he was unusually well prepared, his staff would all be medical

in training and outlook. He and Joyner and Page, none of them doctors, had actually been responsible for this whole project, starting from the premise that people have to be healthy to take advantage of education. This was a more penetrating and philosophical approach than that of the hygienist who had only recently discovered that people have to be educated to be healthy. Mr. Rose was now saddled with both problems. Doubtless he took refuge in the Aristotelian aphorism, that the philosopher should begin with medicine, and the physician end with philosophy.

## Chapter 5. Running Start

The IHC had been successfully launched in London on a high flow of enthusiasm and expectation and the British colonies were now open for a demonstration of what this private agency could accomplish internationally. Mr. Rose's first job was to settle into offices somewhere in a suitable location, gather about him the nucleus of a general staff and then satisfy himself that the colonies actually needed and would welcome the sort of cooperative assistance he was prepared to offer.

He chose Washington for his home base. Mr. Gates had located the RSC there out of regard for southern feelings; it now seemed sound strategically to have the IHC there too, in close contact with the embassies and legations of the countries in which it was hoped to develop its far-ranging program. Space was fortunately available in connection with the RSC offices in the Southern Building in Washington and during the three weeks which Mr. Rose allowed himself, to

of the campaign in the southern states while he devoted himself to initiating the work abroad. His most intimate friend, on whom he relied with confidence for counsel and support, was Dr. W. S. Leathers, Director of Health in Mississippi. When Rose felt the need of spiritual recreation and change, he and Leathers would go off into the country on a fishing trip from which both derived the greatest enjoyment and profit. It does not appear that Leathers considered joining the staff of the IHE although he collaborated with it very closely in future years. He was committed to a program of his own and rose through a distinguished career in public health to the Deanship of the Medical School of Vanderbilt University.

A man to whom Mr. Rose also turned was Dr. Allen W. Freeman, whom he had chosen to direct the campaign of the RSC in Virginia.\* The principal rural health problem in

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\* In 1912 Rose also turned to Freeman to help Jerome Green in his unsuccessful effort to obtain Congressional approval of a Federal charter for the RF. Freeman had helped the PHS to obtain legislation and knew the ropes in Washington. They succeeded in unfreezing the bill in the House, but the opposition of Hope Smith of Georgia killed it in the Senate.

prepare for his voyage to the West Indies, he had the offices remodeled and left them ready to be furnished. This suited him personally as well, since he had been living in Washington for five years and had bought a home there.

As for staff, much importance attached to the selection of the right man for assistant director, on whom as a layman he would have to place unusual dependence in all that concerned the medical and technical aspects of the work and much of the administrative and professional relationships with his field staff of young doctors, which might be expected to grow with great rapidity. Mr. Rose gave consideration to this question as soon as he knew that he was to be the Director of the IHC. He naturally turned to the men who had distinguished themselves as state directors for the RSC, since he needed someone thoroughly competent in the techniques of hookworm eradication, and one besides, who could take over the direction

Virginia was not hookworm but typhoid fever, which Freeman considered an even better lever to secure not only rural sanitation but the more important and fundamental end of permanent county health services. There were certain divergencies of opinion between Freeman and Rose which are worth tracing to their source since they reflect a point of view which was overshadowed at the time by the prominence of the hookworm campaign. Freeman was one of that little group of young doctors who had turned from the practice of medicine to seek a career in public health, an unusual and courageous decision, since professional specialization in that field was a novelty in 1907. But Dr. Levy of the Richmond City Health Department, a health officer well ahead of his time, offered him the job of full-time Medical Inspector, the first one in the South, and Freeman, not long out of medical school, accepted it. Typhoid fever was the great problem, with 500 cases and 50 deaths a year for each hundred thousand of

population, a situation characteristic of most of our cities at that time. The following year he moved up to the State Health Department, and there too he was principally occupied with typhoid, which was obstinately prevalent in almost every rural area. It was in fact the common rural disease of the United States, which held a certain primacy in this respect, having some three times as much typhoid fever as the northern European countries. The USPHS was aware of this and detailed Dr. Leslie L. Lunsden to make a study of it, just as it had sent Wardell Stiles a few years earlier on the trail of the hookworm. Both came to the same conclusion, that typhoid fever and hookworm disease flourished because of the incredibly backward state of rural sanitation, and the only remedy for this was a complete system of permanent county health services. Both were evangelists in spirit - indefatigable missionaries preaching the same gospel of the sanitary privy, though they threatened the people with different devils.

Freeman knew them both, but the situation in Virginia inclined him to Lumsden's point of view, and he got him to come down the next two summers and work with him on the control of typhoid as the most promising approach to rural public health.

Nevertheless, when Mr. Rose came to Virginia with his program for the RSC, Freeman accepted his invitation to direct the hookworm campaign; it was a means to the long-term objective he had been struggling toward, and was backed by a strong organization and adequate funds, in contrast to Lumsden's almost single-handed crusade, for which the niggardly appropriation of the PHS had little money to spare. As for the State, the health department budget amounted to \$40,000, which included the operation of the state tuberculosis sanatorium. He was naturally surprised and disappointed when, as it seemed to him, the work was arbitrarily terminated before it had achieved

any clear results. The dispensary method of hookworm control had not worked very well in Virginia because the disease was spotty in distribution and mild in its effects. Typhoid fever was a much more important problem in the state as a whole, and Freeman was reinforced in his opinion that, if the general public health were the real goal, to restrict the initial approach to an attack on any one disease was to set limits to its usefulness and under certain conditions might even retard the broader movement. Thus while he was wholeheartedly in favor of Rose's objectives, there was lack of conformity as to method and when the RSC came to its untimely end and the IHC made no immediate move to strengthen state and local health services, Freeman joined the PHB.

In the fall of 1917 he welcomed the opportunity to go as Health Commissioner to Ohio, where he put his philosophy\*

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\* As set forth in his book, "Fifty Million Patients."

to the proof and without benefit of hookworm or private funds, organized within the next three years as many county health units as had previously existed in the rest of the U.S. The prime difficulty, as it turned out, was not lack of funds to support this extraordinary development, but lack of trained men to direct it, a problem which as we shall see Mr. Rose encountered and was forced to take steps to solve at the very start of his own ambitious program.

The divergence of views on the importance of hookworm treatment to the general scheme was more apparent than real, and was unduly accentuated by the unfortunate delay of the IHC to initiate a program of its own in the U.S. Although this has been attributed as I said to hesitation on the part of Mr. Gates, the lack of advance planning, so uncharacteristic of Mr. Rose, may equally be charged to the sudden and completely unexpected demise of the RSC in 1914, for which Rose had planned a two-year extension with the unexpended funds

in his hands. From the moment he learned of this unwelcome decision which imposed upon the IHC the responsibility of completing the unfinished work of the Sanitary Commission, he began to shift the emphasis from "relief" of hookworm disease by dispensary treatment to "control" through an intensive drive for soil sanitation and within two years the IHC had initiated the policy of assisting the states, both within and without the hookworm belt, to meet their rural health problem by effective organization of county health units. "In 1917," states Rose's report\*, "the hookworm work in the southern states began to be absorbed in the programs of the rapidly developing county health departments."

This great movement, described with such reserve, was in fact revolutionary both in its effect on the recruitment

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\* Annual Report, RF, 1921, p. 230.

of health officers from the medical profession and in its snowballing progress through the length and breadth of the U.S. Dr. John A. Ferrell, who has been rightly given the principal credit for this development, was director of the hookworm campaign in North Carolina and was the man chosen by Mr. Rose to be his first assistant in the IHC. Dr. Ferrell had many things to recommend him to Mr. Rose: he had been a teacher before he became a doctor of medicine; he had secured an almost perfect success for the RSC by organizing 99 of the 100 counties of North Carolina, failing in Ashe County only because of a deficiency of hookworm and an excess of politics; his feet were firmly on the ground, he had the ability to get projects going in an orderly way, he kept out of trouble and he got results. He complemented Mr. Rose by his caution; his attention to detail and his peculiar ability to get along with doctors and politicians. He was appointed Assistant Director-General at the first

meeting of the Commission in June, 1913, the first of the 7 doctors to be recruited from the RSC. Mr. Rose spent most of the next twelve months upon the water and to Ferrell fell the task of directing and very soon of liquidating the RSC.

Rose was soon mailing projects from all over the world and Ferrell had to cope with the serious problem of staffing them. Fortunately he could draw to a limited extent on the best men of the RSC, and while there may have been some lifting of the eyebrows when it appeared that 6 of the 7 were, like Ferrell, drawn from North Carolina, this was unwarranted since all proved eminently successful in difficult, new situations. It has been said that North Carolinians are undoubtedly the most clannish of southerners, with the exception of the people of all the other southern states.

Mr. Rose was anxious to visit the British West Indies as soon as possible to see whether they reflected the gratifying

attitude of London and what the conditions were with respect to hookworm. It was a quiet corner of the world where he could carry out his first experiments on a small and inconspicuous scale without committing the Rf to any large program, and yet near enough geographically to permit close observation and supervision. He waited for the scheduled meetings of the Executive Committees of the RSC and IHC on the morning of October 4, 1913, and sailed the same day at 1 P.M. on the "Van Dyke" for Barbados. He had had dinner the night before with his old friend and wisest counselor, Wallace Buttrick. On board he found Colonel Theodore Roosevelt bound for the interior of South America after the defeat of the Bull Moose party in the Presidential election of 1912; and Dr. Wilson Popenoe of the Department of Agriculture searching for a better navel orange in Brazil. He also met a number of Englishmen, old-timers in the West Indies, who furnished him with considered opinions on the health and

prosperity of the Islands. He wrote in his diary that the Englishman is a good colonizer because of his sense of fair play and his dogged persistence.

Barbados was frankly a disappointment. A light annual rainfall, a porous soil and a population composed almost exclusively of Negroes was a most discouraging combination for the hookworm, signs of which Rose found only in a few so-called poor whites. He inquired hopefully about malaria but no Anopheles mosquito had ever been seen on the Island. Dr. W. L. Sawdon, the noted Italian parasitologist, accompanied by Dr. Joseph F. Siler, a young medical officer of the U.S. Army, was on a mission sponsored by Sir Patrick Manson, to investigate Sawdon's theory that pellagra was a protozoal infection transmitted by sandflies, but Rose was not interested in unsolved problems of disease. The Island had really little to offer him; the climate of Barbados, says the Encyclopedia Britannica, is beneficial, and is

"remarkable in arresting the decay of vital power consequent upon old age." Somewhat frustrated, Mr. Rose sailed for Trinidad, considered in many respects the most important of the British possessions in the West Indies.

Here he found what he had been expecting - plenty of hookworm in the East Indian coolie labor and a "record of strenuous inactivity" in any sort of preventive sanitation. Most of the patients in the estate hospitals were under treatment for hookworm disease, and the records showed much disability and loss of life from this cause in the laboring population. But the Surgeon-General, the chief medical officer of the Island, was very discouraging about the possibility of accomplishing anything. He himself had been working for five years on the problem and felt that the time had been wasted. The planters, dominant in government and business affairs, were blocking every effort; the authorities would of course like to do something, but

their hands were tied. There was an intimation that the intervention of the Commission was not regarded with enthusiasm. Mr. Rose obtained an appointment with the Governor who received him graciously and listened carefully to what was undoubtedly a calm, clearly put and unanswerable presentation. The Governor asked him to put it in writing, and the outcome was an arrangement for a collaborative project in the coming year. There was even some suggestion of putting the law upon recalcitrant persons so that Mr. Rose began to be afraid of too precipitate action. "I took occasion," he notes, "to emphasize the importance of beginning with measures of relief and education rather than with compulsory legislation."

The Leeward and the Windward Islands gave Rose a warmer welcome and were eager to have the aid of the Commission. Rose saw a good deal in two weeks. He made a rough, 18-hour crossing from St. Vincent to Grenada,

sheltered in the "dog-house" of a 40-foot sloop. He visited hospitals, villages, and homes, and travelled by pony over mountain trails through tropical rainstorms to inspect coolie yards on the sugar and cocoa estates. Soil pollution was universal, government was without funds for control or even inspection, and the resulting sanitary conditions were "unspeakable." Hookworm anemia was obvious, and that the people survived at all was due, he thought, to a high degree of racial immunity.

It was in British Guiana, however, that he finally found conditions ripe for the sort of telling demonstration with which he was eager to inaugurate the work. Lord Crewe's memorandum of 1908 had stimulated action and Rose found all the estates he visited provided with latrines although in the native villages conditions were still "deplorable" and the problem untouched. The managers were an intelligent and well-informed group who appreciated the economic significance

of soil sanitation and were willing to finance it. They were keenly interested in Rose's proposal and details were worked out on the spot. The plan and budget received unusually prompt approval by the Colonial Office and Rose was thus able to push this project into action before any of the others early in the following year.

Rose reached New York in December with six projects in his bag and very well pleased with the way things had turned out. For staff he was not yet hard pressed since it had been agreed that British doctors would be used when available; only British Guiana had asked to have an American sent down to approximate as nearly as possible complete eradication in a selected area. Rose chose Dr. H.H. Howard, a field director for the RSC in Mississippi. Before any plans for the IHE had been made public, Howard had made written application for a job if there should be an international organization. Mr. Rockefeller Jr. asked him how such

an idea had entered his mind and Howard replied that it seemed to him a logical development that was bound to come about.

Howard was a man very definite in his opinions, exact in method, and of strong religious beliefs. Mr. Rose congratulated him on becoming the first staff member of the new organization, and its only fundamentalist. Rose had been unhappy over the failure of the RSC to eradicate the hookworm in even a small area in the U.S.; he counted on Howard's well-known technical ability to do a more complete job in British Guiana. Howard was transferred to the IHC in January, 1914, and was in Georgetown, British Guiana, on the ninth of March, as soon as a budget could be approved in London and New York.

Rose spent much of January scouting for staff at various medical schools and discussing at Harvard and Johns Hopkins possible ways of training doctors for public health work. He did not have much luck since he secured only one definite recruit, L.W. Hackett, who was Rosenau's assistant

in the unique course given at Harvard in Preventive Medicine and Hygiene, and he had recommendations of four or five others, mainly from friends in the USPHS. He felt secure enough, however, to begin to plan the invasion of the Latin American republics, which were all tropical, at least in part, except Uruguay. Remembering the successful method used in launching the RSC, he gave a dinner in Washington on February 15 to the diplomats from the Central and South American countries. He was now able to cite precedents, pointing to the program already approved by Britain, and from the expressions of interest which he heard, he had no doubt what the result would be. Since he himself was planning to leave almost at once on a voyage of further exploration around the world, he entered into negotiations with the PHS to lend him the services of Dr. Joseph H. White to visit in his absence the Latin American countries which might invite the cooperation of the Commission, and make arrangements

for the work to begin without delay. Dr. White was well-known in Latin America (for his feat in arresting the yellow fever epidemic of 1905 in New Orleans - the last epidemic, as it turned out, that the U.S. was to suffer. This had been accomplished with the methods used by General Gorgas in Havana and Panama, and since Gorgas was one of Rose's medical advisers on the IHC, it seems likely that he have suggested the name of White). He entered the service of the IHC on March 7 and Hackett on April 1, 1914, the third and fourth members to be taken onto Rose's staff. Hackett went into training with the RSC in Cairo, Georgia, prepared to go to the first Latin American country which should issue an invitation.

Rose sailed on February 28 on the *CARMANIA* for England on the first lap of his trip to the Far East. The seas were heavy and Rose's diary commenced on an unpropitious note: "I did not care for dinner and I did not seem to care even for the luncheon I had had," and he recalled his trip from

St. Vincent to Grenada, tossed about in the dog-house of the little sloop. But in London things went more smoothly. The Colonial Office had received and accepted the working plans and budgets from Antigua, St. Lucia, St. Vincent, Grenada and Trinidad; British Guiana had dealt directly with the Washington office of the IHC. Rose sent these on with his blessing. Lord Bryce presided over a meeting of the English Advisory Committee, which bestowed its prestigious approval on everything Rose had done or had in mind to do. This is the last time we hear of this Committee of eminent men, which presumably had served its purpose and like the champagne bubbling for a propitious moment on the prow of a fine craft at its launching, was doubtless now dissolved and lost to view.

In spite of the whereases and resolutions which had created the IHC for the purpose of extending the work of eradicating hookworm disease, Mr. Rose had never had any

intention of limiting his horizon to a single objective, however important. Rose told Abraham Flexner\* that having made his difficult decision to accept the job, he had added, to Buttrick, "but I won't stop with hookworm." Now he invited opinion from British colonials on the important health problems of the tropics. Martin thought well of a demonstration in tuberculosis, certainly a major problem; Rosenau had already drawn up a plan for this and sent it to Rose. Simpson proposed attacking plague in East Africa; other animal parasites besides hookworm were mentioned, and Castellani's new trypanosome of sleeping sickness. Rose was noncommittal; he wanted a disease both extremely important and at the same time offering the possibility of prevention and control by fairly simple and direct methods - not one complicated with social problems of slow solution like tuberculosis, or one involved in unknowns like trachoma or leprosy. His interest was not greatly aroused until he called upon Sir Ronald Ross

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\* 21, p.63

who was then teaching tropical diseases at King's College, London. Ross had received the Nobel Prize for medicine in 1902 for his discovery of the mosquito transmission of malaria and had recently been knighted, but these honors had not served to quell his growing exasperation over the failure of the world to utilize this knowledge on any large scale to reduce malaria by the simple process of eliminating the breeding of mosquitoes. "I didn't do this work on malaria," said Ross, "in the interests of zoology, but in the interests of practical sanitation." More than 15 years had passed since anophelines had displaced miasms in the transmission of malaria, yet little had been done to change the traditional method of control by quinine. Ross found Rose an attentive listener, and he must have recognized the unusual importance of the occasion. He had been nursing for some time the idea of a convincing demonstration of his method in some limited areas and he suggested the possibility of exterminating the

Ross was continually  
in a furious rage  
with the world

the anopheles mosquitoes on the Island of Cyprus and doing away with the malaria forever. Rose may have become by this time somewhat allergic to all ideas of eradication, but Ross was not a man to be taken lightly. He accepted an invitation to dine with Ross and a few others, and came away much impressed with what he had heard. "All agree," he wrote in his notes, "that malaria is the scourge of the tropics. Under ordinary conditions, it can be brought under reasonable control with an expenditure feasible for the average community." Ross gave him the name of a Dr. Malcolm Watson, who was experimenting with malaria control by anti-mosquito measures in the Malay States, and Rose promised to look him up.

(He met the Premier of Queensland, the Hon. Digby F. Denham, called on Sir John Anderson, ex-Governor of the Straits Settlements, and had an enlightening conversation with Dr. Philip Bahr, son-in-law of Sir Patrick Manson, who

had been working in Ceylon. Bahr advised him to work through the planters who were prosperous and had an efficient organization; they would be more interested and cooperative than the medical authorities which reminded Rose of Trinidad. He should stress the economic side since competition for Indian Tamil labor was keen, and an increase in working efficiency of one per cent would mean an annual saving of Rs 250,000. Rose just had time also to visit the London School of Tropical Medicine which was located at the docks in order to get hold of the sailors. He made arrangements with the Director, Dr. Newham, for sending men to the school for training and to get the pick of the graduates. The School gave a three-month course, which was mainly clinical in content.)

He sailed next day for Alexandria, on March 19. He had arranged in advance for Dr. F.M. Sandwith, whom he had met and liked on his first visit, to go with him to Egypt

and Ceylon. "He is strong in practical judgment" wrote Rose, and had worked with Looss in Egypt on hookworm disease. Rose had had a busy ten days and settled into his deck chair to read Cromer's Modern Egypt. Egypt was not a British colony but a so-called "condominium" of which Lord Cromer had been de facto ruler since 1883 when England intervened to save the bankrupt and tottering government of Tewfik Pasha and to protect the Suez Canal. Cromer's retirement in 1907 had led to increasing nationalist agitation which threatened to get out of hand until Lord Kitchener, the conqueror of the Sudan, was made Consul General of Egypt in 1911 to restore order. It was Kitchener with whom Rose would be dealing in Cairo. "What impresses me most," he commented, "is that the Englishman succeeds in spite of his mistakes."

Egypt was aware of its hookworm problem - Sandwith had treated cases at the Kasr el Ainy Hospital in 1887 and Rose found that special wards were provided for the disease with

five or six hundred patients (many of these were extremely severe cases) at one time under treatment. He met Looss, the German investigator who was the greatest living authority on the hookworm; he had worked out its peculiar life history in his laboratory in Alexandria after accidentally infecting himself in 1898 with the parasite, and had also discovered that Stiles' Necator was not an American form after all but was indigenous to Africa. A group of pygmies were passing down the Nile on their way to a music hall exhibition in London and while they were in Alexandria Dr. Looss examined them for hookworm. Most of them were infected, but it was not the European species, Ancylostomum, but the Necator americanus. Looss concluded that hookworm had been introduced into the Western Hemisphere through the African Negro -- part of the price it was still paying for slavery.

There was an astounding array of health problems brought to Ross's attention besides hookworm. The fellahs, crowded by the million onto the sharply bounded, hot, and flooded

delta of the Nile, lived in indescribable squalor without a minimum of sanitation - drinking, bathing, washing their clothes, and defecating in the same canal of water which they poured upon their crops. Rose visited Dr. Graham's tent hospitals for ophthalmic treatment which moved about the delta spending six months at a place, and he saw the hookworm camp at Qaliub with beds for a hundred patients. He was asked to cooperate in extending these operations and spent an afternoon with Looss and a local committee working on a plan and a budget. Conditions in Egypt seemed to make it necessary to administer all treatment under hospital conditions and the plan provided for one large and four small traveling tent hospitals to make a provincial demonstration, which would cost £12,000 a year. (With the feeling, always strong in Rose, that education was the most important factor in human well-being, he paid a visit to the ancient Mohammedan University, El Ashar, the oldest in the world. The students numbered about 12,000 from all parts

of the Moslem world, ranging from eight or nine years of age to mature men. They remained in residence 12 to 14 years or longer, and studied the Koran, Arabic grammar and rhetoric, mathematics and church law. The court and cloister were filled with a throng of students repeating aloud bits of the Koran they were learning by heart. In an immense, many-pillared hall several thousand students were seated in groups on the floor forming semicircles around their teachers. The din was terrific and the sight one which could be seen nowhere else in the world.)

Rose was now ready to see Lord Kitchener, who showed a surprising interest and knowledge of health matters, and said he was making public health the chief feature of his administration. He mentioned the four endemic scourges of Egypt: hookworm, ophthalmia, bilharziasis and pellagra as needing concentrated attention, but Rose stuck to his hookworm project and Kitchener readily agreed to supply

half the funds. When, however, an official was brought in and objected that the health budget could not provide such a sum, Kitchener turned to him rather sharply and said "I did not ask why it could not be done, but how to do it."

With the first project on its way to New York, but with a growing appreciation of the difficulties of making a clean-cut demonstration under the conditions he had observed in Egypt, Rose and Sandwith proceeded to Ceylon. There Rose found himself in the position of mediator between the Government and the Planters' Association. "Medical men," he noted, "think there is much hookworm among the Tamils and the planters that there is little or none. The Health Department has antagonized the planters by trying to enforce legislation before convincing the planter that it is necessary."

An inspection trip covering many tea and rubber estates on the Island convinced Rose and Sandwith that almost all the Indian labor was infected, with anemias more severe than

in the British West Indies. Some microscopic examinations were made to confirm the clinical diagnosis, and Rose stated unequivocally that there could be no mistaking the prevalence and disabling effects of hookworm disease in Ceylon. (It seemed to him the coolies should have been examined and treated in Madras before they were sent to Ceylon. The Indian Medical Service did in fact weed out the severest cases at Negapatam, the great clearing port for labor leaving South India, but cure was not attempted, since a survey showed 99.8 per cent of the emigrant laborers to be infected. This was the situation which led to the first IHC project in India in 1920, when Mr. Rose felt able to start work in that enormous field.) The difficulty was that although labor was scarce, the day's work had been standardized on the output of an anemic coolie and the pay was fixed at the equivalent of 11 cents for a man and 8 cents for a woman, irrespective of their efficiency. The proprietors were both intelligent

and wealthy; once convinced of the reality of hookworm anemia, they quickly came to Rose's point of view and were "ready to spend money when given a sound proposition;" they wanted to cooperate directly, however, and not through Government. This Rose was not disposed to do, in spite of the apparent advantages, since the principle of working through the constituted health authorities was based on an objective more fundamental than the relief and control of hookworm disease, and that was: the strengthening of the local health agencies themselves.

A way out of the impasse had to be found, since Rose now looked upon Ceylon as a "peculiarly favorable place for a telling demonstration," and likely to be the key to India and the Orient. Infection was centered on the estates so that there was the almost unique combination of a prosperous community associated with severe hookworm disease; the Planters' Association was a powerful body and alive to the

fact that something must be done; the colony was an island not half the size of North Carolina. The chief difficulty was the weakness of the Medical Department, which could be a temporary matter. Rose proposed a small survey and demonstration for educational purposes under a mixed committee of Government and planters, in charge of a neutral full-time man with a "tactful personality." The Governor offered to supply all the money out of an accumulated surplus medical fund, and although the planters would have preferred to have the Commission contribute its quota so as to share the responsibility and the authority, Rose thought "if Government can do it alone, so much the better." This was a mistake which as far as I know he never made again, in the initial stages of a program. At the outbreak of World War I some three months later, all work was suspended and it was well over a year before the threads could be picked up again, and then under less favorable circumstances. I remember that when

Colombia not long after sent an invitation offering to provide an undue share of the budget of a cooperative project, Rose looked up from the letter and remarked, "It's possible to make too good a bargain!"

Rose now pushed on to the Malay States, saying good-bye to Sandwith with regret (and also to Dr. Aldo Castellani whom he had found in Ceylon studying fungi as a cause of disease - "he thinks they may prove to be important"). He had to leave before the planters had reached a decision, but he received a cable later that they were putting his plan into operation. He landed in Penang and with the medical officers he visited hospitals, inspected coolie lines and examined some 2,000 laborers on coconut and rubber estates from Penang to Singapore. There was abundant evidence of hookworm, but here for the first time he ran into severe malaria which greatly complicated the situation and as a layman he was unable to single out the effects of the two

diseases, since the anemia of one seemed to him indistinguishable from that of the other and the picture was further confused by the mingling of several nationalities. Most of the laborers on the large estates were Tamils from India and an overwhelming proportion of them, as he knew, came already infected with hookworm, but the disabling disease of first importance on the rubber estates was undoubtedly malaria. There was considerable difference of opinion among the doctors about whether hookworm was a sufficient menace to health to justify special effort for its relief and control. In his uncertainty, Ross went down to the little coastal town of Klang, half way to Singapore, where Ross's friend Malcolm Watson was Government surgeon, engaged in trying out the new method of malaria control by anopheline reduction, based on Ross's discovery. Ross called Watson his Elisha who "took the mantle of Elijah that fell from him, and smote the waters."

Watson had been sent to Klang as Government Surgeon in 1901 knowing nothing about malaria or mosquitoes; he had never seen an Anopheles larva. He was suddenly faced with an appalling situation. It was an epidemic year and the death rate rose in Klang to 300 per thousand. On one estate, of 170 recently imported coolies, 102 were down with fever at Watson's first visit; a month later only 57 remained of whom no more than 29 were able to work. The Chinese suspended business for three days and devoted their energies to elaborate processions and religious rites to drive away the evil spirits. Watson tried a different approach. Ross's arguments had made a great impression on him, but he had wanted to see for himself. Now he knew that the "Anopheles was more dangerous than the crocodile, king cobra or tiger." He rejected Koch's treatment method and the Italian quinine prophylaxis and screening, and adopted Ross's idea of permanent drainage to reduce anopheline breeding. He had figures to

prove his success. On the rubber estates the death rate in the laboring population had been cut from 53 to 25 per thousand, and the deaths from fever in Klang from 368 in 1901 to 45. This was all the more significant since the imported Indians came from the lowest castes and usually from famine areas, arriving in the last stage of destitution with only a few rags for clothing, greatly undernourished, and infected with hookworm. The Chinese and the Tamils constituted the main labor supply for the estates, since the Malays preferred village life and were not available for workers, while the Javanese had the reputation of being indolent. The pioneer planters in Malaya came from Ceylon and preferred the Indians whose customs and language they understood. A year on a healthy estate improved a Tamil and his children beyond recognition; he could save money and return to his home in India when conditions there took a turn for the better. But where an estate was very malarious and

the death rate high, his place was taken by the Chinese, virile and energetic, who would take a calculated risk for twice the pay. They had no immunity to malaria and suffered like the Indians when infected, but they fed themselves much better than the Indians and used mosquito nets. When sick, they had little faith in Western medicine and refused quinine or hospital care, preferring to leave the estate and go to their friends where in fact they had a better chance to recover health than if they had remained subject to constant re-infection. Rose was greatly impressed by the Chinese character. "When one considers his fecundity, his family cohesion, his adaptability to tropical climate, his will and his power to work, his thrift, his astute intellect and his ambition and ability to rise when given opportunity, one wonders if he will not in course of time possess the East."

Malaria control had increased the proportion of Tamils on estates, who were preferred by the planters to the Chinese

with whom they could not communicate directly because of the language difficulty and who in times of labor shortage dictated their own terms through the guilds to which they all belonged. One of the pleasantest side-products of Watson's work was the effect on the birth rate. Children were now being born on the estates. Yet Watson knew of one estate with an average of 50 Tamil women on the payroll each year between the years of 1892 to 1898, yet in the whole period no living child was born, in spite of special care and food for pregnant women, and the promise of a big present to the one who first should bring forth a living child. Rose had known malaria in Tennessee, but it had not complicated the work or the results of the RSC, in spite of lack of any sort of preventive measures. This was malaria of a different intensity, which filled graveyards, caused acute suffering to communities of people, and compelled the abandonment of large-scale agricultural developments.

Watson had recently visited Panama where by similar methods malaria had been reduced to one-half of one per cent of the

mention malaria  
as cause

labor force per week, a healthier situation than in most temperate climates at that time. The pioneering work of Gorgas struck Watson as being of immense importance since "the man who acts as a link between discovery and its application needs a combination of qualities as rare as those of the pure investigator." This is a tribute which has long been paid to Watson himself, and in fact (~~it seemed, etc.~~) it seemed to Ross that the Malayan experiment might be the more significant to the malarious world in general, since it was not only supported by the local economy, but the managers had come to consider the work an excellent investment which paid high dividends in labor efficiency and permitted Tamils now to live where only Chinese would go before. It proved that malaria control, if not as simple as Ross contended, was often technically and economically feasible under the most difficult conditions.

As to the importance of hookworm, Dr. Watson had no clear evidence to present to Mr. Ross. The introduction

of non-lusane coolies certainly brought in hookworm, as it had in Ceylon, but it was often masked at once by an explosion of malaria which then remained as a chronic, debilitating infection. In 1908 Lord Crewe's memorandum had spread the belief that hookworm was the chief cause of the excessive death rate and quinine had been neglected for thymol on some of the estates. But though examination showed that hookworms were present in large numbers, yet deaths increased when malaria was neglected, and health returned when it was controlled. "It is clear," wrote Rose, "that with our present data it is not possible to disentangle malaria and hookworm as factors in sick-rate or death-rate, and as a handicap to labor." In Singapore he reached a tentative agreement with the Governor to send an expert or a commission to determine (answer) the unsettled question.

One other problem was thrust on his attention in Singapore; he had heard it mentioned in London. Apprehension had been

created in British circles throughout India and the Far East by the announced opening of the Panama Canal in August 1914. The new and greatly shortened routes made possible by the Canal seemed to the medical advisers of the Colonial Office to carry the threat of a spread of new infections to the Orient, especially of yellow fever which had never reached the East although the vector mosquito, Aedes aegypti, was present everywhere. Active counter-measures were being suggested by Colonel James, such as the rounding up of all ships from the Canal for quarantine inspection in Singapore or Hong Kong before being allowed to proceed to any other British ports in the Far East. Rose made a note to discuss this with Gorgas as soon as he should reach Washington.

Rose stopped over in the Philippines for a brief but rather comprehensive survey of the "remarkable work which has been done in these Islands by the Department of Public Health during the brief period of American occupation."

a word about  
Heiser

The Department of Public Health was actually Victor G. Heiser, and Rose was favorably impressed with his point of view on every feature of the work they discussed. Heiser was unhappy about the new administration under Governor Harrison, which was giving the Filipinos a degree of control for which they were not prepared, leading to a substitution of politics for efficiency. He expressed himself as quite ready to accept a position with the IHC, and on October 1, 1914, he was appointed Director for the East.

Back in Washington at the end of June, Rose found that four of the six Central American countries had invited the aid of the IHC and work had already begun in Panama and Costa Rica. Dr. Joseph H. White had visited the heads of government in Mr. Rose's place and made the arrangements. It was Mr. Rose's idea that in these early years before the objectives of the RF were well understood, or perhaps were known at all, the proper entree to foreign countries was all

important and that some distinguished person should be sent to make the initial contact. It was partly for this reason that he had chosen Heiser whose name was known and respected throughout the Orient. This separation of the diplomatic from the technical function was soon dropped in most of the regions, and staff members, assigned to a new country among the 93 which eventually collaborated with the IHC or its successors, were sent off with a letter of introduction and left to fend for themselves. In the Far East, however, the area was so vast and heterogeneous that Dr. Heiser conserved the technique, finding it useful to cultivate personal relationships with crowned heads and Governors General, traveling continuously for two decades over the entire East and contriving once a year at least to see everyone of importance in government and health circles east of Suez. In this way he was continually gathering a great deal of up-to-date information - technical, political and economic, from areas seldom in the

news - so that he not only fostered the programs which he had planted in the various countries but acted as an intelligent courier disseminating news of what was being discovered and achieved in one country to all the rest. "A drummer of ideas" he called himself, circling the earth like a minor planet, touching ground here and there as he made his annual revolution. At the biannual meetings of the Far Eastern Association of Tropical Medicine, which he had helped to found, it was easy to see that no one had the vast acquaintance-ship or compass of information of Heiser who perhaps knew the Orient and its peoples better than any other American. His own account of a life full of adventure and of influential activity, published as An American Doctor's Odyssey and translated into many languages, has entertained and enlightened the world. As a corollary to this extraordinary dispersion of activity, he left his technical staff mainly to their own devices and let them do their own local planning, to which they did not object.

Mr. Rose now had a triumvirate of regional directors who for the next two decades were to impress their different points of view on the program of the IHC, each in his own characteristic way. A less homogeneous group could hardly have been brought into such close association. Heiser, almost without territorial limits in what was sometimes known as "Heiser's Empire" beyond the Pacific, virtually escaped at times the control of the Home Office as he dealt in his own peculiar fashion with the enigmatic East, but his colleagues, Ferrell and Howard, were centered upon Washington and put into execution, with persistence and with great success, the two designs which Mr. Rose had most at heart in the beginning. John A. Ferrell, who became responsible for all the subsequent program which developed in the United States, gradually brought into being a spreading network of full-time county health services, which Rose had postulated as indispensable to hookworm control and rural public health. Hector H. Howard, sent from Mississippi

Bring in adaptation  
of each to his area

to organize the first foreign project of the IHC, brought intensive hookworm control as near to complete eradication as was humanly possible, and was soon made Director for the West Indies and later for the whole Caribbean area as it developed. To Howard, hookworm was a sufficient end in itself. He had no patience with the voluntary system of treatment by free dispensaries as introduced by Ashford in Puerto Rico and adapted by the RSC to the Southern States. He weeded it out of the West Indian colonies wherever it had gained a start and he observed without sympathy its spread in the Latin American republics where uncoerced villagers living almost in a state of nature required an extended period of education and demonstration before they would submit to the discipline of mass treatment and compulsory sanitation. Mr. Rose, though he tolerated the dispensary method where it seemed unavoidable as an early stage in evolution, was prouder of what seemed the more advanced and effective procedure applicable in the colonies, which in

area and population greatly preponderated in the tropical world. He emphasized in his reports the 95 per cent or more of the population examined by Howard and the 90 per cent cured on the estates and in the villages of the West Indies, and sent Howard later to Ceylon to see that the work was properly begun in that important first performance in the East. Nevertheless, the colonial regimes were to be greatly shaken in two world wars and it is a question whether rural health services with popular participation, which were the ultimate aim of the IHC, have not developed as soundly in Latin America as elsewhere in the tropics.

(One other director was added to the home staff, Dr. Ernst C. Meyer, to head a Department of Surveys and Exhibits which was one of Rose's earliest ideas, prompted by a desire to mount a hookworm exhibit at the Panama-Pacific International Exposition to be held in S.F. in 1915. A good deal of effort and expense was put into this display. Glass and wax models

of magnified hookworms were prepared by experts and life-like representations of bloated and anemic children, victims of the disease. A laboratory was operated where persons who desired could be examined, but how many visitors to the Exposition or natives of San Francisco proved to be infected was never published. The attendance was exceptional and the exhibit was awarded a Grand Prize, but the experiment was never repeated.

? N.Y. Fair

The only kind of publicity acceptable to Rose was that given spontaneously by the authorities with whom the IHC was co-operating, and in this he desired only facts and not expressions of gratitude. He was pleased, therefore, to hear from a member of his English Advisory Committee, Dr. A.G. Bagshawe, who was the Director of the Tropical Disease Bureau in London, that he had decided to create a special department in the Tropical Diseases Bulletin for recording the hookworm work of the IHC. The Bulletin was a highly regarded and widely distributed journal, and in Rose's words, "would give the work desired publicity."

The Department of Surveys and Exhibits was continued, however, and did some very useful things such as producing educative films on hookworm and malaria, compiling memoranda on various aspects of disease and its prevention, and acting as a clearing-house for public health information. As time went on and the expanding IHC built up the record of its own observations and experiences, the Department gradually faded away and was dropped in 1921. After the IHD began to issue the collected papers of its staff in annual volumes in 1924, and the RF had created new divisions in other fields of science and humanistic studies, a combined office of information and publication was established for the service of the Foundation's staff.)

As for field staff, Mr. Rose was still in comfortable circumstances at the end of 1914 in spite of the rapid multiplication of his commitments. He counted on British doctors to direct the work in the colonies; he had taken

three doctors from the RSC<sup>\*</sup> with the promise of two more, and had picked up three from other sources,<sup>\*\*</sup> making eight Americans in all available for foreign service. On the debit side he had accepted invitations from six British colonies and Egypt, and four Central American countries; in addition he had three colonial projects and the last Central American country in the offing. On August 4, 1914, however, England declared war on Germany and immediately all the younger doctors were drained from the colonies. Work in Ceylon was suspended; Egypt cut down her budget drastically; and the work in the West Indies was left in the hands of older men, long-established colonials who were adapted to the comfortable existence of a peaceful tropical isle, and who had no desire to wage the vigorous fight against hookworm disease which was demanded. Mr. Rose rushed reinforcements to the critical

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\* Covington, Jacobs, Kibler, Rowan, Washburn

\*\* Carter Jr., Hackett, Molloy, Schapiro (appointed to replace Carter, resigned)

points, and, since he was now too busy to be beating the bushes, turned over the recruitment of new men mainly to Ferrell.

This, as I have said, was not easy in 1914. In the first place the salaries offered were not large - \$200 to \$250 a month - though they were double those of the RSC. Mr. Rose was a small salary man, perhaps from his long connection with teachers in the South, and he did not bribe young men to enter the service. Qualifications, on the other hand, had to be high: a sound education; the power of adjustment to novel situations; the ability to be happy in the most trying physical and social environments; patience in dealing with ignorance and the ingenuity to work without facilities; fellow-feeling for humanity and interest in its well-being. No body of such men existed, and it was the exceptional individual, sometimes the crank, who responded to such bait, since the Foundation lacked the prestige which

afterwards tipped the balance for many hesitant candidates, nor did it in the beginning guarantee tenure or a fixed system of promotion. "What motive," commented Dr. K.E. Miller of the RSC, "would induce a young medical man to spend his time and energies in that way? Certainly not the money..." It had to be some unusual impulsion; in later years when specialization in public health lost most of its hazardous quality, it seemed to me that there were not so many eccentrics on the staff.

Mr. Rose was much disturbed when he looked into the future. A major problem would soon confront the IHC in the lack of competent personnel, on which its success absolutely depended. On his return from the British West Indies in December, 1913, he had begun to take measures against the time, not far off he thought, when he should need a considerably greater number of well-trained field directors than were likely to exist in the whole United States. It occurred to him also

that he would have to train doctors in all the countries which the IHC expected to assist, so that they could continue the work indefinitely and man the "permanent agencies for the promotion of public sanitation and the spread of the knowledge of scientific medicine" which it was his duty to create.

He asked the GEB to explore the way to increase the number and competence of practical health officers, but a survey of the universities revealed that there were no adequate facilities in the U.S. for teaching public health. This difficulty did not seem insoluble to Rose, who produced a plan for creating one or more schools of public health in connection with selected universities, a plan which was now being elaborated by a committee of the RF composed of Dr. Welch and Mr. Rose. In the meantime, he sent Howard to Trinidad in 1915 to set up a training center where the recruits could at least learn the intensive method of hookworm

control under its originator; for a full course in the science and application of general public health procedures, they would have to wait a couple of years or more.

Two pieces of unfinished business which had originated on his recent voyage required immediate attention: the first was the threatened yellow fever quarantine in the Far East, and the other, the investigation of the anemia in the Malay States. The person to see about yellow fever was Gen. Wm.C. Gorgas, who had cleared Havana of the disease in five months in 1901 and had then been responsible for the sanitation of the Panama Canal Zone from 1904 to 1913, which had permitted the construction of the Canal. He was one of the original members of the IHC, and in January, 1914, became Surgeon General of the U.S. Army. Rose and Gorgas had their momentous conversation on July 14, a few days after Rose's return from the Far East, and this may be considered to mark the inception of the largest project which the RF ever undertook.

The yellow fever program was actively carried on for 34 years and 76 RF staff members were associated with it at one time or another; it cost almost \$14 million,<sup>\*</sup> three times as much as was spent on any other single disease or objective.

Mr. Rose told General Gorgas of the concern expressed on every hand in the Far East lest the opening of the Panama Canal might involve the introduction of yellow fever into the Orient by ships routed through an infected area. As a matter of fact, the apprehension had dated from the time the U.S. had begun its construction. Sir Patrick Manson, delivering the Lane Lectures in San Francisco in 1905 and referring to the recent epidemic of plague on the Pacific Coast, had called attention then to the dangers which might arise as a result of the opening of the Canal. An outbreak of yellow fever in Asia would be a world disaster of appalling magnitude. "Do not reciprocate," he said, "her gifts to you of cholera and plague by a return gift in the form of yellow fever."<sup>\*\*</sup>

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\*\* Personal letter from W.A. Sawyer, October 19, 1950

(inspired)  
(sparked)

To Gorgas this pressure on the West, activated by the Canal, to do something about yellow fever which was forever threatening the world was nothing less than fortunate. His experience had been that the disease could not withstand a well-directed attack. The "Stegomyia" mosquito<sup>\*\*</sup>, which transmitted it, was extraordinarily accessible and vulnerable, breeding only in household water containers. Epidemic yellow fever was a blaze that rapidly consumed itself except in large seaports where births and immigration constantly supplied new fuel. Outside of the tropics, in favorable summers, it had often spread up coasts and rivers for thousands of miles frightening half the world, but like grass fire it was self-limited and seasonable, infallibly extinguished by exhaustion of consumable material and the approach of winter. He had said in 1909 that yellow fever could be eradicated in a generation, and that future generations would come to "look on the yellow fever parasites as we do on the three-toed horse - as an

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<sup>\*\*</sup> The scientific name was later changed to Aedes aegypti, but "Stegomyia" it has remained till this day to the lay population of the hemisphere.

animal that existed in the past, without any possibility of reappearing on the earth at any future time." "The Commissions," said Gorgas,\* "could not undertake a better piece of work than this. Here is a disease that has commanded an unusual amount of attention; one in which all tropical and semi-tropical countries are keenly interested. Its eradication would command the attention and gratitude of the world - and the thing can be done!"

The three men who had had the most experience in the behavior of yellow fever and in its prevention were very well known to Rose and he had great confidence in their judgment. Besides Gorgas, who was on his Commission, they were Henry Rose Carter, wise, cautious and imaginative, the most distinguished epidemiologist of the USPHS, and Joseph H. White, canny and practical, who had been loaned to his staff to make the visits to Central America. It was Carter's shrewd observations during an epidemic in Mississippi in 1898

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\* RE Annual Report, 1922, p.104

that had furnished the first solid support to the theory of mosquito transmission; he had been Quarantine Officer in Havana during Gorgas's campaign, and had accompanied him to Panama as director of hospitals and quarantine.

White had stamped out the New Orleans outbreak of yellow fever in 1905, the last ever to occur in the U.S. Rose called the three men into consultation and Carter and White agreed unhesitatingly with Gorgas. Carter thought the British had magnified the danger to the Far East - the risk was very small over that great distance; India was half-way round the world from Panama<sup>\*</sup> - yet the time was opportune, for the method had been tried out with complete success by Carlos Chagas in Rio de Janeiro and by Liceaga in Vera Cruz, as well as by Gorgas and White. The group was unanimous in urging Rose to undertake the job on a hemispheric scale. Once again the idea of eradication had seized the imagination of experienced and daring men.

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\* Africa was much nearer, where yellow fever had been recognized by the British since 1778.

It was a very serious decision for Rose to make. Yellow fever eradication was in high contrast to the anticipated role of the IHC when it was established, which envisaged long-term pressure on governments negligent of rural health, but there was the plasticity of young tissue in the IHC, with no molds to break or obstructing orthodoxies. Rose put the consensus of the group into a memorandum to the Commission, later condensed in his annual report as follows:<sup>\*</sup>

"Sanitarians hold that the endemic foci (of yellow fever) are the seed-beds of infection; and 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 eradication of yellow fever reduces itself to 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 de Janeiro, has demonstrated that the

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\* Annual Report, RF, 1915, p.71

"disease can be exterminated in such endemic centers and has given ground for the belief that its complete eradication is a feasible undertaking." He thought it might take a couple of years. Carter wrote to Rose: <sup>\*</sup>"I think you have rather exaggerated the difficulty of getting rid of yellow fever when you put two years as the time required. We know just what to do; there is no uncertainty in it. Success is a necessity if we eliminate *Stegomyia* (by preventing) their access to clear water in artificial containers."

A meeting of the IHC was held in New York on May 6, 1915, with Mr. Rockefeller Jr. as Chairman and Drs. Flexner and Welch both present and Gorgas, Carter and White to present the case. Elimination of yellow fever from a hemisphere was not only magnificent as an objective, but Americans had a certain responsibility for the Canal and its consequences, and the RF was the only possible instrumentality through which it could be brought about, for the Pan American Sanitary

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\* Carter to Rose, September 2, 1914

Bureau was an intelligence office without authority or funds.

General Gorgas was willing to enter the service of the IHC

for the purpose. After three weeks of reflection the Com-

mission resolved "that the IHC is prepared to give aid in

the eradication of this disease in those areas where the

infection is endemic and where conditions would seem to

invite cooperation for its control." In June of the following

year (1916) a Commission with Gorgas at its head sailed for

the Spanish Main to ferret out the haunts of yellow fever,

the beginning of an unexpectedly long war. It was in the

spirit of the old Crusades - an attempt to eliminate by

expeditionary forces a continual threat from another continent,

but that is a story for another chapter.

Mr. Rose then turned his attention to malaria. He

decided to appoint a commission of experts to visit not only

Malaya but various parts of the Far East to make a study of

the respective roles of hookworm and malaria in the anemia

which he had observed wherever he had been, and to make a just estimate of the importance of hookworm as a disabling disease. There were not too many experts in tropical medicine available in the United States, but the Canal Zone Laboratory and the Bureau of Science in the Philippines had been productive of American investigators since the turn of the century. Rose took an outstanding man from each place: Dr. Samuel T. Darling, who had already made a brilliant name for himself through a number of important discoveries in Panama, and Marshall A. Barber, not only a competent scientist but one of the most ingenious technicians ever developed by a bacteriological laboratory. Mr. Rose apparently had no difficulty in persuading them to leave their positions to undertake this mission. The Government of the FMS was asked to supply a third man, and appointed Dr. H.P. Hacker of the Medical Department. The Uncinariasis Commission to the Orient assembled at Kuala Lumpur on June 2, 1915, and remained in

the Far East for 25 months, reporting findings which considerably changed our concepts of both hookworm disease and malaria. Barber was an unusual man, inventive, single-minded and exceedingly observant, but it is hard to characterize Darling in three adjectives. Impatient, choleric and autocratic on one side - difficult as we say, to get along with - he was at the same time sensitive and imaginative and keenly interested in every sort of phenomenon. In research he was acute and intuitive, greatly swayed by first impressions. He did not besiege the strongholds of the secrets of nature, he entered by a postern door and captured them from within. "A man of talent," someone has said, "arrives at his destination by the hard route, but a man of genius goes to it like a swallow."

While the Darling Commission was thus engaged, Rose, who had found the Far East too enormous and complex to assess by simple observation as he had been able to do in the

British West Indies, arranged with the Yale Medical School in Changsha, China, to investigate the hookworm problem in Hunan.

One other thing which Rose had on his mind he put at once into execution. Ross and Malcolm Watson had convinced him that malaria could be attacked through the mosquito, under very difficult conditions of tropical jungle and heavy rainfall. It must have struck Rose that mosquito control would be much easier and cheaper in a village environment of the southern U.S. He was anxious to find out how effective the method would be and how much it would cost and he arranged for two experiments to be carried out during the summer of 1915. They were designed to compare the cost and effectiveness of quinine suppression and cure, which Dr. Bass and Dr. Leathers undertook to test for him in Mississippi, with mosquito control by minor drainage and screening in small towns in Arkansas in cooperation with

engineers of the USPHS. The PHS had become interested in malaria control because of the success in Panama, and had persuaded Congress in 1914 to provide \$16,000 for malaria and typhoid investigations, the first appropriation ever made for such a purpose in the U.S.

Rose had now three of the most important diseases which afflict mankind on his agenda, all of which were considered by experts to be eradicable on one or another scale. Yellow fever was supposed to present the simplest problem, owing to its restricted endemic area and the domesticity of its mosquito vector which was so vulnerable to attack. It was a magnificent gamble, almost, it seemed, a sure thing. Hookworm involved no other technique than the safe disposal of human excreta, a matter of ordinary comfort and decency, which a minimum of social education and advancement would ensure. It was admittedly a late-flowering project but without inherent mysteries or unforeseen difficulties. Malaria

presented all the unknowns. Recognized from the earliest times as perhaps the greatest enemy of man's comfort and welfare, it had never been successfully overcome. Mr. Rose was making contact by reconnaissance, testing out the power of the enemy. In the end, the order of these diseases in degree of difficulty was reversed: malaria has been made to disappear from many countries, even in the tropics; hookworm still remains, even in the United States, while we now know that yellow fever will never be eradicated from either the New World or the Old. But everyone is agreed that forty years ago when epidemiology was an infant and the knowledge of scientific medicine had deserved the scorn of Mr. Gates, Rose, a layman, made the choice of three approaches to the well-being of mankind, the wisdom of which no one has ever questioned.

Mr. Rose was an unusually small and slender man, modest to the point of anonymity, with a head which seemed slightly

large for his body. He had an equable manner, hardly ever appearing to be either irritated or jubilant. Previously unknown except to a small circle of Southern teachers, he had suddenly come into the possession of great power. Like some magician out of the Arabian Nights he could summon genii and set them to doing great tasks which concerned the safety and well-being of enormous segments of the world's population. He had this power not only by virtue of the great wealth placed at his disposition, but also because of clarity of mind and statement, a faculty for logical analysis and convincing presentation, an ability to get things done at once. As he sat behind his big desk at the end of 1915 starting to write his report to the Foundation, it is hard to believe there was not exultation in his heart over many promising things begun, but it did not appear in his dry report: "During the year just ended, the work for the control of hookworm disease has been extended and certain new lines of activity have been undertaken."

against hookworm throughout the South, and asked Freeman if he would be his assistant. Freeman felt that typhoid fever was a more important problem than hookworm in Va., causing some fifty deaths annually per 100,000 people, but the solution was much the same, which as Freeman saw it, was the improvement of rural sanitation through permanent local health services. He became Asst. State Commissioner of Health for Va. the next year and put himself wholeheartedly behind Mr. Rose's great scheme when that ripened into action. He directed the hookworm campaign in Va. for the full five years of the IHC's existence, but with his eye turned more and more on the long-term objective: the creation of permanent health machinery for rural people. When the Commission became international in scope and the campaign in the South was brought rather abruptly to a close, Freeman, somewhat disgruntled, joined the USPHS and was promptly invited by the State of Ohio to try to put his ambitious ideas into practice. Here he (had no assistance  
(worked without benefit of hookworm  
(or private philanthropy

from the hookworm which had furnished such a potent stimulus to community action in the South, nor was he aided by outside philanthropic funds, but by dint of a vigorous personality and sound conviction (common sense) he had organized by 1920 as many full-time county health units in Ohio as had previously existed in the United States. As a result he was appointed lecturer, then professor of public health administration in the young School of Hygiene of Johns Hopkins University and later became its Dean, as Bass had become Dean at Tulane (1922).

Fashioning the I.H.D.

## I. Wickliffe Rose

The conduct and the course of the IHC of the RF during the 38 years of its career was shaped by four successive directors, each a leader of character and ability who impressed his own peculiar design upon the adaptable enterprise without materially changing its nature or its ends. Throughout its rapid growth and continuous evolution it also underwent a number of self-examinations, appraisals from without, reorganizations and changes of name. Beginning as an ad hoc Commission created to extend the campaign to eradicate hookworm disease around the tropic world, it soon took advantage of a mandate left open-ended by intention, to tackle two other major scourges of mankind, malaria and yellow fever, which extended its commitment almost indefinitely. Mr. Rose, the first director, felt under these circumstances that the word "Commission" no longer described its proper character and the name was changed to "Board" to connote greater stability and permanence. Finally, when the parent organization itself became concerned in other major fields of human interest besides health, the "Board" became the "International Health Division" of the expanded RF, in the general reorganization of 1927.

Through all these changes and transitions, the IHC remained faithful to the principles which Mr. Rose had laid down from the very beginning. Few in number but sweeping in scope and adaptability, they established a pattern of conduct which proved successful under the most diverse social, economic and political circumstances—among primitive folk and peoples of culture; for tropical diseases and the more subtle problems of health in temperate climates. These principles had been largely derived from Rose's previous experience with philanthropic educational funds and agencies in our South at the turn of the century, while he was engaged in establishing satisfactory working relationships with sovereign States in an atmosphere of exaggerated sensitivity and pride. He now translated these principles into rules of action which his logical mind and strategic sense gave him reason to believe would be suited

to the international environment, of which however he had no first-hand experience.

Reduced to their essence, these rules were based on the philosophy that public health is an exclusive function of government, which no private organization could take over if it would, and one which it should not assume if it could. All work of combatting disease, therefore, though implanted by the IHC, must be at the invitation of government and carried out by officially constituted agencies of the health department, and always in new fields in which little or nothing was being done. Thus the project would have the pioneering features of an experiment or demonstration, carried out on a restricted scale and for a limited period; the IHC would undertake no country-wide activity and thus assume what it considered to be an obligation of government. As a result, from the point of view of the Commission, the success of any cooperative activity would be judged not by its local effect on death-rates and the prevalence of disease, but by the conversion of the local authorities to a new idea, leading to its general and continued application. The IHC never felt that a demonstration was successful unless its aid ceased to be needed within a reasonable time. Thus, as Leathers once observed, Rose worked through existing public health agencies on the disease, and through the diseases on the agencies.

Government was expected to contribute even to the cost of the demonstration, as earnest of a genuine interest in the undertaking, and to try to secure the comprehension and participation of the people in an activity of which they were the direct beneficiaries. This principle of self-help had always been the cornerstone of every Rockefeller enterprise. For this reason in part, Mr. Rose always sought to build on strength, not weakness; "make the peaks higher," he used to say. (1) The two main principles, then, were to work through a genuinely interested government agency, and to encourage, and make a condition of, self-help.

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(1) Fosdick, p. 100.

There were two corollaries which proved important to success although they could not always be strictly observed: the IHC should try not to become involved in emergency relief or local philanthropic causes however worthy; and it should maintain an anonymity in the whole undertaking as complete as it was possible to preserve, throwing all ~~possible~~ credit to the national and local authorities. It was for this reason that Mr. Rose's printed annual reports were so dry and meager, sticking, as he explained, (2) to the "facts susceptible of accurate measurement and record, leaving the vaguer and more indirect benefits to be inferred." He was equally ~~averse~~ to prophecy, and the thin reports of the early years were not padded with discussions of what the Board proposed to do in the future. "We are safe" he used to say, "in talking about the past." Aside then from the scientific papers resulting from research, publicity was left entirely to the local partner in the enterprise, who was encouraged to make the most of it in order to foster local confidence and support. This was difficult at times for some of the staff to swallow but Rose himself seemed completely selfless and had, as Fosdick put it, "a passion for anonymity."

Both of these rules worked great benefit to the Commission's program and to the countries in which it was engaged, but there were times when they had to be disregarded. For example, almost as soon as it was organized, the IHC found itself unavoidably involved in an emergency campaign to halt the spread of tuberculosis in France during World War I. This was an enterprise from which it derived valuable experience as to what was feasible and not feasible to attempt under such circumstances, but which conferred small permanent benefit upon the national health organization of France, and added little to our knowledge of tuberculosis. Its most useful effect was to highlight the vital role of the visiteuse d'hygiene in the health education of the people; this was the first entry of the IHC into public health nursing, a field which it began assiduously to cultivate.

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(2) Ann. Report 1916, p. 17.

As for the principle of anonymity, this was defeated at times by the prestige of the RF, <sup>often successful drive to back</sup> itself and its carefulness in backing the best people. This sometimes led the recipients of aid to publicize the connection both as an evidence of virtue and a protection from the hazards of local politics.

Although Mr. Rose had drawn up his code before he had had any practical experience in the international field, neither he nor subsequent directors found any reason to revise it. It always led the IHB into satisfactory relations with governments of every political and social complexion. Mr. Rose, in laying down these rules, was concerned only with the strategic approach and not with the technical aspects of the work, the nature of which would be governed of course by local needs and conditions. His preparation in the philosophy of education had undoubtedly fitted him to conduct this phase of the general plan, but his three successors were all <sup>a circumstance consistent</sup> doctors of medicine, in line with the growing complexity of the medical problems raised by the expanding program. All introduced significant changes in the pattern of activity, differing from each other in special interests and point of view almost as much as they did from Mr. Rose. Many of these changes were radical enough to seem almost subversive to some of the old guard who were very loyal to Mr. Rose, but looking back, we can see that there was actually no metamorphosis amounting to a sharp break with traditional policy; there was at most a shifting of emphasis from one aspect to another of the master plan. The mould in which Mr. Rose cast the IHC remained without fundamental alteration in spirit or aim until the end.

His rules of conduct, once established and put to the test, influenced the other divisions of the Foundation when they came into being. Men new to the field of philanthropic aid were occasionally surprised at the self-imposed restrictions, since there is an instinctive inclination to go where necessity is greatest and to shore up the weakest points rather than to go only where the need is felt and aid requested, and then to build on the

strongest institutions. This approach had an effect also upon the program and methods of the Health Organization of the League of Nations when it came upon the scene in 1920, and has been a sound guide to the current practices of WHO and the TA agencies, which have accepted the ideal even though political pressures have often imposed compromises.

Changes and transitions under the compulsion of personalities and events are of major importance in the history of an institution and reveal the evolution of its character more than any chronicle of its accomplishments. They began under Mr. Rose himself. No sooner was the IHC fairly settled in Washington and had begun to develop a program of hookworm control in the B.W.I. when the Foundation decided to move the offices to New York for administrative reasons and, soon after, to change its name from International Health Commission to International Health Board. There were good reasons for both actions. The RF had just occupied offices on the 27th floor at 61 Broadway in January, 1915, with room for its two dependencies, the IHC and the China Medical Board. There was no further need for the IHC to be located in Washington once the RSC was dissolved. It was a nuisance for the trustees to attend meetings there, and Mr. Rose's first idea of utilizing the foreign diplomats to facilitate the entry of the IHC into various countries had proved unnecessary. Foreign ambassadors had difficulty in comprehending the simple and ingenuous designs of the Foundation. The direct approach to governments was more successful. Nor did Mr. Rose like to use the good offices of our own State Department and the diplomatic corps abroad, though they were freely offered and it was sometimes difficult to refuse them. It seemed wiser to keep the IHC, in the prosecution of its foreign program, entirely dissociated from the government of the U.S. The London "Times" once commented editorially (3) that "the U.S. has no more effective ambassadors than the representatives of the RF who, year after year, afford their guidance and help in the great

fight against disease ...It has come to occupy a position of universal trust." The move to New York was accomplished on May 1, 1915.

As for the change of name from "Commission" to "Board", this was only logical. With the branching out into yellow fever and malaria, the IHC already had despatched Commissions of its own to South America and the Orient in order to carry out surveys and investigations. "Board" had a connotation of permanence, unlike a "Commission" which goes out of existence when its objective is accomplished. A set of rules was therefore drawn up and the IHC became the International Health Board on June 8, 1916. (May 267)

However the move from Washington and the renaming of the Commission had more significance in the light of future events, than that of a simple change of location and of name. Mr. Rose had enjoyed a certain informality and independence in Washington of which he was jealous. His office was so simple as to need almost no organization. It was more like a family, composed of nine people all told. Dr. Ferrell, his associate, was busy closing out the work of the RSC, of which Mr. Rose was still nominally director in 1914. Dr. Ernst C. Meyer, who was office manager in his spare time, had the impressive title of Director of Surveys and Exhibits, <sup>as such</sup> and was superintending a German craftsman employed to make glass models of hookworms for the San Francisco Panama-Pacific Exposition, who was continually exceeding his allowance. Mr. Rose's factotum, Wallace Lund, arranged his schedule of appointments, took his dictation, typed his letters and got a procession of new staff members off to the Caribbean and the Orient. Mr. Gilliam did the bookkeeping, Garvey ran errands, there were three or four secretaries and typists, and that was all.

The move to N.Y. was the beginning of bureaucracy for Mr. Rose, and he was caught in its inescapable web before he realized it, as the scale of operations quickly expanded to world wide dimensions under his vigorous

impulsion. He was given an Executive Secretary, Miss Florence M. Read, in 1920 to take some of the burden off his shoulders. His modest office facilities were submerged in those of the Foundation and a Comptroller was appointed to keep the books and check the expenditures. This watchdog was Robert Horner Kirk, of living memory to all who can look back upon that exciting period. He was a Scotsman born in Minnesota, of such uncompromising integrity and unswerving loyalty to his duty that to a youthful and not too thoroughly disciplined staff, facing unforeseen problems in far places, he seemed always to be leaning backward a little; and yet was a human being of such heart and sympathetic understanding of their predicaments that, dreaded in anticipation, he rapidly won their affectionate esteem. It was always Kirk who took new staff members to lunch at the English Chop House and indoctrinated them with the spirit of the RF--- usually the only briefing they ever received. <sup>Mr. Rose</sup> ~~He~~ readily acquiesced in the change of offices and procedures; he preferred Washington and had bought a house there, but he could always thrust aside personal considerations. His real fear was for the threatened individuality and relative independence of the IHC which was not a separate body but was the Executive Committee of the Foundation with a few invited consultants. For a while, the IHC had been the only dependant of the Foundation and hookworm control its only activity, so it was natural for the Foundation to take a direct interest in it and handle it through one of its standing committees. But with the rapid expansion and diversification of his program, Mr. Rose felt the need of a Board of his own, composed of members chosen for that purpose with whom he could consult and debate before going to the trustees for approval. This he now secured, the first of a long series of manoeuvres to conserve a certain independence of action which the IHC had enjoyed, but which now began to seem inadvisable to officers of the Foundation, and to Mr. Vincent in particular, who became President in 1917. It was conceded

that the judgment of a lay body like the trustees lacked validity in technical and professional questions arising in scientific medicine and public health, but the degree of autonomy to be permitted a subsidiary Board in the expenditure of trust funds running into millions of dollars annually was a problem never resolved to the complete satisfaction of everybody.

The old eleven-man Commission became the first Board without change, and consisted of seven trustees and four additional members. While only three of the Board were physicians---Simon Flexner, William H. Welch and William C. Gorgas---their uncontested leadership in the United States in medical research, medical education and communicable disease control gave their opinions almost decisive weight with the trustees. By 1922, Mr. Rose's last year as director, the complexion of the Board had become distinctly more medical, with six outstanding figures in medicine and public health as members. It is an indication of Rose's clear thinking and cogency of presentation that his matured proposals almost invariably won their unanimous support. In addition, Mr. Rose himself was a trustee and a member of the Executive Committee (which passed on his proposals), an anomalous situation which was corrected after his retirement by an amendment to the by-laws of the RF stipulating that no officer save the President could be eligible to serve as a trustee. Mr. Rose therefore had a great <sup>influence</sup> leverage with his Board and with the trustees, a situation however which he owed to his own qualities of character and judgment.

*at this stage impossible*

Rose welcomed debate and used to prepare in particular for Dr. Simon Flexner who was the keenest critic. It was not his method to send up trial balloons, and his proposals were all thoroughly worked out, but he confessed (to Miss Read) that occasionally he would include one very doubtful project without recommendation for the Board to discuss and turn down, to give the members a feeling of responsibility and maintain

their morale. He welcomed discussion and criticism of his proposals when they were ready, and also what he called "germinal" ideas, but it is hardly true, as has been said, that he sought much counsel in developing them. Naturally he received advice from an imposing array of consultants but he reserved judgment and could not be pressed into making rapid decisions. Dr. Howard remarked dryly that Mr. Rose always considered advice carefully and then explained why he did not take it. Abraham Flexner says that his friends recognized this independence of thought as an outstanding characteristic, and that he even got the reputation of being a difficult person to talk to. Buttrick once said to Flexner, "it's no use talking to Rose, he doesn't listen." (4) He listened, but he followed his own judgment. In any event, he preferred to read a statement of ideas rather than listen to it. Set down on paper, thoughts were more orderly, concise and clear, even his own, and his associates in the next office were often asked to put what they wished to say in writing. Rose was a great reader, and at the end of the day's work turned to his accumulated material rather than to conversation, and disliked interruption as he absorbed and reconstructed at the same time---the way of all digestive processes. A philosopher and teacher, without any technical knowledge of medicine or public health, he prepared himself by reading in special fields, aided by an exceptional power of comprehension. He read widely outside of these fields also, and possessed a broad culture. In speaking and writing he had a feeling for the precise word, and wrote an occasional poem.

Mr. Rose was not an orator; he made no gestures and he did not raise his voice. He never became heated in argument and though he could be indignant over great issues, he was rarely irritated over small ones. "If he was ever angry," Fosdick said, "we never saw it." He had a quiet sense of humor and was tactful, but never equivocal or unnecessarily diplomatic;

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(4) A. Flexner - Personal communication - Source material p. 62.

he spoke firmly and incisively and said what he meant. Tenscious of principle, he was never dogmatic or aggressive, and while clear in his own mind about what he wanted to do, he could adjust to other points of view and withdraw gracefully, though he did not often have to do so. He said that when he embarked on any course, he liked to have a return ticket.

Rose was small, slight of build and unpretending in manner, but in conferences and board meetings he was bold and convincing, and formidable in debate. "I doubt," said Alan Gregg, "if the Foundation ever had programs of work to be done which were more sound, single-minded, carefully prepared or presented with more startling simplicity." No one could go to the heart of a matter like Rose; he brushed off irrelevancies and never got cluttered up with details. He could not be stampeded by enthusiasm or emotion and his creative imagination was censored by a cool and logical intelligence. He distrusted erratic people and those whose fertile minds carried them beyond what he considered to be the proved and the feasible. Half-baked ideas could not stand up to his shrewd analysis and hard-headed judgment. He did a good deal of thinking between conferences which was not common practice among busy board members and trustees; it was one reason why his carefully matured ideas usually prevailed. He seemed never to impose his opinion; his opinion imposed itself. Norma Thompson, Secretary of the RF, said she did not know how anybody could be so right all the time as Wickliffe Rose. Dr. Thorvald Madsen of the League of Nations once told of a meeting at which Rose was present—a small, unassuming man he did not know. There had been a long, inconclusive discussion and Mr. Rose was asked for his opinion. This he gave very clearly, definitely and to the point, and no one had anything further to say.

When it came however to managing the bureaucratic organization which had so quickly outgrown the little offices in Washington, Mr. Rose was not in his element. Organizing ability he had, and qualities of leadership to

a high degree; he could come to clean decisions and he had the courage and energy to put them into immediate execution, nor was he ever dismayed at the scale of unexpectedly ballooning operations. But he had little faculty for management; his forte was promotion and strategy. His eye was on the goal and he left tactics and intervening obstacles to specialists, though he was always enormously interested in the way things were working.

He was apt to be intolerant of administrative machinery if it got in his way and he would cut corners sharply to expedite matters of importance. His three associates, Drs. Ferrell, Heiser and Howard, were Regional Directors and had separate geographic jurisdictions, but Mr. Rose often used their peculiar talents wherever these seemed to be called for and, ignoring protocol, sent them into each other's territories without making certain of the right of way. When Heiser was home from the Far East, Rose found it convenient to utilize his diplomatic experience and knowledge of Spanish in Central America and some of the Caribbean islands, so that it became difficult to disentangle his sphere of influence from that of Howard. On the other hand Mr. Rose had an admiration for Howard's technique of hookworm control and sent him to Ceylon, which he regarded as the key to the Orient, to see that the work was properly begun. Until the Commission became a Board, Ferrell had the title of Assistant Director General, but there was no real hierarchy. He was in charge of the office when Mr. Rose was away on extended trips; no one but Rose ever ran (directed) the IHB. There was thus some friction and confusion in the early years, which however was not of great importance. It was due to a mixing of functional and geographic assignments by Mr. Rose in his pressing anxiety to utilize his small staff to the best advantage. There was even more necessity under Mr. Rose's successors to maintain a personnel in part functional and in part geographical, as the IHD turned more and more to field and laboratory research, but the administrators were no longer the same persons as the

technicians, and overlapping of authority and responsibility was avoided.

Mr. Rose's personality was the force which knitted his organization together and made it effective. With his colleagues he was completely informal; his employment of authority was unobtrusive and he gained his way by the force of suggestion and the power of logic. With his office staff his relations were detached and impersonal. He never seemed to take any interest in their private affairs, but he was correct and friendly, and could on occasion be very cordial and sympathetic. As for his young doctors in the field, he was chary of praise and held salaries and expenses low---perhaps too low, a residual no doubt of his previous dealings with Southern teachers and country doctors. His own tastes were simple and economical, and he abhorred waste or lavishness at any level, from a short trip on official business to the execution of a large program. He thought that the essentials of ~~most~~ projects need not cost more than a quarter of the estimated expenditure; but he was never picayune.\* There are no records of his interviews and conversations with staff members---he made no notes, as Vincent and Buttrick did. His letters however were stimulating, helpful and greatly appreciated, and staff morale was always towering. He understood their problems and difficulties. Reading between the lines of a report from a distant post, he remarked to Miss Read, "Gregg is lonely," and sent him one of his encouraging letters. His tendency---perhaps his fault---was to be overgenerous in his judgment of men and their abilities. They sometimes let him down, but most of them did their best to come up to his expectations.

Mr. Rose gradually found that he could turn over much of the administrative detail to Florence Reed and the recruitment of staff to Dr. Ferrell who was now Director for the U.S. Finding personnel was no small task since the staff mushroomed in the first five years to 76 doctors, engineers and nurses. The U.S. had entered the war and Ferrell was soon scraping

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\*Unpublished memo. by A. Gregg.

the barrel for suitable candidates. Their training was inadequate, since there were no schools of public health until 1918, and Ferrell did what he could to prepare them for foreign service by sending them for a few weeks to one of the new county health services in the South, used as a training station. Then they were shipped over the horizon to the places which needed them most, often with so little notice that they had virtually no briefing on the country to which they were assigned and no contact with their Regional Director, whom they might not see for months. Nevertheless, while there were some misfits who had to be rapidly eliminated, the result on the whole was surprisingly good---a tribute to Mr. Rose's insistence on character and bent as more important than training and experience. Of the 30 young doctors on the staff in 1918, who had had no special training but were captured <sup>when</sup> ~~as often as possible~~ as they emerged from medical school and before they could form an attachment to clinical practice, no less than a score remained for most of their active lives in the foreign service of the IHD and attained positions of influence and esteem at home and abroad.\*

In spite of all effort however, recruitment of staff never caught up in Mr. Rose's time with the invitations which came flooding in from interested governments all over the world. Starting in 1914 with trial ventures in hookworm control in British Guiana and a half dozen inconspicuous islands of the Caribbean, the novel crusade had spread within three years to 22 foreign states and countries as far apart as Brazil, Egypt, Ceylon, Siam, Fiji and Australia. By 1920, Mr. Rose could report (5) that the Board was "pushing the fight against hookworm disease, as a means of creating popular interest in public health, under 42 governments," and in his last year, 1923, the number of directly cooperating states reached 63, and the IHB was influencing others through its support of the Health

\*Bailey, Barnes, M. E., Connor, Covington, Darling, Grant, Gunn, Hackett, Hill, Hydrick, Jacobs, Kendrick, S. M., Lambert, Molloy, Paul, Payne, Schapiro, Smillie, Strode, Washburn.  
(5) R.F. Annual Report, 1920.

you say on  
p. 8 that 1922  
was his last  
year

Organization of the League of Nations. By this time malaria control through antimosquito measures <sup>was emerging from</sup> ~~had passed~~ the experimental stage and was being attempted in 10 of the United States and 7 foreign countries; the Board was now ready to tackle yellow fever wherever it occurred in the Western Hemisphere, and had sent a Commission to study its prevalence in Africa. One hundred eighty three full-time rural health services, the goal of all this activity, were being <sup>aided</sup> supported in the U.S., Canada and Brazil, with analogous projects under way in Australia, China, Fiji, the Philippine Is. and Jamaica. Other opportunities had presented themselves, particularly in South America, but Mr. Rose had been unable to take advantage of them for lack of available personnel.

But the control of communicable diseases leading to permanent health services <sup>was</sup> ~~was~~ only part---and indeed the less important part---of the original plan which the trustees had in mind in creating the IHC and which Mr. Rose, as a trustee, had himself helped to draw up. The trustees, after agreeing that the work should be educational and humanitarian, decided that it should take the form of "the advancement of public health through medical research and education, including (the emphasis is mine) the demonstration of known methods of treating and preventing disease." (6) Medical research and education were evidently the ultimate goals, phrased by Mr. Gates as "the spread of the knowledge of scientific medicine." This was known as the "lighthouse" principle, a poor analogy which was soon dropped and replaced by "the advancement of knowledge." There was thus an immediate object, namely the initiation of measures for the eradication of hookworm disease in foreign countries ~~leading to the strengthening of state and local health agencies~~, and <sup>a</sup> the more general aim, ~~of~~ the promotion of health by the investigation of disease and the improvement of medical education; matters which Mr. Gates had much at heart.

Mr. Rose as we have seen, set himself with great vigor to start the

hookworm work simultaneously over a wide area of the tropical world. It was a field which he knew thoroughly; the projects were susceptible of rapid and indefinite multiplication on a single pattern, producing a humming activity which pleased him immensely; and the work recommended itself by its immediate and visible results. But with regard to the more general aims, Mr. Rose proceeded with unusual deliberation. It was apparent that medical research and the improvement of medical education did not lend themselves to the method of demonstration and continuing support which the IHB was staffed and equipped to carry out. To make medicine more scientific required the development of a body of trained teachers and investigators, which did not then exist, and of all the resources necessary for the cultivation of scientific medicine, teaching staffs are the most difficult to provide. Libraries and laboratories are ~~more~~ problems in finance, but teachers cannot be produced in a hurry, nor is time the only requisite for the creation of a leader. "It goes without saying," wrote Mr. Rose, (7) "that a productive and inspiring scientist cannot be manufactured to order."

Rose's future record was to show that no one could have had a clearer view of the value of scientific research than he; Hegelian in philosophy, he was convinced that science held the only key to order and progress in a rational universe. Nevertheless, he was compelled to tailor his program to fit the ends and capacities of his organization. He was committed to "the demonstration of known methods of treating and preventing disease," an objective which seemed to him incompatible with a research program; therefore, as long as he was Director, all investigation was farmed out through research grants to other institutions, or to special commissions which he created for the purpose. As for the improvement of medical education throughout the world, he delayed action for six years until the Foundation at his suggestion set up a new Division under another director to develop this vast field.

(7) IHC Memorandum No. 7129, May 24, 1916, by WR.

The key to Mr. Rose's decisions in these matters lies, it seems to me, in his clear-cut conception of what could be accomplished with reasonable speed and success by the method of experiment and demonstration. The IHB had three characteristics which determined the nature of its program. It was an operating agency, which meant that it carried out approved projects under the supervision and direction of its own staff, for a particular purpose and in accordance with well-defined time-limits, standards and specifications laid down in advance (8). This distinguished the IHB from all the other Divisions of the Foundation which accomplished their ends by making grants to selected institutions for research or other purposes over which the Foundation could naturally exercise no control.

Secondly, the IHB was international in scope and any action Mr. Rose might take in stimulating medical research and education would have to be in the foreign field. Two Rockefeller-supported institutions which antedated his own by a dozen years, were already grappling with both problems in the U.S.—the RI in medical research and the GEB in medical education. It seems likely that the principal reason for postponing action was, as he said, that "one of the most important next moves in carrying out our program in foreign countries should be in the direction of increasing the number of effective men in medical science in this country (7. l.c.)", a business for which the GEB was equipped and he was not.

Thirdly, Mr. Rose preferred to stick to a single, well-integrated program in which every part bore an organic relationship to the whole. Size and diversification of activity never troubled him but he avoided uncoordinated projects, however urgent or opportune they might appear. When he discovered that research had become necessary to the accomplishment of his main objectives, he set in motion specific investigations of the diseases which he was undertaking to control (a restriction which succeeding directors thought to be

unduly conservative) and similarly, in the field of education, he vigorously promoted graduate schools of public health in order to turn doctors into health workers, but under-graduate medical education was something he was unable to assimilate into his program.

Mr. Rose's attitude toward research is easily understood. There is no doubt that Mr. Rockefeller, in contemplating the potentialities of the Foundation, was thinking in terms of demonstration rather than investigation, and Mr. Rose was only adhering to this concept in choosing to level the inequalities of the world instead of attempting to add to its scientific knowledge. He had intentionally selected diseases which experience had shown could be controlled and possibly even eradicated by well-known, practicable methods whose application lagged far behind the knowledge of the day. The early work indicated that control of hookworm, yellow fever and malaria was possible through very simple measures of elementary sanitation, well within the competence of young doctors and engineers just out of college. What was important was a reasonably efficient local health organization to maintain the work. It was logical therefore to bend all efforts to establish or strengthen state and local health services rather than to become entangled in side issues of investigation for which the actual field staff had not been selected or equipped, and which did not seem to be indispensable to the success of the campaign.

However, almost as soon as an attack was launched upon any of these diseases it encountered unexpected road-blocks of ignorance which revealed how meager our experience had been with communicable disease control by mass methods. Our understanding of hookworm disease, of which Dr. Howard had said "there is probably no other disease, certainly no other parasitic disease, of which our knowledge is so complete (9)," turned out to be riddled with errors and uncertainties. "The fact that after a series of efforts at control in different parts of the globe extending over a period of more than 15 years,"

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(9) Howard, H. H.

Where and what date. This note in its present form adds nothing

the disease had nowhere been eradicated, suggested to Mr. Rose (10) that the work was "being carried out with a lack of scientific information..... indispensable if complete control is to be achieved." Malaria, which Ronald Ross heatedly proposed that we should stop investigating and proceed forthwith to eliminate, became unbelievably protean the more it was studied, assuming almost as many different aspects as there were malarious localities. Yellow fever, about whose total eradication from the Western Hemisphere even the wise and cautious Henry Carter had no reservations, proved the greatest surprise of all, leading Rose's successors into a long-continued and complex research covering 25 years, in which there seemed no point where one could logically stop.

Mr. Rose met these challenges as far as possible by subventions to research institutions to enable them to carry out the investigations necessary to the prosecution of his campaigns. The creation of new knowledge was for schools and institutes, which in 1913 were themselves only feeling their way in what was a relatively new field of medicine in the U.S. One of Mr. Rose's objectives in offering them grants was to stimulate research activities and tie them into the practical programs of public health in the field. "The Board," said Mr. Rose, "has not entered the field of research as such; it is engaged primarily in promoting the more effective use of the knowledge which we have in the control of disease. It does aid in developing schools of hygiene which are expected to add to knowledge, and it contributes directly to research when in need of an answer to questions arising from its practical field work." (10) In this he had the full support of Dr. Simon Flexner, Director of the RI for Medical Research, who even consented to seek the answer to some of the questions himself, although it was not the custom of the Institute to send commissions abroad or to tackle the epidemiologic problems

*Rose  
referred  
by Flexner  
Richard PPH*

(10) RF Ann. Report, 1919, p. 116 (?)  
(10) Annual Report, 1920, p. 126

of communicable disease arising in the course of preventive work in the field. Nevertheless he loaned Dr. Noguchi to Mr. Rose to head a commission for the investigation of an epidemic of yellow fever in Ecuador, and he began a study for the INB of the proper disposal of human excreta in rural areas. (11)¶ At the same time Mr. Rose organized scientific commissions of his own composed of outstanding specialists to investigate various problems and situations which concerned the progress of his work. Within the first two or three years he sent commissions to South America and Africa to find the "seed-beds" of yellow fever and gauge the possibilities of its eradication; he despatched a commission to the Orient to study the question of the relative importance of hookworm and malaria which Malcolm Watson had raised in Malaya; he sent a commission to Brazil to report on medical facilities, health agencies and sanitary conditions in that vast country before he would set up a program there. In spite of Howard's confidence, he was worried about the hookworm campaigns which were always so successful and yet never quite succeeded in eradicating the hookworm. The <sup>available</sup> drugs were either too feeble or too toxic, and while we knew a good deal about what hookworms did in the human body, very little was known about what they did when they disappeared into the ground and hence the sanitary measures were empirical and possibly ill-aimed. He gave ample funds to the new Johns Hopkins School of Public Health which he had inspired, to go into these matters. The school was enabled to send expeditions to the West Indies, Central America and China, and Mr. Rose had the double satisfaction of obtaining much useful information and of developing the function of field research in this new type of institution. He paralleled this procedure south of the equator by creating an Institute of Hygiene in the medical school of the University of São Paulo, Brazil, organized in 1918 by Drs. Samuel T. Darling and Wilson G. Smillie, who were encouraged to investigate hookworm, <sup>a</sup> the major health problem of the

(11) RF Ann. Report, 1916, p. 64.

country. In this way he skilfully integrated his expanding program into a consistent whole.

When however opportunities for investigations arose which seemed to have no practical bearing on disease control, Mr. Rose was not interested, even though it were one of the three diseases with which he was actively engaged. His final word on this was contained in a letter to Dr. Juan Guiteras, one of Walter Reed's original collaborators in the discovery of the transmission of yellow fever by mosquitoes. Dr. Guiteras wrote from Havana in December, 1921, to suggest that the IHB send a commission to Mexico to confirm Noguchi's demonstration of a spirochete as the organism which caused yellow fever. Mr. Rose replied that the RF had always declined to take part in investigations in the field of medical science to "settle undetermined questions." "We are interested," he wrote, "in Dr. Noguchi's work because it grew out of a commission which the Board sent to Guayaquil for the purpose of opening up activities in that community. The primary interest of our Board in yellow fever, however, is in practical measures for its control (and) our experience.....has demonstrated that we are dealing with a disease that yields readily to the control of the *stegomyia* mosquito." This was sent to Mr. Vincent, the President of the Foundation, "for suggestion." He wrote in the margin, "This seems to ~~me~~ admirable. Your separation of the two questions 1) scientific theory and 2) practical control work, answers G. fully. GEV."

In this way Mr. Rose resolved the question of medical research in a way which was acceptable, at the time, to Dr. Flexner and presumably, to Mr. Gates and his colleagues on the Board of Trustees. It produced however some disappointments and frustrations in the field staff, who, conscious of their exceptional opportunities, lamented the complete divorce between practice and investigation.

But the problem of improving medical education was hedged with peculiar difficulties and Mr. Rose moved toward its solution only after much thought

and, for him, unusual hesitation. The need could hardly be overestimated, and the moment was extraordinarily opportune in 1913, as the IHB came upon the scene. Abraham Flexner's report to the Carnegie Foundation on the state of medical education in the U.S. had been published only 3 years before and was having a devastating effect. A large proportion of the medical schools were proprietary, operating on students' fees and offering a short apprenticeship in medicine usually devoid of any scientific basis. Of 155 medical schools in the country, all but 87 were forced by the publicity of the Flexner report to go out of business within a few years. Those that endured were endeavoring to strengthen and multiply their teaching and research laboratories, and the chairs in the medical sciences. Dr. Barker wrote to Mr. Rose that (7) in experimental morphology, physiology, pathology and therapy "lies our main hope for the progress of medicine in the future," and this was evidently going to call for a considerable number of well-trained and productive men in medical science. The China Medical Board had committed itself to the task of providing ~~a~~ faculty for two medical schools in China; the schools of hygiene which the Foundation was planning to establish here and abroad would need men well grounded in medical science; the medical commission to Brazil had recommended "as the first strategic move in an effort to promote scientific medicine in Brazil that we provide men for some of the laboratory chairs in the medical school at São Paulo," and these were only the first steps in the large program ahead.

The initial obstacle, as Mr. Rose saw it, to the "spread of the knowledge of scientific medicine" was that there were no competent persons available to do the spreading. The "most important next move" therefore was to increase the number of effective men in medical science in the U.S., and he offered a tentative plan for doing this, namely, to find out who are the masters in the sciences most necessary to the progress of medicine, increase their

educational influence and productivity by grants for equipment for teaching and research, and surround them with a group of selected young men who might be attracted through fellowships and the prospect of a career to pursue such a course of training even through a long period of time.

It must have occurred to Mr. Rose at this early date that such a method of stimulating progress was applicable not alone to medical science in the U.S., but to all science everywhere, and that what was lacking was only the means and the machinery to put it into effect. Seven years later, in 1923, he resigned from the directorship of the IHB before reaching the retiring age, and with funds provided by John D. Rockefeller, Jr., organized the International Education Board to carry out just such a program for the advancement of every branch of scientific knowledge on a world-wide scale.

In the meantime it was not clear to Mr. Rose what the IHB could do in this situation. It was characteristic of him that, once he had clear ideas in his own mind, he did not hesitate to put them into operation. Now he used the war as an excuse for delay. On the one hand, the whole health movement, now beginning to acquire momentum, depended on the strengthening of medical schools and the reorientation of doctors in scientific and preventive medicine. This was not only because Rose needed medical graduates with a different kind of training for his faculties and staff, and to provide students for his schools, but even more because the quality of medical education had a direct bearing on the task of preventing disease and the cooperation of governments in public health work, <sup>in this</sup> ~~for his~~ success depended in considerable measure on the knowledge and social spirit of the medical profession, and in particular upon the attitude of the local physician. Quite apart, therefore, from its effect on the practice of medicine, a sound basic medical education was organically related to the science and art of public health, and justified major consideration and action.

On the other hand, the field of medical education was vast, unsettled

and unique, complicated by tradition, dissension and doubt. It was not something which Mr. Rose could construct from the ground up, as he was accustomed to do; it was an established and time-honored institution which had to be reformed. The new, scientific approach was still experimental and beset with problems of what should be taught and how. The Johns Hopkins Medical School, ~~the leader~~, under Welch's guidance, ~~in the~~ was just now (1914) embarking on a trial of full-time teachers as a substitute for part-time surgeons and practitioners on its faculty; Welch called it a "profound change" and it was by no means unanimously accepted. Mr. Rose sought an adviser who could orient him in a field in which the consensus of medical opinion, on which he had always relied, was conspicuously lacking.

Dr. Richard M. Pearce, who by arrangement with the University of Pennsylvania began in 1916 to devote a considerable part of his time to Mr. Rose's problems in medical education, was an experimental pathologist. He had graduated and taught at Harvard, studied in Germany, served 5 years as Director of the Bureau of Pathology and Bacteriology of the New York State Department of Public Health and was now Professor of Pathology and Research Medicine at the University of Pennsylvania. He had been an assistant of Simon Flexner, who recommended him to Rose, probably because he was unhappy at Pennsylvania, where a breach had developed between the Old Guard and those who, like Pearce, represented the modern approach, and thought that medical education as it then was, actually unfitted young men to add to or to spread the knowledge of scientific medicine. In Rose's estimation Pearce had the background and the convictions which qualified him perfectly for the responsibilities he now assumed, while to Pearce the job offered an opportunity to obtain a general view of medical education everywhere, and to consider what further adjustments would have to be made in medical teaching to meet the rapidly evolving requirements of public health with which Mr. Rose was particularly concerned. Rose and Pearce usually saw eye to eye, and came

to have a great admiration for each other.

Since Europe was at war, Mr. Rose began by sending Pearce on two trips to South America, in 1916 and 1917, where he visited the medical schools and hospitals of Brazil, Argentina, Paraguay and Uruguay. The result was "an illuminating report on medical education" but no projects except a proposal to establish a Chair of Hygiene in the Medical School at São Paulo, Brazil. Pearce apparently was not ready to make any specific recommendations for developments in medical education, in this area or elsewhere. He was deliberate by nature and, like Rose, distrusted opportunism, believing in thorough preliminary study followed by careful planning and the time-consuming preparation of personnel through fellowships. "Don't let them stampede you" he said to Hackett who was being sent to Brazil to open the public health work in that vast country.

There were good reasons for pausing before committing the IHB to any program in medical education. In the first place, it began to be clear that the IHB policy of small, short-term grants would not achieve the "profound change", short of which Welch believed that little of lasting value could result. The GEB, which was already tackling the problem, had felt the necessity of contributing large sums for buildings and endowment, and within the next few years was to appropriate nearly 100 million dollars to a score of strategically situated medical schools in the U.S. alone. The IHB was essentially an operating, not a grant-making agency, and unfitted to cope with the task of "helping strategically placed medical schools throughout the world to increase their resources and to improve their teaching and research," as Mr. Vincent defined the enterprise. (12) The experience in China, Siam and the Philippines already indicated that where science was rudimental a very large investment would be required, which could hardly pay off in less than 20 to 30 years, whereas Mr. Rose's basic strategy was grounded on quick results. Finally, Mr. Rose, as a layman, was at a serious

(12) President's Review, 1920.

disadvantage in attempting to influence physicians in such a controversial field. It is not surprising therefore that in the end the conclusion was reached that the RF should set up a separate division to deal with medical education in fields outside of the U.S. and China, <sup>to</sup> which were ~~adequately~~ <sup>well restricted</sup> covered by the GEB and the CMB. This was done at the meeting of December 3, 1919 and Dr. Pearce was made Director of the new Division. The minutes read that "plans for the development of an expanded program in medical education... were held in abeyance during the period of the war. There now seems no necessity for further delay in developing (a) field which, (with) its assistance to other programs of the Foundation, forms so important a division that it has for some time seemed to the officers desirable to organize formally a Division of Medical Education."

This brief explanation gives little hint of the importance of the issue to the IHB or of the complicating factors which had led to a postponement of action for 6 years in a field which had seemed urgent to the trustees and was particularly dear to Mr. Gates. Such delay was unusual in Mr. Rose, and although apparently justified by the war, had not postponed any other essential phase of his well knit program. The new plan however satisfied everybody. Both Rose and Pearce were fully aware that the character of the medical education in a country would determine the quality of the health service which could be implanted there. They thought alike on so many things that they undoubtedly counted on working closely together, reaping the advantages of division of labor without sacrificing harmony of objectives. This worked splendidly for a number of years. The DME, while following Mr. Rose's precept of building on strength by constructive aid to the most advanced institutions in Europe and the Americas, did not neglect the areas in which the IHB was in need of locally educated personnel to man the health services which it was creating. But time brought changes in staffs and policies. With the disappearance of Rose in 1923 and the subsequent shift

of interest of both the IHB and the DME to scientific investigation, medical education was dropped from the programs of both and, as we shall later see, did not again become a field of activity of the Foundation for over 20 years. This provoked little comment at the time, but the conclusion cannot now be escaped that this was an appreciable default and set a limit to the possibilities of accomplishment of the IHB in many of the countries in which it was at work.

The farming out of research problems to outside agencies, and the conveyance of all programs in medical education to another Division left Mr. Rose free to concentrate on the three diseases which he had selected for world-wide attack. It had been demonstrated in numerous small areas that all of them might be expected to yield to rather simple methods of control, and this gave him a confidence in his unspecialized and inexperienced staff which seems in retrospect to have been his greatest gamble. He appeared to have no misgivings as to the technical aspect of the work, which had been shown to require little more than ordinary intelligence and common sense; it was the establishment of satisfactory relations with alien authorities under a great variety of unfamiliar circumstances which was likely to prove the stumbling block. Only the field staff could do this, and it was to prove a most decisive element in their success or failure. In considering the appointment of a staff member, Mr. Rose asked first of all, "Has he judgment?" This was more important in his opinion than any special<sup>ized</sup> knowledge or experience. It was perhaps naive to suppose that these young Americans, sent abroad on missions so little heralded and understood, could make much headway against national pride, suspicion and official reticence which naturally conceals unflattering situations from the scrutiny of outsiders. It was even less likely that they would command respect as international advisers to governments in measures so experimental, under the social, political and climatic conditions of the tropics, that it was easy to see that they<sup>"experts"</sup> themselves were

engaged in learning by doing. Nevertheless the work expanded rapidly to the ends of the earth, and was everywhere hailed as an unqualified success. The youth and innocence of the field staff of the IHB was actually an asset and not a liability at that stage of its evolution, since it led to a bona fide exchange of skills and information between the Americans and their foreign colleagues. This gave authenticity to the word "cooperation" which in backward areas was too often taken to be a euphemism for a less acceptable term. In Latin America, for example, where all the countries except Uruguay are tropical in part, there was everything to learn about the effects of climate, politics and tropical disease; while in Italy, where famous malariologists were sometimes not on speaking terms with each other, they willingly collaborated with the novices from overseas who were eager to learn and ready to pronounce Galileo's "wise, ingenuous and modest confession, 'I do not know'". To this was added of course the <sup>disarming</sup> inviting anonymity with which Mr. Rose invested all his works.

It was fortunate for Mr. Rose that hookworm disease was universally employed in the early phase, as the spearhead of the campaign for rural public health. It presented a fairly homogenous<sup>e</sup> problem everywhere, susceptible of only one basic solution which was a simple form of sanitation; and while it still had its secrets, it was without the epidemiologic subtleties which were later to prove so frustrating in yellow fever and malaria. For at least five years, Mr. Rose waged no general campaign against any disease but hookworm, for which his staff was fully competent.

This was not because of any disillusionment on his part as to the feasibility of <sup>controlling the other diseases.</sup> ~~their control~~. The proposed eradication of yellow fever had to be postponed because General Gorgas, who had the planning of it, had been absorbed by World War I as Surgeon General of the Army. When he was released in 1918, the vigorous campaign began in Ecuador and Guatemala, and by 1922, Mr. Rose could say in his last report to the R.F. that the "only infected

areas remaining in the Western Hemisphere appeared to be eastern Mexico and a narrow coastal zone in northeast Brazil." He had the greatest confidence in the future. "No other infectious disease has been so completely subjected to human control as has yellow fever since the day when the *Stegomyia* was found to be its intermediary host (13)." He had already sent a commission to Africa in 1920 to spy out that territory and was ready to tackle the Black Continent when experienced personnel should be available <sup>after</sup> ~~when~~ the Americas had been freed of all infection.

As for malaria, the early work by the IHB was purely experimental. During the war, the Public Health Service ~~Engineers~~ had successfully protected Army training camps and key industrial plants from malaria by eliminating all mosquito breeding places in their vicinity, but the efforts had been carried through almost without regard to cost, for the sake of some military or commercial end. In 1916 Mr. Rose set out to discover whether there were practical methods of malaria control which the average small community could afford. Various ways of combatting anopheles mosquitoes on the wing and in their breeding places, and of treating parasite carriers, were tried out separately in different communities, and Mr. Rose took advantage of the engineering and biological aspects of mosquito control to draw the U.S. Public Health Service and the federal Bureau of Entomology into these studies in collaboration with the states, counties, and the IHB. Not until 1920 was he ready to undertake a general program of malaria control in the U.S. and abroad, but once decided upon, projects multiplied rapidly as usual, and by 1922 the IHB was engaged in operations in sixty-six towns and counties in the U.S., and had begun to carry the demonstrations to Central and South America, the West Indies and the Near East. With malaria as with yellow fever,

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(13) R.F. Annual Report, 1922, p. 105.

there was no reason to suppose, at the close of 1922, that the methods so uniformly successful wherever they had been properly applied would not work as well in any part of the world. The reports coming in from Nicaragua, the first of the foreign demonstrations to be undertaken, were reassuring. "This test showed," wrote Mr. Rose in his final report<sup>(13)</sup>, "that simple, inexpensive measures already employed in the Southern States, can be successfully followed in tropical areas."

Both of these diseases, yellow fever and malaria, proved to be far less simple and amenable when confronted in the jungle than when viewed from 61 Broadway. It gradually became clear that the uprooting of parasitisms so ancient and perfected in their mutual relationships would call for the most exhaustive knowledge of their natural history and local adaptations; but this was hardly suspected by Mr. Rose or his advisers. It was the technically simple hookworm program which had already begun to involve the IHD in strategic problems of first importance to its main objective. The conquest of hookworm disease was not an end in itself; every hookworm campaign must result in a permanent rural health service maintained by the taxpayers, or its effect would be transient and the effort in the long run a failure. Such a development was not likely to be spontaneous, and in the U.S.<sup>it</sup> had only begun to acquire momentum in 1921 after more than a decade of intensive education, encouragement and pressure on the part of the RF and of the U.S. Public Health Service. Once started, however, the movement proved to be unexpectedly contagious, perhaps because it was long overdue. In 1908, there had been but one county health service functioning on a full-time basis in the U.S.; in 1914 the number had grown to three; in 1922 Mr. Rose had the satisfaction of reporting that there were 215 such units scattered over twenty-six states,

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(13) loc. cit., p. 117

a result which could in general be ascribed to the impact of the hookworm work.\* Abroad -- in Latin America, the British Colonies and the Far East -- it was too soon to expect permanent developments on such a scale, but there was evidence that the idea had taken firm root in Brazil and was likely to spread rapidly in two or three of the more advanced states.

This chain reaction which Mr. Rose had set on foot required one thing above all to keep it going, a constantly increasing supply of health personnel with special training in hygiene and sanitation. This training was something which Mr. Rose's own staff had not had and which none of the medical schools or universities was able to offer. The adventures which many communities were making in organized public health had demonstrated one thing very clearly, that practicing physicians did not make effective health officers. They did not possess the preparation or the undivided interest and time needed to develop the possibilities of what was rapidly becoming a distinct profession.

Mr. Rose had foreseen this major obstacle long in advance, and had <sup>circumvented</sup> fore-stalled it as well as he was able. For the simple projects of the early years, he had relied on young men fresh out of school, with a desire for organizational service and foreign experience. When specialists were called for, he borrowed them temporarily from other institutions. He drew heavily on the Army for his yellow fever surveys and early campaigns, since it was the Army Medical Corps that had solved the enigma of the transmission of the infection; and because malaria control seemed in the beginning to be a drainage job for engineers, he went to the U.S. Public Health Service, which had had experience in the protection of Army training centers from malaria during the war. For hookworm work, he began with a nucleus of experienced men drawn from the Rockefeller Sanitary Commission, and he used the initial campaigns in

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\* Insert chart, RF Ann. Rep., 1922, p. 140

Trinidad and Ceylon as training centers for new staff members. In this way he was able to get his ambitious program started with a minimum of delay, utilizing the personnel at hand.

But as early as the autumn of 1913, when he was back from London with a blanket invitation to extend his work to the entire British Colonial Empire, but with no field staff whatever, Mr. Rose began to wonder how he might educate young men in the new principles and techniques of hygiene, not only for the benefit of the IHB, but for all the countries where its work might lead to constructive developments in public health. Without delay he requested the GEB to survey the existing facilities in the U.S., but it turned out that there were none; it seemed that a new kind of professional school was needed which did not exist in any university. It was determined that the RF should offer to assist universities to develop institutions to cultivate hygiene as a science and to train students in its application. The first of these, planned and organized<sup>iz</sup> by Dr. William H. Welch, was the School of Hygiene and Public Health of Johns Hopkins University, which enrolled its first class of seven students in the fall of 1918, for whom a curriculum had been constructed without precedent in this or any other university. In rapid succession the RF made large grants to schools of public health at Harvard and London Universities and on a smaller scale to similar schools in Czechoslovakia and Poland, first steps in Mr. Rose's plan to restore and modernize the health machinery of post-war Central Europe. The fact was clearly recognized also that a new type of public health nurse was going to be indispensable to the success of the health program now in evolution, and the RF called a conference in 1919 to consider what a nurse's education should be. This too had important consequences in public health training and practice, and led to a policy of aid to nursing schools which was developed under Mr. Rose's successors.

Most of the students in these early years were enabled or induced to take this training, which was quite voluntary, through fellowships granted by the RF, which found itself obliged not only to create the schools but also in the beginning to recruit the student bodies. The policy was never abandoned. Fellowships continued to be provided in growing numbers as the demand for professionals in public health increased, mainly as a result of the spreading influence of the IHB both in the U.S. and abroad. When Mr. Rose resigned, six years after the first fellowships had been awarded to two young doctors in Brazil, the RF had spent \$400,000 to send some 200 doctors and nurses to the U.S. for training, to man the drive for a new kind of public health practice around the world. This turned out to be one of the most acceptable and constructive forms of international collaboration which the RF ever undertook, fostering an intercommunication between countries of more than purely hygienic significance. It took on volume as the projects multiplied, until in the end, the RF had allocated some seven million dollars to what Mr. Rose called "an investment in leadership."

These great schools and these thousands of trained health workers represent an educational force which has had profound influence on the health of the world. To set on foot a movement which opened up a new career, laid the foundations for a new profession and impelled great universities to create the necessary schools was an impressive accomplishment; to Mr. Rose it was implicit in the organic structure which he had in mind. He accepted the huge issues involved without hesitation, once he was convinced of the logic of the development, which proceeded from the relief and prevention of disease through an aroused public consciousness to the scientific realization of organized health promotion under skilled direction. In his last report he wrote: "Public enlightenment, government machinery, and technical education

(14)

and research are bound up in a sure sequence."

To these far-reaching developments which owed their stimulation and accelerated evolution to hookworm disease, we should add one more, in which Dr. Welch's influence is easily divined. The bacteriological discoveries, which had recently burst upon the world in a "golden decade" of the previous century and were revolutionizing clinical diagnosis and pathology, had strangely enough wrought little or no change in public health procedures. A laboratory, hastily improvised by the New York City Board of Health had aided in arresting cholera in *that* port in 1892 and Welch did not miss this opportunity to argue for permanent public health laboratories. "The same measures which are needed to protect a city against occasional epidemics of cholera are needed at all times to protect it against other infectious diseases. . . . which although they do not come with the terrible impetuosity of cholera, steadily do their deadly work, and in the course of time destroy among us far more lives than cholera." (15)

The cities responded promptly so that in 1899 Welch was able to say: "The development of laboratories connected with boards of health is one which is peculiarly American." This was not true of states or counties where even boards of health were primitive or nonexistent. The necessity for microscopic diagnosis on a huge scale during the hookworm campaign of the Sanitary Commission had revealed to Mr. Rose the unsatisfactory state of public health laboratories throughout the South. When in 1920 he was ready to begin his world-wide effort to improve state and local health services, he considered the laboratory of such basic importance that he added a new administrative officer, called Director of Public Health Laboratory Service, to the

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(14) R.F. Ann. Rep., 1922, p. 103.

(15) Quoted by S. Flexner in "Wm. Henry Welch," p. 343.

triumvirate of Ferrell, Heiser and Howard who had been his associate directors for almost seven years. This was Col. Frederick F. Russell, Director of Laboratories of the Army during the war, who had achieved distinction for successful control of typhoid fever and other infectious diseases in the Army. Three years later, Col. Russell, now a Brigadier General of the Reserve Corps, succeeded Mr. Rose as General Director of the IHB.

Just before Mr. Rose resigned, an event in the international field of public health gave him an opportunity to extend his influence in a new direction. This was the creation in December, 1920, of the Health Organization of the League of Nations. It started, auspiciously enough, with the direct support of 52 nations, in contrast with the Office Internationale d'Hygiene Publique, which after interminable delays had been ratified by 13 states in 1907. Even the U.S., which opposed the League of Nations politically, gave its Health Section sympathetic collaboration. All was not plain sailing, however. The Office refused to surrender its independence, and the funds allotted by the Assembly of the League proved inadequate to support the minimum program which the Health Committee had drawn up. The impasse created by the Paris Office was circumvented by making its Permanent Committee the Health Council of the Health Organization, and in the matter of funds, the IHB came to the rescue. The RF was very sympathetic to the objectives of the League in general, and of its Health Section in particular. Raymond B. Fosdick, a trustee and a member of the IHB, was Under-secretary General of the League, and President Vincent wrote: "It is the purpose of the RF and its Boards to have a part in this world-wide teamwork for preventing disease and bringing about improved conditions of health."<sup>(16)</sup>

The man chosen for medical director of the League's Health Organization was Dr. Ludwik Rajchman, who had been selected to direct the new Institute

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(16) G.E.V., President's Review, Ann. Rep. R.F., 1921, p. 73.

*was the cornerstone of a collab. program*  
of Hygiene which Mr. Rose was planning to build in Poland. As soon as his appointment was confirmed, in November 1921, Rajchman requested the support of the Foundation for the Health Section, and Rose went at once to see him in Geneva, expressing disappointment at his decision to leave Poland in view of the importance of the task of developing the Warsaw Institute and the public health work which would flow from it. <sup>Rajchman's</sup> (17) Dr. Rajchman then began to tell him of his plans for the Health Section. Rose was a good listener; Rajchman a fluent and convincing talker. He spoke for three hours without interruption from Rose. At the end, Rose questioned him closely about policies, obstacles, personnel and finances, and before they adjourned for dinner expressed his great interest in the enterprise but would not commit himself until the following morning. Next day he was ready with his answer: Rajchman was justified in accepting the Geneva appointment and Rose would ask his Board for support. Rose thought the League should do more than counsel and exhort. "A demonstration," he said, "is infinitely more effective than a conference." The support, therefore, took the form at first of financing a continuous international exchange of public health personnel and of putting the Epidemiological Intelligence Service on a broader and more effective basis by establishing a broadcasting bureau in Singapore. The cooperation was continued along these and other lines for fifteen years, and the investment of the Board in what is often considered the League's most effective work amounted in the end to almost a million dollars. Dr. Rajchman remained Director for this entire period.

When Mr. Rose resigned in 1923 to become President of the GEB and IEB, the lines of development of the IHB were firmly established: an attack on certain specific diseases of universal concern was used as a means of awakening a national realization of the necessity for state and local health services,

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(17) Personal communication, L.R. to L.W.H., March 2, 1953.

and these led "in sure sequence" to local facilities for instruction and investigation in all fields of health and disease. In a scant decade, Rose had imparted a momentum to the IHB which was strongly felt throughout the remaining quarter-century of its existence. His <sup>direct?</sup> immediate aims were never realized, much as he had set his heart upon them. Hookworm had not been eradicated anywhere, yellow fever always eluded complete elimination, and malaria remained an unsolved problem in rural populations during his lifetime. Mr. Rose's real objective was quite different. However strong had been the humanitarian impulse which led to the creation of the RF and the IHB, Rose was motivated by a logical appraisal of the social, educational and economic impact of disease. His goal was the recognition on the part of governments and peoples of their obligations to provide through organized effort a more propitious existence for rural populations. The movement which he initiated to promote the health of rural people never stopped growing.

*7. control  
2. mal*

*The "why" and  
the "how"*

In summing up Mr. Rose's accomplishment, we do not detract from the power and originality of his thinking by pointing out his debt to others. He did not invent a new concept of public health, nor the participation of private philanthropy in public service, nor any unexplored way of preventing disease. His contribution lay in bringing these fresh and tentative ideas into congruous and effective association, and expanding them to embrace the world. We owe to his insight and bold action a novel and highly successful form of international cooperation, at the grass-roots (operational?) level, and on a massive scale. Supporting all this expanding activity, and carefully planned in advance, was an intercommunicating network of institutions for teaching and research, somewhat in the spirit of the German university system. "No such imaginatively comprehensive scheme," wrote Abraham Flexner in an expansive moment, "had ever before been conceived except the Catholic Church." To add that Rose was scarcely known to his own generation and

*chile*

hardly at all to this one makes a strange footnote to his remarkable story.

That he was not a medical man has aroused little comment either at the time or in retrospect. <sup>It</sup> ~~This~~ entailed an unbelievable amount of self-education on his part, in the fifth decade of his life, and compelled him in technical matters to rely almost completely on the knowledge and judgment of his medical colleagues. But in fact the most important decisions which he had to make were not medical ones, nor the problems posed by hookworm disease, which he considered to be essentially educational. His was a broader and more philosophical view of man's predicament in his struggle against ignorance and disease than the purely medical one.

This was made clear by his resignation from the IHB at the age of 61 to undertake the extension of knowledge, internationally, through assistance to education and research. This was made possible to him by Mr. Rockefeller, Jr., who created the International Education Board in February, 1923 at Mr. Rose's suggestion, and generously endowed it. The action was precipitated by the first World War which had greatly impoverished the intellectual resources of Europe, but the idea had come to Mr. Rose many years before, when he was pondering the reasons for the static condition of medicine which had so impressed Mr. Gates. In a memorandum, already cited in these pages <sup>(7)</sup>, he wrote that progress depended on increasing the number of effective men in medical science, and that the "most important next move" should be the multiplication of teachers and investigators and the encouragement of young men to choose science as a career. This "scheme," as he called it, seemed to him extensible to all science. He resigned the directorship of the IHB in March, 1923, and devoted the rest of his active life to the support of pure research and the promotion of scientific agriculture, two fields from which he had

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(7) loc. cit.

*Not complete*

carefully excluded the IHB.

Mr. Rose loved the out-of-doors and took great pleasure in fishing, a sport which was compatible with constructive thinking. He died suddenly on September 5, 1931, at the age of 69, while fishing a stream on Vancouver Island, British Columbia.

## Chapter 7

### Accent on Research

Dr. Russell once said that when he took over the directorship of the IHB his chief difficulty lay in having to succeed Mr. Rose. Mr. Rose was successful as the leader of an enterprise in which he had no technical competence because his colleagues respected his judgement and his strategic sense, and his staff believed in him, received his energetic backing and were inspired by his confidence in them. The actual field work, though greatly extended geographically and increasing constantly in volume, was technically simple. The methods of control of the three diseases which had been selected as targets consisted in standardized practices worked out by men of long experience in each field, which had proved uniformly successful in the past. The undertaking was of such magnitude, however, and had such a large staff of doctors responsible for its efficient operation, that the Trustees now turned to a medical scientist to supervise its future evolution.

Dr. Frederick F. Russell was one of the experts whom Mr. Rose had called in because of his specialized knowledge of public health laboratories, which were now becoming important to the development of the state and local health services in which the IHB was interested. Dr. Russell came from the Army, which he had joined at the outbreak of the Spanish-American War. He did not leave it, as he had intended to do at the close of the war, because the Army, at the turn of the century, offered him the sort of career in laboratory medicine which he now wanted to follow. The Surgeon-General was George M. Sternberg, who has been called the "father of bacteriology in America," and under him the Army, widely extended in the tropics of both hemispheres, played a more important role in preventive medicine than the universities in the care of troops and of civilian populations as well. Russell became one of a distinguished group which included Walter Reed in Cuba; Ashford in Puerto Rico; Strong, Craig,

Vedder and Siler in the Philippines His tropical experience was considerable and in 1914 he was in Panama when Dr. Samuel T. Darling resigned as Director of the Laboratory of the Board of Health at Ancon, to head Mr. Rose's Uncinariasis Commission to the Orient. He took Darling's place until the U.S. entered World War I in 1917 when he was appointed Assistant to the Surgeon-General to organize and administer the Division of Laboratories and Infectious Diseases of the Army. The death rate from disease among the soldiers, which had been shamefully high in the war with Spain, was cut in half in World War I and Russell received most of the credit. His major contribution was to simplify and systematize the procedure for vaccination against typhoid fever, and he gave a mass demonstration of its safety and protective value in the Army. For this he received the Distinguished Service Medal in 1919.

It was at this time that the IHB, seeking to transfer its responsibility for hookworm control in the Southern States

to the State and county health departments, discovered how weak most of them were in laboratory services. It has long been accepted that a laboratory is essential to a department of health. It does much more than examine water and milk; it aids physicians in making diagnoses and supplies data on communicable diseases to health officials which make scientific prevention a possibility. The necessity for such a service was not generally recognized in 1917, and indeed it was unpopular among many physicians, as an interference with personal prerogative. Strong opposition had developed in New York City to the setting up of the first public health diagnostic laboratory in 1893,<sup>\*</sup> and in the 20 years which elapsed between that event and the creation of the IHC, only six states had followed the example.<sup>\*\*</sup> Abroad, progress had been even more hesitant; clinicians deprecated the excessive reliance of American physicians on laboratory findings, as tending to supplant skilled observation. As medicine became more

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\* Winslow: Life of Hermann M. Biggs, p. 107

\*\* Freedman, B., P.H. Reports 69:867, 1954

scientific and instruments of precision furnished data beyond the reach of the five senses, the uncertainties of visual and intuitional diagnoses were exposed. Health departments were quick to seize on the modern laboratory as a new tool on which they could depend for accurate knowledge of the prevalence of infectious diseases, the basis of reliable vital statistics and of intelligent action.

The IHB actively promoted this development as early as 1918; Mr. Rose had broached the idea of attaching to his central staff one or more trained public health laboratory experts whose services might be put at the disposal of state or municipal boards of health.\* In 1920, in view of increasing requests for aid, the time seemed ripe for a world-wide movement to raise the standards of public health laboratories and introduce them into countries which lacked this essential service. Without question the man to do this

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\* RF Annual Report, 1918, p.44

was Col. Russell and he was appointed on February 1, 1920 Director of Laboratory Service of the IHB, a department organized to aid governments in developing their public health laboratory facilities. The following year the Army made him Brigadier General of the Medical Reserve Corps.

Dr. Russell was absorbed at once in numerous activities which gave him a magnificent opportunity to see the Board's work at first hand. Almost all the states were now organizing or improving their laboratories; in March and April he was invited to Alabama, Mississippi and Kansas; in June to Virginia, North and South Carolina, Georgia and Texas. In July he was in Czechoslovakia where Selskar M. Gunn, of the Board's Tuberculosis Commission to France, was adviser to the Ministry of Health. The development of a laboratory service suggested the idea of establishing a school of hygiene for the training of laboratory workers, vital statisticians, epidemiologists and administrators - the first public health

school projected by the Board in Europe. The next year Dr. Russell started laboratories in all the countries of Central America and there were calls for his services in Mexico, Australia, and the Philippines. Before long his aid and counsel were in wide demand - in 20 states from Maine to California and in as many foreign countries. In providing this service Mr. Rose had met a growing need. In no other job connected with the IHB could a man of Russell's natural curiosity and manifold interests have come in contact with so many different facets of the Board's work in so short a time. He was disappointed to find so little going on in the way of research and he thought the antituberculosis campaign in France, based on propaganda and popular education, lacked any scientific basis. He tried once or twice to interest Mr. Rose in lines of investigation which the field staff might undertake in connection with their work, but he received no encouragement and soon ceased to talk about it.

When the question came up of finding a successor to Mr. Rose, the choice fell on Dr. Russell, a medical scientist, rather than on an educator of the type of Mr. Rose. While the IHB was deeply involved in the educational field of Public Health and in aiding state and local health services, the staff were mainly engaged in attempting to control three important diseases, a campaign which had grown to large proportions and which called for direction of a medical and scientific character. The three men on the IHB who might have had the greatest influence on the choice of a new director were Drs. Welch, Flexner and Hermann M. Biggs (then Commissioner of Health of the State of New York). All three were staunch believers and promoters of scientific medicine and public health founded squarely on the laboratory as the basis of sound practice, teaching and research. Welch had been responsible for the emergence of the public health laboratory in America; Flexner for the laboratory as a research tool;

Biggs, who was perhaps the dominant power in the public health movement in the U.S. at that time, "brought the new scientific medicine into the service of the state, laying for all time the sound basis of laboratory science upon which American public health is based."\* Since the IHB had on its staff the leading exponent of the laboratory as the most important single factor in communicable disease control, it was not surprising that Dr. Russell became its new Director. He had made himself respected in three years, for his scientific ability, his vigorous attitudes and his practical common sense. He was thoroughly acquainted with Mr. Rose's program, methods and aims, and he was immediately available. Dr. Russell was first of all a bacteriologist and this conditioned his thinking about public health and his selection of the problems which merited first consideration by the Board. The keys to the behavior of yellow fever, malaria, and even tuberculosis were in his opinion to be sought

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\* Winslow, Life of H.M. Biggs, p.385

in laboratory investigation and in studies of the environmental factors responsible for their spread and persistence and any strictly educational<sup>a</sup> effort aimed at enlisting the individual sufferer and the community in their control was premature as a demonstration until the fundamental mysteries of their sources and modes of infection could be cleared up. Mr. Rose himself had felt much the same about tuberculosis. The Commission to France had been sent, almost against his will, to meet a wartime emergency, and had unavoidably developed in a way that had detached it from the rest of his program, which was carefully built on the assumption of adequate knowledge and effective methods of control. The educational campaign in France had been excellently organized and had probably influenced millions of people, but Mr. Rose felt that such a socially entrenched and chronic infection did not offer the opportunity for a satisfactory demonstration in disease control. Treatment and sanitation were of little avail and the results of

intensive educational effort were not immediate or tangible; the costs seemed very high (roughly equivalent to the combined budgets of the hookworm, yellow fever and malaria programs) and the desirable transition from antituberculosis campaign to organized Departmental Health Services failed to take place. Selskar Gunn, who had been in command of the educational side of the campaign, was depressed at what seemed to him the defection of the Board in the most promising field of the public health effort. But neither the Board nor the Trustees were disposed to alter the course which had been set by Mr. Rose. While public education in hygiene became a feature of the work of the IHB under Dr. Washburn in Jamaica and Dr. Hydrick in Java, it remained a deviation from the normal program, since both Dr. Russell and his successor, Dr. Sawyer, considered it a function of the local health services which the Board was aiding, and not of the Board itself.

Dr. Russell brought to his new job not only a medical and scientific orientation, which immediately affected the technical program, but a long Army experience as well which brought about a change of atmosphere in field and office from the informal and flexible regime of Mr. Rose. To Dr. Russell, too, the change from Army laboratory to Foundation office was a radical one which required adjustment. For a year or so after taking over Mr. Rose's desk, he kept a microscope in a corner of the office, but this attempt to bring the laboratory with him into the office proved to be only a symbolic gesture; the microscope accumulated dust and one day disappeared. The Colonel's training had been to accept orders and make the best of them. He organized and administered his work on a campaign basis at first and frequently used military phraseology. Staff were assigned without consultation and letters now followed prescribed channels and passed over certain desks, something like the

"standard operating procedure" of the Army. This caused mild amusement in the other departments of the Foundation whose small staffs found no necessity for an elaborate bureaucracy, and it gave rise to flashes of resentment in the field, unused to such formality and centralized regulation. Young staff members plunged into unfamiliar situations felt the need of informal communication with fellow staff members of more experience, but frankness and familiarity were frozen by the process of shunting letters and their replies over the austere desks of directors in New York, Paris or Peking, and they often preferred to correspond with colleagues outside of the RF. This had no serious effect and standard procedure yielded to compromise as Dr. Russell gained experience and felt more secure in his new position.

He got out into the field whenever he could get away, and traveled much more than Mr. Rose. His experience and judgment were invaluable to the staff. On his visits he

was energetic, kept up a brisk walk and lost no time until he came to a laboratory. That always stopped him and he liked to go into details of procedure and technique, happily pointing out improvements and economies which could be made without sacrificing accuracy. He was keenly interested in staff work in the field and established a much closer working relationship with every one of his team than any of the other Directors. He asked the field men to keep diaries and send them to him at regular intervals instead of the sporadic letters they had been accustomed to write. This involved him in an overwhelming avalanche of paper, but in this way he kept in touch, day by day, with the Board's activities all over the world. This system seems to have been initiated by Hackett, who was making a malaria survey of Italy in 1924. He wrote enthusiastically, "It seems as though I were actually accompanying you on your trips." He kept up his scientific reading, too, and carried a full

briefcase home with him each evening. He never invited anyone to his home, and gave his new secretary, Miss Ruth V. Reed, an expense account to entertain for him.

Short and stoutish, he had a friendly presence, though he could be very brusque to incompetence and sham, and was direct and constructive in criticism, which was usually well received because of his experience and ingenuity in dealing with both technical and administrative difficulties. In personal relations he was accessible and companionable but always a little formal, and he never approved of using first names in daily contacts in the office. It was thought that he rather liked to be called General, though he never used his rank in correspondence. It helped him occasionally in dealing with authorities in Latin America and elsewhere, since in those days they were often high-ranking military men. At one top-level conference where almost everyone was an officer, he whispered to the staff member who was introducing him, "I'm a General, too."

Experience gained in the Army may also have been reflected in some of his characteristic reactions to problems and obstacles arising in the course of his administrative duties. For example, in handling the many applications for aid which had to be rejected, he advised his staff not to give too many reasons for refusing a request. Declinations should be brief and general; otherwise one might open himself to an argument which he could lose. His own requests and proposals to his Board and to the Trustees sometimes encountered serious opposition. He did not at the start, or perhaps ever, have the great prestige of Mr. Rose, whose careful proposals were turned down by his Board only under exceptional circumstances, but he possessed unusual political sagacity. Russell did not give up when decisions were against him. He accepted the situation, bided his time and manoeuvred. Wickliffe Rose had had to consider the reaction of Mr. Gates

tenacity

who, however, had resigned in July, 1923, and who, wrote Mr. Vincent, "is sadly missed. He was always stimulating, and the officers prepared business with possible criticisms from him in mind." Russell had no contact with him; the person he prepared for was Simon Flexner. They were both medical scientists and understood each other thoroughly, though they did not always agree. Dr. Russell was a shrewd thinker, with a facility for weeding out unessentials. His two great assets in defending his proposals before the lay members of a board like the Trustees were an exceptional memory and an impressive - almost an authoritarian manner in exposition, bringing the weight of his past experience to bear on the decisions. Dogmatic as he often seemed, wagging his forefinger pontifically as he made his points, he was always willing to argue and his opinion could be changed by facts and sound reasons. In fact, he rather liked young people with well-considered ideas who would stand up for their opinions.

very tenacious

While no one could take the place of Mr. Rose, Dr.

Russell soon made a separate niche for himself in the friendship and esteem of his staff and of his Boards. He could not write such cogent and inspiring letters as Mr. Rose, but he was less reserved and more warmly personal. He became increasingly effective as he settled into his job and Florence Read, who bore the immediate brunt of the abrupt change from Mr. Rose, came to hold Dr. Russell in admiration and affection.

The situation which Dr. Russell took over from Mr. Rose was a flourishing one. He had inherited a going and successful program which had everywhere encountered interest and cooperation, and was growing almost too rapidly for safety. The IHB was now operating in some 75 states or countries, had been instrumental in creating 9 schools or institutes of public health in the U.S. and abroad, and had given fellowships to 200 young men and women from all parts of the world to enable them to study in these schools.

FFR warm in personal  
contact but formal  
in letters - WR  
just the opposite

A concerted attack on yellow fever had reduced the infected areas to two on the American continents, one in Colombia and one in N.E. Brazil. Malaria, while not an easy problem, had been controlled in a series of demonstrations which had cost the communities concerned much less than the disease. Hookworm, the old stand-by, was now combatted in 52 countries on six continents and 29 islands of the sea.

Nevertheless, there was one aspect of this flourishing activity which disturbed Dr. Russell very much. It was the divorce between practice and research in the program of the IHB. He had come to the IHB in 1920, the year Mr. Rose declared: "The IHB has not entered the field of research as such." But he understood more clearly than Mr. Rose the innumerable and complex variables, in man and his environment, which make every disease situation different from all others. He kept in touch with the field work and asked Mr. Rose questions to which he had no answer. He distrusted

standardized procedures in disease control and thought that Boards sitting around tables approving projects usually oversimplified the problem and the task. The pattern of a world-wide campaign against any disease could be valid only in very general terms, allowing almost unlimited play for the adjustment of presumptive knowledge to actual situations.

Now that he was Director, his visits to the front revealed the many roadblocks of ignorance which beset his staff. Colombia was having yellow fever again in an isolated and almost inaccessible area of the interior after an interval of 11 years, and no one could imagine how the infection could have been reintroduced. There had been an unanticipated outbreak of yellow fever in Salvador in the summer of 1924, although no case had been reported in all of Central America since 1921. Mr. Vincent wrote, "This forces a careful review of the theory and practice of

anti-yellow fever work." <sup>\*</sup> And when these minor epidemics had been successfully extinguished, suddenly the whole coastline of Brazil was ablaze with the infection, the source of which could not be traced. Malaria, too, was causing trouble. "The control of malaria," wrote Mr. Vincent, "is not always as simple as a statement of the essential facts would make it seem." <sup>\*\*</sup> It began to be suspected that the demonstrations, which had proved so easy and inexpensive in Arkansas, had been made under unusually favorable conditions. There were a great many species of malaria mosquitoes which differed from each other in biology and behavior, so that the measures for their destruction would have to be adapted to each individual situation. Even hookworm disease, least complicated of the three, presented unexplained variations from place to place, involving unknown nutritional and immunological factors. "Simple as hookworm appears," said the President, "there is much still to be learned about

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\* President's Review, 1924, p.33

\*\* President's Review, 1923, p.31

the nature of the disease and methods of dealing with it."\*

This new note, struck by the President of the Foundation in his previously optimistic Reviews, reflected without doubt the reservations of Dr. Russell with regard to the program which he had inherited. In the first report which he submitted to Mr. Vincent, he pointed out that neither universities nor health departments are able as a rule to conduct much research in the field. Yet such investigation, "perhaps not sufficiently cultivated in the past," is indispensable to the development of sound practice, and must be done by men in the field who are in contact with the people and who see the problem as a human one, in its natural setting.

"At first glance," he wrote,\*\* "it would seem a simple matter merely to distribute widely from the vast stores of scientific facts produced by the laboratories of the world, for few of the discoveries in disease prevention have been fully applied. And yet when a specific work is undertaken, as in the control

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\* President's Review, 1923, p.36

\*\* Annual Report, RF, 1925, p. 103

of hookworm disease or malaria, it is soon found that there are serious gaps in the knowledge essential to successful control. The lack of this information not only delays progress but prevents the application of many facts already discovered. Mr. Rose and Mr. Gates had been particularly impressed by the gap between our knowledge and its application, but Dr. Russell's experience had been that the more important gulf lay between what we knew and what we needed to know. Practice and investigation fertilize each other and public health advances on both legs. Every project to Russell was an experiment rather than a demonstration, and his staff a body of investigators on the alert for new knowledge in order to improve the methods in use. The doing and the investigating, Dr. Russell thought, could not be assigned to separate agencies.

In spite of the doubts of some of his associates, who were reluctant to see the IHB depart from one of Mr. Rose's

need for a new  
kind of staff  
JAF -

firmest policies, Dr. Russell placed more and more emphasis on field research. "Thus methods," he said, "become more discriminating, more precise, more sure." Mr. Rose's endeavor was always to increase the volume of the work along lines proved successful by previous experience; Dr. Russell wanted to improve the quality and aim. This was the major change he introduced into Mr. Rose's program. He carried his Board with him and then his Trustees. Mr. Vincent himself came fully around to the new point of view. In his final report, as he retired from the Presidency of the Foundation in 1929, he wrote, "The Foundation, even in the attempt to apply existing knowledge to the protection of public health, is forced into seeking further facts about the nature of certain diseases. Thus opens a vista of research in preventive medicine and hygiene."\*

The field staff had not been selected for investigative ability and some were impervious to the new spirit, but it

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\* President's Review, 1928, p.47

was welcome to the majority, who had been frustrated beyond measure by the embargo on research. The home office had been setting the course by the fixed stars, but they were obliged in practice to steer by the headlands, though without funds, equipment or encouragement to do local epidemiologic investigation. The results of the new policy were immediately visible. The IHB was exploring an immense field rich in untapped knowledge. In 1924, Dr. Russell published the first bound volume of the "Collected Papers of the IHB," beginning an annual harvesting of the scientific production of the staff which has continued to this day. This permanent record of the scientific achievement of staff members now includes approximately 2,000 titles, an indication of the magnitude of the work accomplished. Volume I, for 1924, was a slim book of 250 pages containing 22 articles gathered from the various journals in which they had been published. By 1935, when Dr. Russell retired, the scientific spirit

was in full fruit. The carefully winnowed production of that year filled two large volumes of 1,600 pages which cast light on almost every field of communicable disease and public health. "Important as allotment of funds to well-conceived public health projects may seem," wrote Dr. Russell,\* "it is probably a lesser service than the collection and dissemination, through a widely scattered field staff, of the results of the current experience in many countries."

The value of this experience now depended more than ever on the ability and preparation of the staff, a situation which had begun to trouble Mr. Rose. Study leave was an old Army practice, and Dr. Russell increased the opportunities of the staff to study in schools of public health, in laboratories and in field stations during extended periods of leave. This produced an important change in the composition of the staff which some of the officers and members of the Board regarded as a serious drawback to certain aspects

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\* Annual Report, RF, 1925, p. 102

of the work. The staff ceased to be as homogeneous and versatile as it was in the beginning. Specialization in research was restrictive and tied one to a field. Staffs had to be developed for each disease and were no longer interchangeable. The original idea of using the control of a disease only as an entering wedge to procure the development of a program in general public health was somewhat lost to view. Malaria and yellow fever and the other diseases to follow became ends in themselves, as they were bound to do when taken out of their settings. This was awkward when such projects came to an end and the emphasis shifted. Since specialization increased rather than diminished under Dr. Russell's successor, an almost insoluble personnel problem was created when the IHB finally resumed its earlier interest in the more general fields of public health. Dr. Russell was aware of this danger and tried to maintain a balanced staff, with men on it of both types - the functional

and the geographical, as Dr. Bishop called them. The deficit in public health men of all categories was also a continual handicap in the countries with which the Board was cooperating, and much importance was placed on the education of their public health personnel through travel and study. The grants by the Foundation for buildings, equipment and endowment of schools and institutes of public health around the world were larger during Dr. Russell's term of service than before or since. He was continuing, in this, the initiative of Mr. Rose. Between them, they channeled over 20 million dollars into capital expenditures in educational institutions, 90 per cent of the total amount expended for this purpose through the IHB during its history. A favoring circumstance for Dr. Russell was the long period of freedom from wars which intervened to disturb the plans of all the other Directors.

Dr. Russell had obtained in a short time a good deal of

what he wanted, but he was not yet satisfied. He was still turning to the universities and to the RI for laboratory research in hookworm, malaria, and yellow fever, which could not be carried out in the field or in the public health laboratories which he had been developing. He wanted a laboratory of his own and felt helpless without one. He was particularly anxious to have the IHB do its own yellow fever research, a feeling inspired in part by military connotations, since the Army had carried out the first successful investigation of the disease. The RI had loaned to the IHB the services of Dr. Noguchi, who had made two or three visits to South America and had announced the discovery of the organism which caused the disease, a leptospira which he had recovered from cases of yellow fever in Ecuador and Brazil. There was some skepticism about this organism among other investigators of this infection, and while Dr. Russell did not doubt the validity of Noguchi's discovery, he wanted to

be able to confirm it independently. As soon as he joined the IHB, he had suggested to Wickliffe Rose the advisability of setting up a laboratory in Vera Cruz, Mexico, to study yellow fever in an endemic area, but the campaign was going very successfully at the time and neither Mr. Rose nor Dr. Flexner thought that further investigation was necessary, or was a proper function of the IHB. Dr. Russell did not even now feel strong enough to press for a central IHB laboratory but he conserved the idea, since he believed that the concentration of the IHB on hookworm, yellow fever and malaria produced an unbalanced program and was no longer necessary or advisable. He felt ready to undertake the study and experimental control of almost any of the great epidemic and endemic diseases of mankind. Mr. Rose, for obvious reasons had selected for attack the diseases about which we seemed to know the most; Dr. Russell was more interested in those about which we knew too little. But

any such extension of the program would require a central laboratory manned and directed by the IHB.

To fill the now vacant place on the staff of Director of Laboratory Service, and probably to secure some additional backing in the home office for the new course he was about to set for the IHB, Dr. Russell brought in Dr. Wilbur A. Sawyer from the field. Dr. Sawyer was at that time Consultant in Public Health to the Commonwealth of Australia and was the only one of the Associate Directors with a scientific background and a bent for research. When Dr. Russell retired twelve years later, the scientific trend of the Board's work had become so firmly established that Dr. Sawyer took his place as Director of Division.

The other three Associate Directors, Drs. Howard, Ferrell and Heiser, were not enthusiastic over the shift in the dominant interest from the promotion of rural public health to the investigation of disease problems, but they became

less involved in it than they had feared. Dr. Russell did not need the coaching in public health practice on which Mr. Rose depended, and he took into his own hands the technical direction of the work which Mr. Rose had left entirely to them. Nevertheless, each was still essential to the program in his own way.

Dr. Heiser's contribution was in fact unique. The Far East was a vast, heterogeneous and extraordinary region over whose diversified programs, which were in constant and almost kaleidoscopic mutation, Dr. Heiser reigned with indefatigable activity for 20 years. His influence, which sometimes overflowed the boundaries of public health, spread from the Philippines and the South Seas across Siam and Malaya to India and beyond. Because of his great prestige as a sanitarian, his unrivaled acquaintanceship with the Orient, and his own self-confidence, he enjoyed throughout his singular career an independence of decision and action which

somehow escaped the full control of the home office. This annoyed no one more than Dr. Russell, always anxious to centralize authority, but he actually did nothing about it since Heiser's fingers were on every pulse in the Far East and no one else could have hoped in any reasonable period of time to acquire his standing with these various governments, most of whose public health policies and aspirations were confidently founded on Heiser's dicta and advice.

Dr. Howard remained in charge of the Caribbean area where he had planted the first foreign enterprise of the IHC and had invented the techniques of the intensive system of hookworm control at a time when the word "eradication" still figured expectantly in the lexicon of the Foundation. He continued to monopolize this field until he retired, bringing new weapons to bear, as fast as they were invented, on a stubborn enemy which was always being defeated but could never be destroyed. Though yellow fever and malaria captured

Dr. Russell's interest entirely as their intricacies became apparent, hookworm disease was the traditional core of the IHB program - the foot in the door of the salesman of rural public health. It continued to occupy the Board for some years, though on a constantly diminishing scale. Dr. Russell was frankly uninterested in it because nothing new came out of it, and it was turned over as fast as possible to local health agencies. In 1922, Mr. Rose's last year with the Board, the Foundation was still spending half a million dollars for the relief and control of hookworm disease; in 1935, the year of Dr. Russell's retirement, only one small project remained - an experiment with a new type of latrine in an Egyptian village. Dr. Howard had resigned in 1934. It is a matter of interest, however, that hookworm never disappeared entirely from the annual reports or the budgets of the IHB, or of its successor, the IHD. It figured for some time as a small research project in nutrition and immunity, and came

to life again in the last years of the IHD as a control problem in Bolivia and the Dominican Republic, its eradication always simpler in theory and more difficult in practice than most of the other diseases. It is still an enormous and unsolved problem of the tropics, awaiting the time in some distant future when a rising standard of living and of education will do away with it entirely.

Hookworm disease was the springboard which launched the IHB into its comprehensive activities for the promotion of rural health. Dr. Ferrell was very influential in this movement in the U.S. - more so than any other single person. The number of county health departments organized on a full-time basis was three when Dr. Ferrell joined the IHC, the number grew to 205 during Mr. Rose's period as Director, and was 621 when Dr. Russell retired in 1935. When Dr. Ferrell himself resigned in 1944, their number had increased to 1838, more than half of all the counties in the U.S.

Because of his success in this extraordinary work, his large acquaintance with the health officers of the U.S., and the esteem in which they held him, he was elected President of the American Public Health Association in 1933.

The only other disease with which the Board had been engaged was tuberculosis. ~~That~~<sup>the</sup> attack, developed by the Board's Commission to France, was through the isolation of discovered cases and the education of the public in its dangers. The Commission had been dissolved in June of 1921, the French had taken over the clinical activities and Dr. Russell was glad to be out of it. The knowledge of its epidemiology and of the social and economic factors involved in its spread was too vague to make this a suitable demonstration of disease control for the Board to undertake. The aim was not sharp enough to stop such a chronic and unknown process in its tracks, and nothing was learned of scientific value during the campaign. Dr. Russell told the staff in

Paris that he hoped the IHB would never get into that type of work again.

The exception was the Bureau of Public Health Visiting - the Visiteuses d'Hygiene - which the Board had created in France together with its associated schools of nursing, and which it continued to administer under Miss F. Elisabeth Crowell, a remarkable nurse whose work had impressed the Foundation as constituting a permanent contribution to public health and a possible starting point for a continuing activity in nursing education. The stirring of a European program was taking place in the RF apart from the IHB. A policy had been adopted by the Trustees of keeping in continued touch with conditions in Europe after the war, through visits of officers from time to time. In 1920, Mr. Edwin R. Embree, who was Secretary of the Foundation and of all its Boards, made a survey of the European situation and came back enthusiastic over Miss Crowell's accomplishment. Mr. Embree was

already interested in nursing; he had engineered a conference on nursing education in 1919 which had led to the famous Goldmark report in 1922, and to aid by the Foundation for a demonstration at Yale University of the newer methods of training nurses. Miss Crowell was assigned to study nursing education in nine countries of Europe and her report in May, 1923, seemed to Embree and to the Trustees to reveal a great opportunity for the Foundation in a new field almost as important as medical education in its relation to medical care and public health. It was a field shared between the IHB and the Division of Medical Education, but was difficult to partition. The ideal education for a nurse was an integrated course which would prepare her for both hospital care and public health service. It was decided to create a new division of the Foundation, to which could be assigned not only nursing education but some other projects which were now administered by the Foundation itself because they did

not lie exactly in the field of either the IHB or the DME.

In December, 1923, the Trustees created a Division of Studies, under Mr. Embree, to lend "cooperation in studies in human biology including general physiology and the mental sciences; aid in nursing education and studies in hospital and dispensary service, and (to make) studies with regard to projects in new fields which might be considered from time to time by the RF." The RF now had two Divisions, the DME and the DS, and two Boards, the IHB and the China Medical Board. Since the IHB was already engaged in public health nursing projects in Brazil and the Philippine Islands, as well as in France, and Mr. Rose had felt strongly that all the public health activities of the Foundation should be developed in harmony under one direction, in the IHB, it was agreed to leave existing programs unchanged and to give the IHB complete freedom to develop public health nursing in the countries where it was working. This permitted Dr. Russell to pursue

his conversations with the Johns Hopkins and Toronto schools of public health in regard to possible courses for the post-graduate training of public health nurses. The DS would limit its interest to the basic education of hospital nurses. Thus the education of nurses, like that of doctors, was dropped from the IHB without protest; both were losses which proved against its interest in the end and which were corrected in after years.

In the redistribution of 1923, Miss Crowell, of the Nursing Bureau of the Commission for the Prevention of Tuberculosis in France, was taken on Mr. Embree's staff, and Selskar Gunn, who had organized its Educational Division, was assigned to Dr. Russell as a staff member of the IHB although he was not an M.D. Mr. Rose had created two categories of individuals on his staff - the regular members, and the special members taken on for temporary projects or for a probationary period before being regularly appointed.

All the men engaged in yellow fever work and on the Tuberculosis Commission were special members, as were consultants, engineers, entomologists and other experts and specialists. Dr. Russell continued this classification and it was soon obvious, though never as far as I know expressly stated, that to become a regular member of the field staff, one would have to have the degree of Doctor of Medicine. Dr. Russell made two exceptions, much against his will: the first was Gunn, who was the only non-medical man ever taken on to the regular staff by either Mr. Rose or Dr. Russell; the other was a nurse.\*

Gunn's appointment was logical and unavoidable. The office of the Tuberculosis Commission in Paris had gradually developed into a central European headquarters for both the IHB and the RF. When the Commission was disbanded, Gunn was brought from Czechoslovakia to keep the office open,

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\* Miss F.E. Crowell, appointed in 1931 when IHD absorbed all nursing activities of the RF.

and in October, 1922, the letterhead was changed from "IHB - Prevention of Tuberculosis in France," to "IHB - Office in Paris, Selskar M. Gunn, Director." In 1923, Dr. Russell found himself with an office in Paris, and a European Director. Gunn belonged to a small but outstanding group of health officers and teachers, known as the "Sedgwick school," who had vigorously opposed the monopolization of the whole public health field by doctors of medicine. He had graduated from Professor William T. Sedgwick's course in Sanitary Science and Public Health at the M.I.T. in 1905, at a time when physicians took little interest in preventive medicine and there were large areas in the field of public health which the standard medical course left completely uncovered. Sedgwick was greatly respected in public health circles; he had been elected President of the American Public Health Association, and had been a member of the IHB until he died in 1921. But Dr. Russell, like most doctors, was not in

sympathy with the idea of non-medical health officers. There were tasks connected with public health and with the IHB which doctors were not qualified to perform, but Russell wanted a doctor in charge because he had to deal with disease and with other doctors. It was this argument which he had used to convince Mr. Rose that malaria control was a job for doctors to direct and not engineers or entomologists, necessary as the latter might be, for malaria was a human disease and not a set of the engineer's blueprints. Dr. Russell did not understand Gunn and thought his sociological and educational outlook would not lead the IHB rapidly and safely to any desirable goal; he had a scientist's criteria for a sound experiment which, in his opinion, usually involved the laboratory approach. On the other hand, Gunn - idealist, humanitarian, with the high enthusiasms and profound depressions of a mercurial Irishman - was uncomfortable and at a disadvantage in talking with Russell. He felt that the

Poor opinion of SS. -  
A bact. finds the  
course of a disease  
by plating it out  
and has something  
concrete to build  
on.

IHB, under the new regime, would ignore the social implications of disease which seemed to him all-important, and he was disheartened by the annual reports which were dominated by hookworm, yellow fever, and malaria. Nevertheless, the two worked together to build up a European program for the IHB of rapid growth and lasting importance. It was Gunn who discovered Johan of Hungary, Stampar of Yugoslavia, and Rajchman in Poland, and later of the League of Nations. All of these constructive leaders Dr. Russell backed to the hilt.

Dr. Russell, it should be added, did not like the way the Paris office was developing. It had begun as an IHB outpost, like any other foreign office in South America or the Far East. But Paris was a crossroads for Europeans such as New York could never be and Mr. Vincent soon had the idea of setting up a branch RF in Europe with Gunn at the head. It was taken away from the IHB in less than a year,

Decentralized the  
IHB and tied it  
in with RF

and by 1924 was supported by a Foundation budget. The other Rockefeller Boards and Divisions sent representatives to live in Paris and handle their expanding European interests, and officers and Trustees were frequent visitors, so that soon the little suite at 22, rue de l'<sup>Elysée</sup>Eglise, became too small, and in August, 1925, the offices were moved to 4, rue Septembre, near the Opera, up four flights of stairs and no ascenseur. These proved to be very unsatisfactory and Mr. Gunn employed George Bakeman, who had been with the Red Cross in Austria and whom he had known at M.I.T., as office manager to scout for a permanent home. Bakeman discovered a brand new building at 20, rue de la Baume, without partitions on the fifth and sixth floors, so that the rooms could be arranged as desired, and this is still the address of The Rockefeller Foundation. Gunn was in charge of the new offices, but he was still on the staff of the IHB directing its European program which by 1926 had grown

so large that he had six staff members to assist him:

George Bevier for Austria; W. Leland Mitchell for

Czechoslovakia, Hungary and Yugoslavia; Ralph K. Collins

for Bulgaria and Turkey; Frank Milam for Poland; R.M. Taylor

for France, and C.A. Bailey for Spain. These men were thus

removed one step from immediate contact with Dr. Russell and

were on a slightly different plane (basis) from the rest

of the staff whom he controlled directly. This was a novel

situation in the IHB and one which Dr. Russell did not like.

He was opposed to decentralization of authority and was

unwilling to surrender responsibility to Gunn, who as Chairman

of the Paris office, was more than the representative of the

IHB; he was also closely tied to the RF and its general aims.

To Mr. Vincent, on the contrary, this seemed a most

desirable development. The decentralization represented by

the Paris office had created a tightly knit group of sub-

directors of Foundation activities <sup>who,</sup> in an atmosphere of

They formed a small independent (planetary) group, subordinate to N.Y. but revolving about another center, developing their own brand of policies and ideas.

relative independence ~~who~~ were working in closer consultation with each other and with the Europeans than they had ever been able to do in New York, while Mr. Gunn's position created a common focus of thought and activity which brought even the somewhat detached and autonomous IHB into the circle of general Foundation interests. It was an epitome of the Foundation projected into the European scene. As President of the Foundation, Mr. Vincent was encouraged to believe that a similar coordination might be effected in New York by bringing the IHB into the same direct and responsible relationship to the Foundation as that of the DME, whose tentative plans and matured projects were discussed by Dr. Pearce with Mr. Vincent and then presented to the Trustees. Actually, the Foundation took very little part in originating or approving the projects which Dr. Russell and his Board presented at stated intervals for financial action. Mr. Vincent wanted to establish a more organic connection between

the Foundation and its various parts, as well as a clearer definition of their relations to each other. This he obtained from the Trustees in a reorganization which went into effect April 1, 1927. The IHB and the DS were suppressed and all the activities of the Foundation gathered into two Divisions - the IHD and DME - with the object of centralizing responsibility and the evaluation of programs in the Foundation, and of delimiting the fields of medical education and public health more clearly to avoid overlapping and confusion.

+55 [ This partition led inevitably to certain allotments which proved unworkable in the long run. The work of the CMB was brought under the DME, an unbalancing action which was obviously provisional, and the whole program of the DS in nursing education was given to Dr. Pearce, which revived an old debate. Fitting nursing into the organized activities of the Foundation had always been a thorny problem ever since the field of medical education had been split off from

public health. The creation of the DS had served as a temporary expedient, but the present solution was unsatisfactory to both Russell and Pearce. In addition there was a group of miscellaneous projects of the DS which could not be fitted into the new scheme at all, and ranged from aid to research in marine biology to anthropoid investigations at Yale, anthropological studies of aboriginal tribes in Australia, and research in brain physiology and mental hygiene in various universities. They were all in the field of the biological sciences which was as far as Mr. Vincent was willing to stray from medicine and public health, and probably for this reason were labeled Human Biology, to which they bore an evolutionary relationship at least. These projects had been developed by Mr. Embree\*, director of the Division of Studies, in the conviction that medicine and public health were not the only fields of human affairs in which the Foundation should lend constructive support, and

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\* Fosdick, p.238

they did in fact foreshadow important future developments. At the moment they were left hanging, in the expectation that the growing desire within the Foundation to broaden the base of its activities would create an appropriate setting for them.

See 58  
notation on yellow p. 55)

At the same time Mr. Vincent hoped to restore the close relationship between the two which Mr. Gates had had in mind when he assigned ~~them~~ as one program to Mr. Rose and the IHC. It was never possible to realize these aspirations of Mr. Vincent. As the activities expanded in both fields, they inevitably encroached upon areas of the untried and the unknown in which the Trustees felt themselves incompetent to advise and to decide and were forced to rely upon the judgment and knowledge of the directors of the two divisions. Dr. Russell and Dr. Pearce, however, made no great effort at collaboration. They respected each other's abilities, but they differed so radically in temperament, aims and

methods that they rarely saw eye-to-eye in consultation over a common objective. Thus while their programs in medical education and public health intersected at so many points that no logical frontier could be set up between them, teamwork did not develop in the way Mr. Vincent had hoped. Instead, the desire was for a separation and definition of function rather than for any type of integration.

end of p. 55 a

beginning of yellow p. 56

health were to be cared for by the eventual creation of new divisions. Thus all the operative functions of the RF were now contained in the IHD and the DME. At the same time the decentralization of the Foundations' operations, which Mr. Vincent had found to be so fruitful in Paris, was formalized and extended by creating three Vice-Presidents. Mr. Embree, whose rather anomalous Division of Miscellanies had been done away with, became Vice-President in the New York office; Selskar Gunn was promoted to the Vice-Presidency in Paris; and

Mr. Roger S. Greene, Resident Director of the Peking Union Medical College under the China Medical Board, was made Vice-President in the Far East.

Dr. Russell did not like the change. He had no Board with its majority of doctors and scientists to support him and had to take his proposals to Mr. Vincent, whom he found the most skeptical man he had ever known, more adept in tearing things down than in building them up, and who, he thought, did not really believe that health officers and health departments could reach the goals they were setting. Mr. Vincent had been President of the University of Minnesota - a humanist who had learned to be an exceptionally fluent, witty and admired public speaker at Chautauqua, which had been founded by his father. His field was sociology, but his interest was captured by medicine and public health and he reached a wide popular audience through his annual Presidential Reviews, published by the RF, and his numerous

public addresses in which he explained the RF to the world. He took exuberant pleasure in young people, as Alan Gregg has commented, and gave the field men a feeling of belonging to an organization that had spirit and style. He got to know the staff of the IHD better personally than any other President. He liked teamwork and expected tolerance and loyalty, and his rectitude and eager interest gradually overcame Dr. Russell's initial uneasiness in dealing with him directly. In the end they understood each other very well, and during the last few years, Dr. Russell could generally count on Mr. Vincent's support.

Unfortunately for Mr. Vincent's hope for a new integration of the Foundation's activities in the "closely related fields of medical education and public health, on which the Foundation had come to concentrate its attention and resources, Dr. Russell and Dr. Pearce, the directors of the two divisions which now carried on all those activities, did not often

see eye-to-eye on the many questions which concerned them both. Their characters were in strong contrast and their interests and points of view were quite different. Though to Mr. Vincent it was "increasingly clear" that the strengthening of medical schools has a direct bearing upon the essential task of preventing disease,\*" actually, because of Dr. Russell's and Dr. Sawyer's increasing absorption in research rather than public health administration, the IHD did not greatly feel the need of a strong DME, and as for the teaching or preventive medicine in medical schools, the IHD preferred to make direct grants to universities than to operate through the DME. At the Harvard Medical School it supported a plan to "permeate the curriculum with the preventive idea,"\*\* and made a grant for much the same purpose to Vanderbilt. Dr. Pearce, on the other hand, had little interest in public health or any form of close collaboration with the IHD. He was really interested in medical science rather than in medical education, and soon abandoned the latter entirely

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\* President's Review, 1922, pp. 12 & 39

\*\* President's Review, 1923, p. 40

and turned the attention of his Division to the aid of basic research in the medical sciences. Dr. Russell was of course also a propagandist for research, but his interest was in "target" research, aimed at elucidating questions arising in the course of disease control and carried out as a staff enterprise, coordinated and directed by a central authority. Teamwork did not develop between the DME and the IHD in the way Mr. Vincent had hoped, and the desire seemed to be for a separation and definition of the two fields rather than for any type of fusion.

Dr. Russell now turned to the Trustees with two novel and important proposals. He needed a central laboratory for investigations on yellow fever virus which could not be carried out in the field, and he desired to expand the scope of the IHD to include other important diseases besides hookworm, yellow fever and malaria. Mr. Rose was still a Trustee, but Dr. Russell was courteously rebuffed in his attempts to

First monkey with  
yellow fever -  
July 4, 1927  
Accra

consult him. He had severed himself completely from the IHD, apparently to avoid exerting any influence on his successor. Dr. Russell therefore looked to Dr. Simon Flexner, the most influential of the Trustees in medical and scientific matters, to support him. Dr. Flexner was getting much interested in epidemic influenza and in viruses in general, since very little was known about them. Dr. Russell proposed a joint program of research in respiratory diseases, the laboratory work to be carried out by the RI, and the field work by the IHD. This was one of the most widespread and important group of diseases that affected mankind and represented an appropriate new project for the IHD, as well as providing a demonstration of the value of coordinated investigation in laboratory and field. Dr. Flexner accepted the proposal eagerly and it was decided to study respiratory infections in various parts of the world. Dr. Russell's choice of the man to carry out these

Summer of 1927

studies was also very agreeable to Dr. Flexner; he was Dr. Wilson G. Smillie, of the IHD staff, who had once been a fellow of the RI. The investigation was begun at once in October, 1917<sup>?</sup>, the first venture of the IHD into the unknown. At the time Dr. Russell learned that Flexner was interested in the mode of transmission of verruga, a little-known disease limited geographically to certain valleys in Peru, the cause of which, a minute bacterium, had just been isolated and cultivated by Noguchi at the RI. Dr. Russell proposed a cooperative field study in this disease also and provided an entomologist, Dr. R.C. Shannon, to do the field work.

Almost simultaneously he authorized a survey of tuberculosis in Jamaica, an idea which had originated in the Bureau of Health Education, created by Dr. B.E. Washburn of the IHD, as a result of the early hookworm work. Tuberculosis was the most destructive disease in Jamaica, and in Dr. Russell's

opinion, in the world, and offered another opportunity to investigate the unknown factors of its spread in a scientific way, an approach which had not been included in the program of the Commission for the Prevention of TB in France. All this caused a certain consternation in the home office where the staff now clearly saw the trend. Dr. Russell was aiming to enter the pioneering field of global epidemiology.

Dr. Russell then approached Dr. Flexner on the subject of a central laboratory for the IHD to enable it to supplement the field investigations of yellow fever. In 1927, after a most discouraging period of insuccess, the yellow fever Commission to West Africa had succeeded in infecting an Indian monkey with the disease and in isolating the virus, an achievement which at once opened up opportunities for laboratory investigation which had been impossible for over 25 years. This time Flexner proved difficult. He had always

new program

other disease  
problems -  
short-term  
field studies

had a satisfactory understanding with Mr. Rose that the IHD would confine itself to operations for disease control, and the RI would do the research. This had always been quite unrealistic, of course, <sup>because</sup> except for Dr. Noguchi's expeditions to South America and Africa, ~~because~~ they worked on different types of disease, without the possibility of coordination.

When Dr. Russell presented his yellow fever problem, Dr. Flexner did not want it. Several investigators, including Dr. Noguchi himself, who was like a son to him, had died of yellow fever contracted in the laboratory, and the risk was very great. Furthermore, he was not willing to divert his men from their own investigations and he was afraid that the volume of outside work would grow out of any bounds which he might set; nor did he want outsiders in his laboratory.

Dr. Russell was, however, engaged in a very large experiment on two continents without the basic knowledge necessary for the further prosecution of the work; the prestige of the RF

May 21, 1928

FFR thinks of an independent lab out of N.Y.?

was deeply involved and this was not a problem which could be peddled out to others. Dr. Flexner at length reluctantly offered Dr. Russell a couple of rooms in the Institute, under the most rigid conditions aimed at preventing the spread of the virus to the other laboratories. The Yellow Fever Laboratory in New York of the IHD was opened on June 28, 1928, under Dr. Wilbur A. Sawyer.

Yellow fever work now dominated the program of the IHD and became (more and more) exceedingly technical as the virus studies proceeded. Dr. Russell had to go to the Trustees with the details of his activities and he always took an enormous file with him which, with the explanations of the scientific background of his proposals, discouraged them to the point of letting him have his way. All but three of the 25 Trustees were laymen, and the biological intricacies of yellow fever serology were impenetrable to them. A new general reorganization of the RF to enable it to embrace

The Trustees had never felt themselves wholly restricted to a particular program and had made occasional important appropriations outside of the health field. In general, however, the Foundation, under Mr. Vincent, was held to be committed to medicine and public health, and when other important interests had attracted the attention of the Rockefeller family, independent agencies had been established at different times, each with its own program and trustees. There were four of these Rockefeller boards now in operation: the RF, GEB and IEB, and the Laura Spelman Rockefeller Memorial which supported research in the social sciences. During 1928 the four Rockefeller boards that operated in the philanthropic field - GEB, RF, Laura Spelman Rockefeller Memorial (which supported research in the SS) and the IEB - in a series of conferences "sought ways of bringing the work of these organizations into closer and more definitely cooperative relations."\*

In the plan which was adopted and went into effect on January 3, 1929, the RF took over from the pool of activities all the programs relating to the advance of human knowledge.

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\* Annual Report, 1928 - Letter of transmittal

other fields than medicine and public health was under consideration and Mr. Vincent rather unwillingly appointed a committee with Dr. Flexner as chairman to draw up a proposal for the future status of the IHD. Dr. Flexner wrote the scheme which was based on that of the RI, where the Trustees were in charge of plant and finances, with a Board of Scientific Directors to evaluate the program for them. The Committee's report was accepted on January 3, 1929, when the reorganization of the RF took place. Dr. Russell's interregnum without a Board had lasted less than two years.

The new RF consisted of five divisions whose programs were dedicated to the "advancement of knowledge." To the fields of medicine and public health were added those of the natural sciences, social sciences and humanities. As in the IHD, there was to be a general decentralization of functions. Mr. Rockefeller Jr. had once expressed concern "whether it would be possible to get together a single group of men who

could be expected to have knowledge and interest along so many different lines." It was now decided that the Trustees had the ultimate responsibility, but each division "must have a thoroughly competent technical staff of such caliber that their recommendations to the Trustees in their specialized fields would carry an initial weight of authority and responsibility."\*

However, to preserve an organic unity, Mr. Vincent insisted that the RF and not the individual divisions, should be held to be the agent in every project. There was resistance to the idea on the part of the divisions and it was eventually dropped under other Presidents. The new policy was reflected in the divisional reports. In 1926, Dr. Russell reported that "the IHB took part in public health work of various kinds in 88 states and countries throughout the world;" but in 1927 "the RF cooperated with governments in public health."

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\* RBF, The RF, p. 138

Actually the positions taken by Frost and Russell were in no sense incompatible and an acceptable compromise was not hard to reach. The statistical and the laboratory methods are both working tools of scientific epidemiology today, and while they were firmly established then in the recently created schools of public health, they were still new to health officers. They were new at that period to the general run of health officers; they were already firmly established in the recently created schools of hygiene which were exploring the scientific approaches to health problems. The two methods sought an understanding of the origins and evolution of endemic and epidemic situations, but from different angles. The effective causes of the spread and persistence of disease are usually obscured by a complex of confusing factors and elements - physical, biological and social - any of which may plausibly be concerned in the result and which, therefore, must be untangled and evaluated

before the meaning becomes clear. Mathematical ways of dealing statistically with living things had been developed, by means of which descriptive data gathered by observation could be quantitatively analyzed, and this Karl Pearson called "biometry." <sup>Yule?</sup> Yule, one of Pearson's pupils, showed that the statistical method was "specially adapted to the elucidation of data affected by a multiplicity of causes." Here then lay one way of solving the problems presented by communicable disease, whose variable characteristics had for centuries been described and compared in a purely qualitative way. Frost developed the quantitative approach to the mass phenomena of disease, using statistical analysis as a touchstone to separate the consequential from the inconsequential, in the data accumulated by a field epidemiological survey.

On the other hand, there had been a simultaneous advance in the knowledge and techniques of microbiology - the study of the microscopic agents of disease and of their behavior, in vitro and in vivo, in the laboratory. This had led to a

much clearer understanding of the sources and modes of infection and to the principles of immunity. An example was Dr. Russell's previous work on mass typhoid immunization, which had been based on Sir Almroth Wright's laboratory investigations. Problems of infection and immunity can be divested of the host of confusing and often casual factors which complicate them in nature - "cloistered" in the laboratory, as Sir Almroth used to say - and clues obtained which will enable those engaged in the practical aspects of disease prevention and control to focus on the significant things.

The differences which arose and persisted between Russell and Frost were thus matters of emphasis. Frost looked to the laboratory for certain indispensable data but not for the solutions to individual or general problems in epidemiology. Russell recognized the importance of statistical methods in arriving at conclusions (paper

- 4 -

epidemiology, he called it), but he wanted dependable data which had passed the test, where possible, of laboratory confirmation as a prerequisite for analysis. Epidemiology depends on being able to recognize a disease when it occurs, and this can only safely be done with laboratory assistance. In his early work as Director of the Laboratory Service of the IHB, he had promoted the establishment of public health laboratories in order to provide health officers with trustworthy information to guide their activities. "The laboratory and reliable vital statistics," he wrote - the emphasis is mine - "are the necessary bases of intelligent public health administration."

Both biostatistical and laboratory analysis depended on the patient and intelligent efforts of the so-called "shoe-leather" epidemiologist who covered the field, gathering data and material for examination. As Dr. Bishop remarked at a Scientific Directors' meeting, the solution of the IHD dilemma was to combine laboratory, "paper" and "shoe-leather" epidemiology in one coordinated program, and this was the actual outcome of the long debate.

As a matter of fact, Dr. Russell had already introduced a biostatistician into his New York offices, some four years previously, which was before he obtained his laboratory. He badly needed skillful help in arranging and systematizing the miscellany of data pouring in upon him in rapidly increasing volume from hookworm, malaria, and yellow fever projects all over the world. But in addition to this, yellow fever was behaving strangely, upsetting firmly established doctrines, and Dr. Russell wondered whether a statistical examination of the situation might not provide an explanation. He looked to the Hopkins School of Hygiene, which had strong departments of statistics and epidemiology, to send him the proper person and in 1926 he took Miss Persis Putnam on his office staff. This was not a completely novel experiment on Dr. Russell's part, since the Milbank Memorial Fund, which was established in 1905, had employed two statistical analysts under the direction of Edgar Sydenstricker before the RF came on the

scene, and although not a medical organization, had engaged in studies of tuberculosis and other sickness surveys. The move was one, however, which in its consequences was to surprise no one more than Dr. Russell himself.

Miss Putnam had just obtained her Doctorate of Science in Hygiene at Johns Hopkins, majoring in statistics, but she had already had considerable practical experience with the U.S. Public Health Service in the analysis of public health reports. She was set at once to examining field reports and her first study was of the 1926 yellow fever epidemic in Brazil, which had come as a rude surprise since the infection had been thought practically extinguished in South America. She kept indexes on the yellow fever work for years, but there were no epidemiological revelations, because the infection could not be recognized when it occurred. Dependable diagnostic tests were later devised in the laboratory and led in the 1930's to an understanding of the yellow fever enigma, a sequence of events which doubtless confirmed Dr. Russell in his conviction that the laboratory was basic to epidemiologic inquiry.

Miss Putnam soon became familiar with all the other fields of IHD activity - hookworm, malaria, tuberculosis, medical entomology, and respiratory disease, - and even analyzed the fellowship record, comparing training with results. She was able to help the field investigators in the arrangement and analysis of data, which few of them at that time knew how to handle expertly. One of her early memorandums on the questions to be answered by the Station for Field Studies in Malaria which was being opened at Edenton, North Carolina, made a great impression and even reached Dr. Vincent, who remarked that it was "exactly what we need." It was in fact the necessary complement to Dr. Russell's scheme to extend and diversify research. The practice was initiated of subjecting to statistical criticism the setting up, execution, and results of all field and laboratory experiments and Dr. Russell impressed on Miss Putnam the importance of complete objectivity in dealing with plans and reports from even the most authoritative sources. She found, however, that there were limits to her usefulness in

this direction. Higher criticism of the effects of malaria control measures or of tuberculosis surveys provoked reaction. Men faced with all the variables of an actual problem in the field questioned the validity of judgments made in comparative ignorance both of the peculiarities of the disease and of the local circumstances which influenced its spread. It seemed that biostatistics might differ in this respect from mathematical analysis which did not require in its critical function an understanding of the subject matter under investigation.

Dr. Russell, who was always inclined to distrust nonmedical opinions on medical questions, and statistical deductions based on any but the most factual and reliable data, felt the need of a statistical consultant who was also a doctor and familiar with the conditions under which the field projects were carried out. Dr. Dublin, an eminent statistician, who was then on the Board of Scientific Directors, advised him to set up a statistical division with a trained statistician and staff. He felt that

an institution like the IHD without a proper statistical service was like a ship without a compass, and had always considered the employment of a single statistical clerk to be quite inadequate. Dr. Russell was not prepared to go as far as Dr. Dublin proposed, but he brought in a staff member, Dr. Hugo Muench, who had had ten years' of varied experience in the field, and had shown a strong interest in statistics. Dr. Muench studied at Hopkins for a year and in 1932 set up a statistical service in the New York office which turned out to be one of Dr. Russell's happiest innovations. Field men learned the criteria by which the significant could be distinguished from the nonsignificant in analyzing problems and evaluating results; but, since no statistical method can compensate for a badly planned experiment, they were also advised in the art of designing experiments which would hold water. This rapidly set a standard of quality which was a hallmark of the scientific work of the IHD from that time on. Many pitfalls into which both the early yellow fever and malaria work had fallen, could have been avoided had such a service existed from the beginning.

This brought some changes to the IHD in addition to its Board of Scientific Directors. In accordance with the new objective, the DME became the Division of Medical Sciences and Dr. Pearce rapidly worked his way out of all obligations to medical and nursing education. He died in February, 1930, and Dr. Alan Gregg was appointed in his place. Dr. Gregg, once an IHB staff member, was troubled about abandoning medical education completely, and cooperated where possible with the IHD for a short period. The Foundation officers, however, did not approve of his clinging to a field which had been dropped and the collaboration came to an end. Since well-prepared nurses were still indispensable to the IHD, Dr. Russell in 1931 assumed all the activities and personnel of the Foundation in the field of nursing education and practice. Miss Mary Beard became an Associate Director, bringing the number to five, and Miss Crowell was taken onto the regular staff, the only Field Director without the degree of M.D. Gunn was now Vice-President

Ferrell, Heiser,  
Howard, Sawyer,  
Beard

Trying to ride  
four horses at  
once

in Paris, over all the divisions and active in none, so that  
he led a rather frustrated existence until in 1931 he began  
his studies in preparation for the China Program which will ~~be~~  
described in another place. Dr. Russell, however, took  
immediate advantage of the <sup>new</sup> situation in the Paris office and  
sent Dr. George K. Strode, who was in storage in the U.S.  
on study leave, to Paris as Director for Europe, Africa and  
the Near East. The responsibility for policy and program  
remained in New York.

To Dr. Russell's disappointment, Mr. Vincent selected  
the first Board of Scientific Directors himself, appointing  
only two of the list which Russell had suggested - Dr. Rufus  
Cole, Director of the Hospital of the RI, who was a very  
close friend, and Dr. Wade Hampton Frost, Professor of  
Epidemiology at the Johns Hopkins School of Hygiene and  
Public Health, who had started the research on respiratory  
diseases for the IHD and represented the combination of

investigator and administrator which Dr. Russell always sought. The other medical members were Dr. Eugene L. Bishop, Commissioner of Health of Tennessee, and Dr. Wilson G. Smillie, who had been doing the investigations in respiratory diseases for the IHD and was now Professor of Public Health Administration at Harvard. The two non-medical appointees were Louis I. Dublin, statistician of the Metropolitan Life Insurance Company and Prof. C.-E.A. Winslow, Professor of Public Health at the Yale Medical School, who, like Gunn, had graduated under Sedgwick and held the degree of Dr. P.H. Dr. Russell was, ex officio, a member of the Board, which made seven in all. Dr. Russell, who undertook to arrange their terms so that two should retire each year, saw to it that the non-medical members, Winslow and Dublin, received the one-year terms. The new Board differed from the old in being inside, not outside the IHD. It was self-perpetuating, electing two members each year to replace two who went off. The schools

of public health were influential on the Board and the professors usually outnumbered the administrators. The Board had no executive responsibility and was really a scientific policy committee, interested in the future developments, serving to keep the program balanced and letting the Director know whether he was headed on a course which had general acceptance. Their decisions were on principles, not concrete projects. These were selected and elaborated by the officers, and the Board usually voted the estimates as presented and rarely turned anything down. Winslow once complained, "We have worked all day and haven't changed the program by five cents." But the Board was not a rubber stamp; it was very helpful on policy, and in considering projects the discussion was apt to go into general principles and objectives. Actually the Board was virtually forced to act as individuals and not as a Committee which met to deliberate and evolve programs. It could hold only a few

FFR attributed  
this to careful  
and mutual  
preparation;  
Winslow to  
steam roller

stated meetings a year to approve a crowded agenda of projects and estimates. There was little opportunity for mutual exchange of ideas in informal discussion, which might lead to a group judgment by free interplay of suggestion and opinion. Even so, the reciprocal relationship between officers and Board was enormously valuable. The members of the Board were men whose standing in their various fields gave weight to their judgments; the Trustees had great respect for them and corresponding confidence in the proposal of the division. They, on the other hand, often considered that they learned as much as they gave in an association which offered such exceptional opportunities for discussion and observation of every aspect of public health under the most diverse conditions. They were urged to visit the field work, which they often did in the summertime; usually in pairs, bringing to staff members an invigorating draught from the outside, and returning with a valuable appraisal to the home office.

The make-up of the Board changed continually and yet many of the same names kept turning up anew to give it continuity. It became a vital organ to the body of which it had seemed at first only an appendage, and when after more than twenty years it was given up with the transformation of the IHD into a new entity, its excision was a matter of regret to all who had been accustomed to the impact of its moral and critical authority.

The Board of Scientific Directors met for the first time in January, 1929. Dr. Russell kept everything which might prove controversial off the agenda at the first session, acquainting them with the division's program by samples judiciously selected. He shrewdly suspected, however, that they would not be harmonious in spite of Mr. Vincent's opinion that they were a well-balanced group. There were vigorous cross currents in public health thinking and Dr. Russell hoped that they would not pull his Board apart.

There was no desire on the different boards to obtain unanimity of opinion on debatable matters, but there was a feeling in the Foundation that action should never be pressed in the face of any serious opposition. Dr. Russell had long been turning over in his mind an important modification of the division's program which he now feared would cause a division in his Board.

In the fall of 1929 he sent a memorandum to the Scientific Directors to sound them out on his idea. Reviewing the history of the IHB, he pointed out that in hookworm disease a large measure of control was possible by very simple methods provided there was a reasonably efficient health service to carry on the work. Mr. Rose had therefore put much effort and money into raising local and state health organizations to a higher level of efficiency so that the available information might be used effectively to combat this and other diseases. Later, however, the Board attacked malaria and

yellow fever and it was discovered that on many essential points there was no information at all. Field studies more and more comprehensive in character, which now included respiratory diseases and tuberculosis, had been undertaken at the Board's expense to clear up the unknowns in epidemiology. The results had already modified administrative procedures of health departments, and there was no question that many public health measures were still based upon observations which urgently needed restudy. "It is probable," wrote Dr. Russell, "that our organization can make a greater contribution to public health by pursuing scientific studies in the field than by further developing health organizations on the basis of existing knowledge." And he added that such a program should not overlook the investigation of public health administrative methods, mentioning particularly the relation of the health department to hospital and medical service, a proposal which, if acted upon then instead of

twenty years later, might have influenced the tardy developments of American medicine in this controversial field.

Dr. Russell did not disguise the fact that giving priority to investigation in the activities of the division would involve considerable changes in budgetary allotments, personnel, and facilities. The funds, he thought, could be obtained by diminishing the grants in aid to health departments; men of the "investigative type" would be engaged to fill future openings on the staff; and to support their work the IHD would need a "home station in New York or other suitable place" with offices, laboratories for pathology, bacteriology, parasitology and medical entomology, and provision for epidemiological and statistical work.

It is clear that what Dr. Russell had in mind was a new kind of research institute to utilize the peculiar advantages of the Foundation's kind of work: the long

experience of the field staff in working with governments and establishing relations of unusual confidence with peoples in every part of the world, which enable them to take cognizance of all the local conditions affecting health.

This type of research, as he pointed out in his memorandum, would be quite different from that pursued by the universities and scientific institutes which devote themselves to the study of the fundamental phenomena underlying disease.

This would be the application of scientific epidemiology to concrete problems, with the aim of finding or improving methods of control.

What gave the decision a pressing character and Dr.

Russell his strongest talking point was the yellow fever

situation. The discovery of a susceptible animal had at

last opened up opportunities for research which had long

been anxiously awaited. Besides the difficulty and expense

of operating complete virus laboratories in Africa and Brazil,

Date of the  
mouse discovery?

there were valid reasons for carrying on the experimental work where yellow fever did not naturally occur. Dr. Flexner had with some reluctance offered facilities at the RI to fill the immediate need, but he could hardly be expected to provide these indefinitely or to find the space which now became necessary for operations on a larger scale.

It was understandable also that Dr. Russell would wish for quarters of his own where the IHD, which was the only operating agency of the RF, could achieve the sort of unity and detachment which the RI itself enjoyed. He actually picked out a spot for the building near 42nd Street and the East River, where the U.N. is now located, and then went to Simon Flexner with his idea, in the summer of 1929. Dr. Flexner seemed at first not unfavorably disposed to the plan. It is likely that he had never wanted to do laboratory or field research for the IHD since it interfered with his own carefully constructed program, but in Rose's time he had compromised

by lending Dr. Noguchi and other members of the Institute staff to the IHB on a temporary basis. Now the looming yellow fever studies threatened to be exceptionally disturbing. On the other hand, he did not approve of converting the IHD into a research organization with functions which might easily develop similarities to those of the RI. It was a dilemma which he resolved by decisively opposing an independent laboratory for the IHD other than that provided by the RI. Dr. Russell came away, however, with the impression that he might not object to the laboratory if it were not located in New York. Russell himself thought it might even be preferable to locate it in Baltimore, but he did nothing more about it until he was sure of backing from the RF and his Board.

A change of administration now took place in the RF which favored Dr. Russell's plan. Mr. Vincent, who might not have gone the whole way with Dr. Russell, retired from the Presidency of the RF at the end of 1929 and was succeeded

by Max Mason, mathematical physicist and former President of the University of Chicago. Dr. Russell was happy to have a scientist in charge. Mr. Mason, who did not get about the field as Mr. Vincent had done and knew little at first hand about the work of the IHD, was fundamentally an investigator and he liked Russell and his policy. Russell felt that he would back him if the matter came to the Trustees.

The question now lay with the Scientific Directors. The debate was precipitated by two proposals advanced by Dr. Russell for approval at the January (1930) meeting of his Board. The first was to increase the yellow fever allotment by \$175,000 and to decrease that for State and local health services by the same amount. The second was a concrete plan for a long-term study of tuberculosis as it occurred in families and groups, to be carried out by specially trained personnel working through local dispensaries, coordinated and supported by a "home station" such as outlined in his

memorandum of the previous fall. The Scientific Directors, as Dr. Russell had feared, were irreconcilably split over the main issue, which was, as they saw it, whether the laboratory approach to communicable disease problems should be allowed to dominate the field work and the traditional policies of Wickliffe Rose. Only Drs. Cole and Smillie supported Dr. Russell; the other four, while they strongly favored field investigation, were opposed to turning the IHD into a research institution, in part because it was against every tradition of the organization, changing its aims completely; in part because they strongly disbelieved in the laboratory orientation of epidemiology. The ensuing discussion amounted to a reconsideration of the objectives and policies of the IHD which had a decisive effect on its future program.

Winslow felt strongly that the IHD should be kept in the field of administrative public health and field investigation, letting others do the basic research, as Mr. Rose had

done. He wrote, in a letter to Bishop\*: "The policy of cooperating with public health agencies in the development of field research in public health practice seems to me the most important task of the next twenty years and one which no organization but the RF can adequately perform ... To wander off into conventional laboratory research would be a real tragedy." He added, in comment on the tuberculosis proposition, that since the studies were intended to be made by specially trained staff members, "cooperation" under such circumstances would mean little more than securing permission and facilities from local authorities for the IHD agent to do a piece of work. With this opinion, Bishop, from the standpoint of a State Health officer, was in agreement, urging that the special situation of the RF in its relations with health authorities all over the world should be utilized to help them build up their own research activities - a decentralization rather than a centralization of machinery

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\* January 7, 1930

and technical skill in epidemiological investigation, exemplified by the yellow fever work in Africa and the malaria studies in Italy. These were fruitful combinations of laboratory, "paper" and "shoe leather" epidemiology, closely related to the public health aspects of disease. Laboratory research on parasitic biology, on the other hand, was concerned with looking for new points of attack rather than guiding the actual warfare. He thought it important to avoid creating two distinct kinds of personnel in the staff of the IHD.

Dr. Frost's carefully reasoned opinion, in which Dublin agreed, was decisive. He agreed completely with Dr. Russell that the IHD must not be content with exploiting current knowledge of disease, for it was clearly hobbled in the pursuit of every one of its objectives by limitations to scientific knowledge. Its true function should be to combine epidemiological research with experiments in disease control, for which it possessed facilities unequalled by any other agency in the

world. But Frost's concept of epidemiological investigation differed widely from that of Russell. He appreciated the importance of fundamental research to reveal the nature, causes, and development of disease, carried on in laboratories of microbiology, immunology and parasitology - it was essentially the experimental method used by the Rockefeller Institute and university laboratories. From such studies the guiding principles of disease control had been established. The method constituted an immense advance over the inferences and analyses of the pre-bacteriological era, but the trouble was that it was tending to replace them. To Frost, the focusing of interest through the laboratory on the nature and sources of infection was a deplorable narrowing of the field. Sound epidemiology was not based on the infectious agent alone; there were powerful influences of environment, habit and circumstance which affected the prevalence of disease. In this field he spoke with authority, for in

large measure he was responsible for a new concept in epidemiology. Theobald Smith had not yet made his notable contribution to the understanding of communicable disease, interpreting it as an established parasitism, dependent on the mutual adaptation of two organisms and adjusted to a complex of environmental, social and immunological factors. Ten years earlier, in 1921, he had been appointed professor of epidemiology at Johns Hopkins, the first professorship of the kind in America, and he was now the leading epidemiologist of his time. His distinctive contribution to public health practice had been to make epidemiology an "analytic discipline" based on the accumulation of pertinent "field data" by intensive surveys, from which meaning was extracted by statistical methods. The laboratory was an indispensable tool in this process, but to approach an understanding of the epidemiology of tuberculosis or any other disease through the laboratory was the last method he would have chosen.

He was fully aware of the distrust of bacteriologists and pathologists of so-called "paper epidemiology," based on analyses of the heterogeneous data on the occurrence of disease as reported by official health agencies, which could not result in conclusions any more accurate than the sources of information. This did not shake his confidence in the method; it merely pointed out the necessity of a more elaborate and intensive collection of data, checked by the laboratory and subjected to strict statistical evaluation. "By analysis of such data, and in no other way," he wrote, "can we find the correct answer to innumerable questions which directly confront the health officer."

He proposed, therefore, that the IHD concentrate its aid on local and state health organizations with special emphasis on the development of a sound epidemiological function through the assignment of trained staff members and the development of local laboratory and statistical

facilities and eventually the assumption of the work by local personnel. He would not limit aid to projects favorable for epidemiological study, but we should be on the lookout for such opportunities which held great promise of work of high quality. The projects should not be too elaborate, but rather of such scope as to be practicable for a really good health department. A given unit might be able to undertake only one intensive study, but the field could be covered by multiplying units. The problems requiring investigation were so numerous that no preference need be given; local conditions would determine the focus of investigation.

end of yellow p. 72 n  
p. 73 missing

starts  
with yellow p. 74

problems seemed most difficult and obscure. He recommended that less emphasis be placed on public health practice and more on research until some of these problems were cleared up. Men of the investigative type should be recruited for the staff.

Diff. staff required

Bd. split, unusual  
in RF

Look for card  
on Frost ✓

The reaction of the majority of the Scientific Directors was immediate and adverse. They differed from Dr. Russell on both methods and principles. All but Drs. Cole and Smillie thought that the IHD should stick to its tradition and work for the improvement of public health through the official agencies. Not centralization but decentralization of the laboratory should be sought, so as to support the study of epidemiology, which could only be carried out among the people. Frost, an epidemiologist of great distinction, thought that tuberculosis could never be fought or understood in the laboratory. Bishop, a health officer, thought they should build up research activities in the health departments, and

not in New York, and promote field studies of the natural history of disease and of the methods applicable to its control. Winslow wanted the IHD kept in the field of administrative public health and field investigation; basic research should be given to others, in the Wickliffe Rose tradition.

Dr. Russell thus failed to get anything like the unanimous support which he needed to carry out the comprehensive changes which he had proposed, but he still felt that an important part of his plan could be salvaged. Once the idea of field investigation as a necessary part of public health practice was accepted (and it had met with little if any opposition), the advantages of having a base laboratory seemed incontestable. Professor P.A. Buxton, of the London School of Hygiene and Tropical Medicine, had put the case succinctly. It was a statement dealing particularly with insect-borne diseases, but it was applicable to the public health research problem in general: "The subject may be

"approached in two ways: it may be studied in the field and in the laboratory. The field method has met with most favour in the past ....(but) field observations can hardly ever be precisely interpreted, because so many factors are varying at once. My own belief is that field observations are a necessary preliminary, but that their function is to set problems which should be solved in the laboratory. The laboratory method will eventually carry us further than we can go by working in the field, because experiments can be devised in which single factors vary. One, therefore, obtains a result which is precise and repeatable; from this established base further advances in knowledge can be made. Our ultimate objective is the understanding of the laws...which will give an interpretation of what is seen in the field."

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While Frost and his colleagues might well have contested the validity of this principle as applied to the epidemiology

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\* Quoted by Russell - RF Annual Report, 1932, p.28

of a disease like tuberculosis, the point at issue was really whether or not the central laboratory was to dominate the program and be suffered to displace what many held to be more productive and suitable peripheral activities. Dr. Russell was willing to give way on this point, if indeed he had ever been inclined to insist on it, and made his position clear in his annual report for 1932: \* "The RF is in a position to carry out research on disease in its natural environment, in almost any place in the world. Such research is always conducted in cooperation with government health departments. When the research is successful, the Foundation aims to assist the governments in preparing and trying out plans for the prevention of the so-called preventable diseases through the application of knowledge gained by the research...But so long as public health research is limited to isolated stations in the field, there will be bafflement from time to time because of the inability to carry promising

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\* p.27

"lines of investigation to a conclusion such as can be arrived at only in a well-equipped base laboratory."

This statement met with general acceptance. The new research function was grafted securely on the old traditional policy of working through health departments. There was thus no significant departure from the plan already in operation when the Scientific Directors came on the scene. Dr. Russell wrote to a friend, "I hoped for much and got very little, but I have not lost anything." What he had gained was ratification of the status quo; there was no return to Rose's restricted program. He had his yellow fever laboratory in the RI for Medical Research, and he now introduced malaria problems which could be studied experimentally - the life cycle of the parasite in monkeys and birds, and the study of the biology and behavior of anopheles mosquitoes in captive colonies in the laboratory. Other viruses and agents of disease were investigated and Dr.

Flexner was induced to provide more and more space. It was clear, however, that a more permanent solution would have to be found and an arrangement was made with the RI for the installation in one of its buildings of an independent laboratory to be directed and operated by the IHD - the "home station" which Dr. Russell had wanted. This was opened on January 1, 1934, with the approval of the Scientific Directors and the blessing of the Trustees, who appropriated \$100,000 for its maintenance. After the initial year, the Scientific Directors were a self-perpetuating body, two members going off and two being elected annually, and while at the start there had loomed the possibility of an uncomfortable division between an administration and an opposition group, these clouds dissolved under the high-minded leadership of Frost and through the wisdom of Russell, and each successive Board sought conscientiously to elect only persons to membership who were acceptable to all, and to take no important step about which there should develop any serious doubt.

The result was a balance between public health practice and investigation which seems in retrospect to have been an excellent solution. The staff inevitably became divided between men of the investigative type and those interested (administrative) primarily in community health. To the latter, the laboratory work was most relevant and productive when it was integrated with control measures, as in hookworm, malaria and yellow fever. But no research laboratory should restrict itself to the purely practical questions which arise in the course of the application of knowledge. (Just as Rose focused on disease control, leaving investigation to others,) Russell was not deterred from concentrating on disease problems in field and laboratory which had little or no bearing on the cooperative health projects of the IHD. On the other hand, Dr. Russell greatly expanded the other two main activities of the division as well, which thus developed a larger and better balanced program than in any other period of its

existence. He was very active in the support of institutions of public health education, which included schools and institutes in the U.S., Canada, Great Britain, Italy, Czechoslovakia, Poland and Japan, and in spite of his early unsuccessful effort to transfer to research a part of the funds allocated to health department aid, in the end, the promotion of state and local health services in the U.S. and abroad led to notable developments and is considered one of the principal accomplishments of his administration. In this, the influence of Dr. J.A. Ferrell was conspicuous, and continued the work of Mr. Rose in stimulating and supporting the modern public health movement in its central organizations and its peripheral growth. This intense activity bridged the critical period of the great depression and reached its culmination just as Dr. Russell retired. This was the moment when, in the U.S., the Federal Social Security Act of 1935 released adequate funds in federal aid

to states and counties for health purposes which permitted the RF gradually to withdraw from all commitments in the U.S. to a movement which owed its inception and vigorous growth to a need first recognized by Wickliffe Rose, and a policy ably developed by John A. Ferrell.

One other program, inherited from Mr. Rose, Dr. Russell maintained throughout his period as Director, but in a cautious and restricted way. This was the aid given by the IHB to the Health Section of the League of Nations - the operating bureau of the League's Health Organization. The Foundation had hailed the birth of the League as a great forward step in the social progress of mankind, and Mr. Rose was enthusiastic over the proposed program of its Health Section, which seemed to him a far more suitable organ for the promotion of international health activities on the part of governments than the League of Red Cross Societies whose grandiose plans, elaborated at the famous Cannes Conference

of 1919\*, had already begun to fizzle out. He was pleased with the League's Medical Director, Ludwik Rajchman, and was prepared to aid his general program with broad and elastic appropriations in order to give Rajchman a free hand in developing its potentialities. There is reason to believe that Mr. Rose would have considered turning over a sector of the IHB's program to the Health Section, had it developed along the lines he approved. There were many common objectives, since both worked in selected fields on the frontiers of public health. Rose quoted with approval Rajchman's explanation to his Health Committee of certain principles of action of the IHB, when he announced the Board's appropriation of \$344,440 to the League for various items of its program. "It is a fundamental matter of policy," he said, "that the Board should have no views in determining the Health Organization's policy or programmes or any details of its administration... They would not like anyone to think that they are assuming

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\*See p. \_\_\_\_

the right to participate in the discussions of the Health Committee because they have made a contribution to its work."\*

This was a correct statement and did not conflict with the fact that the Board had given the money to the League for specific purposes - the creation of an international epidemic intelligence service, and an exchange of visits between health officials of various countries - ends which had been suggested by the Health Committee itself. Rajchman hoped for a broader policy in the future, and Gunn, who had supported Rajchman to Rose, now argued for a subsidy to the Health Section without restrictions on the use of funds.

Dr. Russell was opposed to this on several grounds. The Health Organization had no independent existence but was subject to the vagaries of international politics, since its funds were voted by the League Assembly. Rajchman was forced to be politically minded also in order to exist and it was always uncertain to what extent political considerations

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\* Annual Report, RF, 1922, p.157

influenced his thinking. The League membership was not world-wide and did not include the United States. And finally, Dr. Russell and Dr. Rajchman disagreed fundamentally on too many matters of policy to make for a mutual relationship of unreserved confidence. Dr. Russell therefore selected the more technical aspects of the League's program for aid, and treated them as he did any other projects financed by the IHD. There was no question, however, about the need. The financial resources of the Health Organization came from the general funds of the League and its budget was voted by the Assembly. This amounted approximately to \$200,000 a year, less than ten per cent of the average IHD budget, exclusive of capital grants. The additional contribution of the RF ran to about \$120,000 a year until 1930 and then tailed off rapidly and ceased in 1938, ending a period of 15 years of fruitful cooperation, which had convinced thinking people of the usefulness of such an intergovernmental organization.

The budget dropped at once to \$230,000, which was little more than it had been in 1923. The approach of World War II had already begun to affect the international political situation and while the greatly reduced Secretariat maintained a tenuous continuity throughout the war, its functions were transferred to the United Nations in February, 1946.

#### SUMMARY

Dr. Russell retired in 1935 at the age of 65. He was already a distinguished man when he joined the IHB in 1920, after 22 years in the Medical Corps of the U.S. Army. There he had been chiefly engaged in protecting military and civilian populations against communicable diseases, and there was a certain continuity in this with his new job, although the atmosphere and the methods were vastly different. His 15 years with the RF were the most productive of his life, and without obscuring the stamp which Mr. Rose had left on

the organization, he changed the pattern of its activities in a way which added lustre to its already considerable accomplishment. This was not the end of his active life. He was invited at once to join the faculty of the Harvard School of Public Health which reaped the benefit of his practical wisdom and large experience. Thus he had three distinct careers, in each of which he made a vital and original contribution.

His greatest achievement was to create and foster in the IHD the spirit of scientific investigation to serve as intelligence in the war against disease. The IHD had been created on the assumption that enough was already known to make it feasible to control and prevent a number of the most important diseases, if the knowledge were only applied in an organized way on a large enough scale. This knowledge proved, on test, to be inaccurate and incomplete. Russell turned at once to investigation. The IHD had not been

planned as a research agency, but he made it one. "The work of governments in controlling disease," Sir Edward Mellanby once told the League of Nations, "can only be as good as knowledge allows it to be, and this knowledge can only come through medical research." Russell's thesis was that as long as knowledge has frontiers, every health worker has to be a pioneer. The IHD had devoted itself to demonstration, leaving the obscurities to be clarified by others. Dr. Russell assumed both functions. For the first time, coordinated field and laboratory investigations and experiments were brought to bear on viruses, plasmodia, helminths, and mosquitoes the world over, guided and counseled from a central post of command which had the whole vast battlefield in view. This was accomplished against a certain resistance within the organization, on the part of those who feared that the laboratory might come to dominate the activities of the division instead of serving as a tool for the promotion

of rural public health. However, under no other Director was there such an expansion in the traditional functions of the division. The influence of the IHD in strengthening state and local health departments was never so great, nor were such large grants made under any of the other Directors for the building, endowment and maintenance of schools and institutes of public health. He channeled more funds into general public health than either of his successors, and if he added investigation in a large way to Mr. Rose's simple program, he did not for that reason neglect the fundamental principles which Mr. Rose had laid down. Mr. Rose's rule of anonymity, which was always an outstanding characteristic of the Board's work, could not, of course, extend to research, and Dr. Russell let the credit go where it belonged. But in the cooperative work with governments, his favorite injunction was: "A job well-done is the only publicity we need."

## Chapter 8

### The Exigencies of War

No one actively engaged in creative work submits willingly to the Procrustean axe of compulsory retirement at age 65, but it must have been with unusual reluctance that Russell, still enjoying great vigor of mind and body, surrendered the directorship of the IHD to Dr. Wilbur A. Sawyer at the end of August, 1935. He had been in command for almost 13 years, a longer term than that of any other director, during which he had brought the activities of the IHD in both field and laboratory to a high pitch of volume and efficiency. As a medical scientist, he had infused the entire program with the spirit of investigation, which he knew must go hand in hand with the control of any disease to avoid waste of effort through ignorance. The creation of an intelligence service to explore the enemy's resources and weaknesses to sharpen the attack on disease was Russell's chief contribution to the program of rural public health which Wickliffe Rose had developed as the solid core of the

Division's activities. The research ingredient had added zest to what had been the purely administrative functions of the staff, had increased their effectiveness and prestige, and had begun to earn unexpectedly large dividends of scientific knowledge. As Russell was preparing to retire, many of the riddles of yellow fever epidemiology which had puzzled the world for decades were being solved at last, the paradoxes of malaria were finding a scientific explanation, and a dozen other important diseases had been brought under intense scrutiny. There was, of course, a certain diversion of funds and staff to this end, but in spite of this Russell had found it possible to preserve and even expand the other interests which Rose had considered fundamental to a balanced program - the promotion of rural health services and the specialized training of personnel through fellowships and grants to schools of public health and nursing. Only hookworm disease had been dropped as a special objective; no further research or demonstration was needed in the methods of control.

For many years the dominating interest of the IHD had been in yellow fever, as an obstacle to the development of Africa and South America, and as a threat to the rest of the world. The discovery of the infectibility of the rhesus monkey and the white mouse opened up vistas of research and possibilities of prevention and control which had hitherto been impossible to explore. The man in charge of these studies, and of all the laboratory activities of the IHD was Dr. Wilbur A. Sawyer, who was thoroughly in sympathy with Dr. Russell's policies, and in whose character and ability the latter had come to have implicit confidence. He was the only scientist in the small group of Associate and Assistant Directors of the Division. Sawyer was well known to Foundation people; he had been on the staff of the IHD for 17 years, five of which had been under Mr. Rose. He had often served as Acting Director of the IHD during Dr. Russell's absences. It was no surprise, therefore, when the Trustees chose Dr. Sawyer to succeed Dr. Russell as Director

intensive investigation; the greatly expanded malaria studies were creating new knowledge and power, and a dozen other important diseases had been brought under intense scrutiny. Yet, in spite of the growing absorption in research and the resulting adaptation of staff to this end, Russell had not slighted any of the objectives which Rose had considered fundamental. The elimination of hookworm disease as a program in itself had been brought to a conclusion, but this was because it needed no further demonstration. Its method of spread and its importance to the rural health and economy were universally recognized.

of the Division, yet it showed that the Foundation had come a long way since 1923. The significant fact was that, like Russell, he should have come from the laboratory rather than the field.

The attitude of the Officers and Trustees of the RF toward research as a function of the IHD had undergone a complete reversal since Mr. Rose had refused to be drawn into an investigation of yellow fever in 1921 "to settle undetermined questions," and this exclusive dedication to "practical control work" had been warmly supported by President Vincent.\* Mr. Vincent, after six years of amiable controversy with Dr. Russell, had modified his opinion sufficiently to admit that the Foundation was being "forced into seeking further facts about the nature of certain diseases."\*\* Max Mason, who succeeded Vincent in 1930, was himself a scientist and fully shared Dr. Russell's viewpoint and it was during his presidency and doubtless with his blessing that Sawyer was

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\* Letter to Dr. Guiteras, Ch. 6, p.20

\*\* President's Review, 1929

selected. In less than a year, Mason was succeeded by Raymond B. Fosdick, who had been a Trustee since Rose's time, and had a clear appreciation of the necessity for research in the program of the IHD. He clearly ranged himself on Sawyer's side. "The approach which is now being followed," he said, "is laboratory research, tested by field experimentation and demonstration under actual practice conditions."\* Two years later, in describing the varied activities of the IHD, he wrote: "The heart of this far-flung program is the laboratory. Unless field work in public health goes hand-in-hand with increasing knowledge, it becomes stagnant and stereotyped. The work in yellow fever, for example could never have progressed, either in revealing new and dangerous aspects of the disease, or in gradually perfecting the safeguard of vaccination, if it had not been for the strong reliance placed on laboratory technique."\*\*

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\* President's Review, 1936, p.11

\*\* President's Review, 1938, p. 20

Sawyer, therefore came to his new job with the assurance that he had the solid backing of the Foundation, whose broad aim had recently been declared to be primarily the "advancement of knowledge," and not its application. He took this quite justly to be a mandate to continue and emphasize the policies of his predecessor. These he explained in his first staff conference, and they can be summed up in these words from an Annual Report:

"The primary objectives of the IHD are (1) a search for new knowledge directly applicable to disease prevention; (2) cooperation in investigations of diseases of importance to public health; (3) demonstrations of the application of new knowledge."\*

Demonstration, the key-note of the original program, was now in last place. Nevertheless, in this connection it is of interest to recall the report of one of the first meetings of the RF after its legal organization had been completed. It was devoted to the discussion of the policies and lines of work which were likely to present the largest probability of permanent and

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\* RF Annual Report, 1938, p. 87

far-reaching usefulness. "There was general agreement that the advancement of public health through medical research and education, including the demonstration of known methods of treating and preventing disease, afforded the surest prospect of such usefulness."<sup>\*</sup> This was the order in which Sawyer lined up his own objectives: first research, then education of health personnel, and finally local public health activities.

Owing to the depression, the expanding programs of the other Divisions, and later to the war, Sawyer's budgets were, on the average, a third of a million dollars less than Dr. Russell's. In order to maintain, and shortly, under war pressure, to increase the laboratory activities, he had to retrench in some other area of his program. The funds of the IHD were distributed under four general headings: the control and investigation of specific diseases; public health education; aid to state and local health services; and salaries and expenses of staff. About the fundamental importance of public health education, Sawyer felt as strongly

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\* RF Annual Report, 1913-14, p.11

as had Rose and Russell. Schools of Public Health, Schools of Nursing, fellowships and travel grants were second in importance only to research into the nature of diseases and deficiencies. Educating administrators and specialists to take advantage of advancing knowledge was the best form our cooperation could take, since the progress of public health in every land depended more and more on personnel trained in modern methods and exposed to modern ideas. Thus the allocations to public health education were kept at the highest possible level with the funds at his disposal. As for the fourth item, staff inevitably grew more expensive year by year, so that the entire curtailment fell on the strengthening of state and local health services. Only eight per cent could be allotted to this field of activity, as compared with the 19 per cent spent by Dr. Russell.

There was undoubtedly a feeling on the part of older staff members, whose career had been mainly in public health administration, that the major shift to research represented almost a

subversion of the original aims and policies established by Mr. Rose and the Trustees in setting up the IHC. It was recalled that the use of the word "demonstration" had often been attributed to Mr. Gates and to Mr. Rockefeller Sr. as representing their idea of the best method of accomplishing the ends in view for the IHC.

Careful consideration shows that these criticisms were largely unjustified. It is true that Sawyer was strongly inclined toward the laboratory approach to epidemiological problems and felt that the knowledge thus gained was essential to communicable disease control in the tropical and subtropical regions in which the Division was principally engaged. The control of communicable disease was, in turn, the important first stage of a public health program in such areas. In this he was following Dr. Russell's line of thought, and if his program did not keep the balance between research and public health practice which Russell had been able to maintain, it was in large part due

to two new events which altered his situation remarkably.

The first was the passage of the Social Security Act by Congress in 1935, the year Sawyer assumed the direction of the IHD. Under Title V, large grants in aid to the states were instituted to provide funds on a matching basis to give an impetus to the public health movement. This Act came into operation in 1937 with eight million dollars to the Public Health Service and six and one-half million dollars to the Children's Bureau for allotment to the several states in proportion to their needs and potentialities. The activities to be stimulated by the Federal grants - the control of communicable disease, the promotion of local health services, the training of personnel and the protection of maternal and child health - were those in which the IHD had been cooperating with a large number of the states for over 20 years. This long-awaited move on the part of the Federal authorities was welcome to the IHD, since the transfer to Government of the technical and financial

responsibility for the public health programs which it had helped to develop was always the final aim of every cooperative project in which the Division had sponsored. The rapid withdrawal from this area led to a sudden decrease in the commitments for state and local health services in the U.S. (Abroad?)

The second event, which threw the IHD program more seriously out of balance, was the outbreak of the Second World War in Europe in 1939. This at once closed down all current projects in Europe, North Africa, and the Near East; after Pearl Harbor, the Far East was shut off as well. Thus the war, as in every other area of human activity, caused an abrupt derangement of the planned program of the IHD, which could not be redressed until long after the conflict was over, although Sawyer, as rapidly as possible, organized a new and large-scale public health development in South America to utilize staff and funds as they were thrown back upon New York by the spreading area of conflict. All but the first three years of

Problem was to  
locate them  
satisfactorily  
(Were some staff  
shifted to U.S.?)

Sawyer's period as Director were passed under the shadow of the war. It compelled a channeling of effort into those things which would contribute most to the Allied and American war potential.

It would be a mistake to conclude that Sawyer's outlook upon public health was narrow or one-sided. His training and experience had been unusually broad - more varied probably than those of any of his colleagues; he had been engaged in almost every branch of medicine and public health. Graduated from Harvard Medical School, with a full two-years' internship at the M.G.H., he began private practice in Berkeley and was appointed Medical Examiner of students at the University of California. Just as it seemed that he was thoroughly committed to a career in clinical medicine, he was through accident brought suddenly into public health work when he was put in temporary charge of the State Hygienic Laboratory, a small and rather inactive affair, located on the campus. Becoming greatly interested in epidemiology and other possibilities of such an

institution, he accepted an appointment as its full-time director for five years, striking out in various directions to make it more useful. He opened a "Pasteur Institute" for the treatment of rabies, made some of the earliest observations on polio virus in intestinal contents, and made a name for himself as an epidemiologist in an investigation of an outbreak of typhoid fever. He was made Secretary and Executive Officer of the State Board of Health in 1915, holding at the same time the Professorship of Preventive Medicine and Hygiene in the University. Drawn into the First World War, he was commissioned Major in the Medical Reserve Corps of the Army and stationed in the Office of the Surgeon General in Washington. Relieving Col. W.F. Snow as Chief of the Section on Combating Venereal Diseases in the Division of Infectious Diseases and Laboratories, he found himself under Col. F.F. Russell, with whom he began his long association before either had entered the RF.\*

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\* Autobiographical Sketch, Bull. of the IHB. 3(2):49-56, Oct. 1922

It was Mr. Rose who took him from the Army into the IHB in June, 1919, and his first assignments were in the classic fields of hookworm control and the strengthening of state and local health agencies. Heiser had expanded his domain to include Australia, and with his ability to make an almost irresistible case for anything which he thought needed to be done, he had persuaded a somewhat reluctant government to invite the IHB to investigate the hookworm situation and to assist in a general reorganization of the inadequate health machinery of the Commonwealth. Sawyer was assigned to the task and was successful on both counts. His observations on the varying levels of hookworm infection under different conditions opened up new subjects for investigation in a field which had been considered virtually exhausted. The Australians shortly appointed him Adviser to the Ministry of Health, a position well suited to his bent for cool analysis and constructive planning.

Sawyer's five years under Rose, therefore, were spent in the development of a thoroughly typical project of the pioneering

years - hookworm control, rural sanitation, and the installation of health machinery to conserve the results. It was distinguished, however, by the incorporation for the first time of an epidemiological investigation into the routine of a hookworm campaign, and the opportunity to exert an influence which went far beyond the local health units to the central authority itself. When Russell succeeded Rose, he began at once to utilize Sawyer's experience in public health laboratories by making him director of a branch of the IHD which he himself had developed, under Rose, for aiding health departments to organize their laboratories, and when in 1928 Russell secured a laboratory of his own to carry out investigations of disease, Sawyer became its first director, moving easily, as he had done before, from administration to research. Thus Sawyer represented the type of staff member which Russell prized the most - the man who could be moved back and forth between the laboratory and the field, competent in both areas of the Division's activities.

Sawyer became Director of the IHD in 1935 at the age of 56. His outstanding quality was an integrity so uncompromising that it always seemed to those with somewhat less rigid principles that he was perpetually leaning a little backward on questions of policy and expediency. He was not as companionable as Russell and there was a certain lack of warmth in his association with his colleagues and his staff, but there was a compensating honesty of approach to all matters of opinion which left one in no doubt as to where he stood. He was averse to any form of opportunism or scheming and he profoundly distrusted people who used any such methods. He had a scientific mind - objective, conscientious and resourceful, and was a skillful and inventive laboratory worker, but he was not primarily a laboratory man, although his fame may eventually rest upon his scientific achievements; he was an administrator and an epidemiologist. He had actually spent only eight or nine years of his long and active life in the laboratory. *It must not be forgotten that he continued his administrative work long* After he retired, he was made Director of the

Medical Division of the United Nations Relief and Rehabilitation Administration, commonly known as UNRRA, which with a staff of 1,363 people of many nationalities, carried out the largest international emergency medical operation ever known, spending more than 168 million dollars in four years. His qualities were those which he most admired in others: logical reasoning, courage of conviction, skepticism of the unproven; his defect, at times a virtue, was his unyielding (almost immovable?) stand on questions about which he had made up his mind. Russell liked to argue, and thought no worse of you if you failed to agree; Sawyer rather judged people by whether they agreed with him or not, and perhaps his most exasperating trait, to those, at least, who attempted to make him change his mind, was that he was apt to conclude, when you abandoned the effort, that you had come around to his opinion. He was thoroughly competent in many fields and he was happiest when in complete and direct charge of something he knew how to do, making decisions, accepting

responsibilities, overriding persons and opinions, and taking everything upon his own shoulders. It may be inferred that he was a tremendously hard worker, and not good at delegating authority.

By the time Sawyer reached the top position in the IHD, he was clear in his own mind, through experience and observation as a staff member who had been engaged in every phase of the Division's work, that investigation was paying more dividends than the effort to improve public health practice in backward areas of the world. The ability to control diseases was in direct relation to the state of our knowledge of them, and the IHD was more strategically situated to make great contributions to this knowledge than any other single institution in the world. He planned no drastic changes in the program of his predecessor; in his first staff conference he said the emphasis had been "somewhat shifted from the application of knowledge toward the improvement of methods, a result of experience in finding that

existing knowledge is far from adequate."\* Nor did he feel that this was a break from the principles laid down by Mr. Rose.

"The fundamental objectives have not changed," he said. These were to work through governments for the welfare of peoples by the control of disease and the promotion of health, not by assuming responsibility for their health problems, but by aiding them to solve their most urgent difficulties. As

Mr. Rose often said, the RF funds were limited - almost insignificant in comparison with the vast, combined budgets of the governments we worked with, and our efforts, at best, incommensurable with the greatness and the diversity of needs. Selection of targets must be rigorous, with preference given to those promising clear-cut and reasonably prompt results. The sailing orders received and passed on by Mr. Rose had been simple and general, permitting latitude in the choice of methods and of immediate objectives. To Sawyer, the intensification of research was a natural development of Rose's ground plan, not

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\* Policies and Procedures - Memo of Staff Conference, Oct. 1935

a deviation from it. This point of view was apparently shared by the Trustees, the Officers of the Foundation, and of the Scientific Directors of the IHD, whose approval was necessary not only of the general policy to be followed, but of each project of the Division before it could be put into operation. Russell's qualities and his immense prestige in the Division, and in the Foundation as a whole, had gained him almost unlimited support. Sawyer lacked the political deftness of Russell; indeed he was averse to playing politics of any sort, and perhaps he did not have the knack, but his integrity and the honesty of his stubborn ideas carried his policy along. Since he always reached a sense of security in his own mind before putting his weight behind a course of action, he was usually cool and impersonal in argument or under the fire of criticism. He paid little attention, therefore, to those who grumbled that his policy was a betrayal of the concepts of the original designers and builders of the IHC.

As might be expected, the notable accomplishments of Sawyer's regime were in the field of the investigation and control of specific diseases. The IHD laboratories in N.Y. touched the peak of their activity. They had already been going full tilt under Russell, with Sawyer in charge. To yellow fever and malaria were added short-time studies of a dozen other infections, and these multiple investigations were carried to the field in any part of the world where the selected diseases were endemic and could profitably be studied. Spectacular achievements were the perfection of an effective vaccine against yellow fever in 1937, and the total eradication of the formidable malaria mosquito, Anopheles gambiae, from Brazil, ten years after its introduction by boat or plane from Africa. These were great events which were heralded over the world, but as Sawyer had predicted, important advances were made in every field in which intensive study was begun. What he had probably not foreseen was that these activities and the expert staff assembled to carry them on were

to place the IHD in an unusually advantageous position to collaborate with the Armed Forces in the control of the diseases which threaten the maintenance and movements of armies in time of war.

Sawyer's research program had begun to affect the composition of the staff from the time he became Director, but after war broke out, replacements and additions to staff were restricted to men trained in the laboratory sciences. Of the 75 members of the staff which Sawyer inherited in 1935, 26 dropped out during the nine years he was in office, and 28 new members were taken on; 24 of these were trained in the sciences, and only four in public health,<sup>\*</sup> of whom three were public health nurses.

For the first time, also, all the field and laboratory staff were placed upon an equal footing, and the former distinctions, grades and categories based on function, tenure, or seniority were abolished. Rose had had two staffs, one permanent and unspecialized, experienced as administrators in the few and

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\* Dr. H.D. Chope, appointed in 1941 to develop a training center for the Sao Paulo (Brazil) Institute of Hygiene.

relatively simple fields cultivated by the IHB, and hence virtually interchangeable; the other staff composed of persons taken on as experts for specific projects, or sent on commissions of investigation, or employed on temporary assignments. The former group were known as Field Directors and rose through various grades of promotion from Junior Field Director to Regional Director, after which they might be taken into the Home Office as Assistant or Associate Directors of the Division.\* All the rest were called Special Members and included all nonmedical professionals such as entomologists, engineers and nurses; all newly appointed staff members during the period of probation, and, in Rose's time, the entire personnel of the Yellow Fever Service from top to bottom, since the Service would go out of existence when it had achieved its aim, the eradication of the disease in the Americas, which was confidently expected from year to year.

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\* Gen. Director, Assoc. Dir., Assistant Dir., Regional Dir., Assoc. Reg. Dir., Asst. Regional Dir., Senior State Dir., State Dir., Assoc. State Dir. Senior & Jr. Field Dir., Special Member (Annual Report, 1917, p. 74)

Dr. Russell was soon rid of the complicated schedule of staff promotions, which was merely an automatic recognition of seniority, not merit; which could be handled by periodic increases in salary; but he conserved the status of Special Member for temporary and nonmedical assignments, which he thought the best solution of the problem created by the appointment of specialized personnel. In his last year, 1934, he had 38 regular members and 31 special members on his field staff. The Trustees were troubled, however, by the unequal economic status of the two kinds of staff member, especially in regard to the retirement pension plan from which Special Members were debarred. With the approval of the Scientific Directors, the membership was homogenized in December 1934, a few days before Sawyer took office. All were now known simply as "staff." Since appointments to the RF staff from the Directors of Division down had always been for one year only, it might be thought that this would prevent undue accumulation on the staff of highly specialized talents of restricted usefulness,

and indeed President Vincent believed that annual appointment made the situation completely liquid. However, as the RF grew from a small uncertain experiment into an organization of great responsibility and long commitments, tacit assurance of tenure became indispensable. While no guarantees could be made, it is not on record that anyone was ever dropped from the staff by failing to be reappointed each January 1st. This still seems an unsatisfactory situation, and, in fact, Sawyer's appointment of many highly trained specialists for special laboratory jobs, was an embarrassment to his successor as the pendulum (swung) returned toward center after the war, and new problems admitted to the program called for a different type of personnel.

There was also an almost complete abandonment by Sawyer of the practice of granting study leave to members of the staff - a sort of sabbatical in reverse to permit a staff member who lived abroad to return home after three years of service to

"broaden his knowledge of public health and inform himself on the newer developments in the field." This practice had begun under Rose as soon as schools of public health were created to offer professional training for health officers. Before that, he had had to send out medical graduates selected for intelligence and common sense, but without training in either public health or tropical medicine. The need was for administrators, since no research was contemplated, but these young doctors were found to be particularly weak in parasitology and entomology, knowledge of which was essential to their work, and special courses were arranged for them at Johns Hopkins in these subjects. "After it becomes possible to choose new staff members among graduates of public health schools," wrote Mr. Rose in his report for 1919, "elementary training of this kind will be unnecessary."

However, study leaves were never discontinued. They became progressively more valuable both to the staff and to the Board. Many members had to live in relative isolation, removed from

stimulating intellectual contacts. They were always being embarrassed by the superabundant (exuberant) knowledge of their own local assistants returning from fellowships abroad. The Division finally came to consider study leave as imperative and a part of the regular duty of the staff. Under Sawyer this program came to a virtual standstill. But here too, the fault was not so much Sawyer's as of the times. Under the high pressure of laboratory research and the deficiency of men with public health experience, no one could be spared for study leave.

The constant erosion of what had been the "regular staff," together with the refusal of study leave was depressing to the field men not engaged in research, to whom public health had always been the core of the IHD program; now it appeared to be a deviation from accepted policy, and morale in the field fell to an all-time low. This was particularly true in the West Indies and Caribbean Region where hookworm control and health education of the people had, under Howard and Washburn, headed

the list of Mr. Rose's pioneering program. This had been the training ground for almost all the older men on the IHD staff, but the program had been static for years. Howard was gone and the long tables of hookworm treatments and cures had disappeared from the annual reports; it was no longer a productive line of work. There were flurries of interest in short-term studies of tuberculosis and yaws, but these had been terminated by Dr. Russell, and nothing new had turned up to compete for Sawyer's interest with the unknowns in yellow fever, malaria, and the other diseases being investigated in strategic areas around the world. Dr. B.E. Washburn, a stalwart whose original and effective methods of health education in Jamaica had set a pattern for the British colonies, resigned in 1939, finding himself stranded in a backwater, far from the main current of the Division's activity. It was a sign of the times that Dr. J.L. Hydrick, who had devoted himself for 15 years to the development of a system of popular education in health practices and sanitation in Dutch Indonesia, was now

told that health work unconnected with research had little future in the IHD, and was transferred to another post.

An organization like the IHD, almost unfettered by restrictions in its exploration of the vast domain of "health," but operating by means of relatively short-lived projects constantly being initiated and constantly coming to an end, has an enormous flexibility, and responds rapidly to changes at the helm. Resistance to any alteration in the course comes from the permanent staff, whose older and often abler elements are reluctant or unable to abandon the old orientation. Some quit but the majority remain, with an aura of obsolescence, to deprive the new director of complete liberty of action, but at the same time to insure a certain continuity of program which lends stability to an institution. This was the situation confronting Sawyer, but it was not a new one. Russell had faced a similar one 13 years before, and Strode was to have the same experience some years later. The essential interest

in the history of an institution lies not so much in the annals of events as in the transitions which bring about change and progress in a stride. Such transitions in the IHD occurred with each change of Directors. But the long stride in Sawyer's case was also from peace into war.

The Paris office was naturally the first outpost of the RF to be affected by the war. There had been war-clouds over Europe since Munich, and the outlook grew steadily darker throughout 1939. In the spring, Selskar M. Gunn, Vice-President in charge, selected a little town on the coast named La Baule, near Ste. Nazaire, south of the Cherbourg peninsula, to which the office could be moved if necessary. Some of the officers with their families had been accustomed to go there in summer. It had a <sup>lovely,</sup> ~~long~~, gentle beach for children, facing south in a great crescent, with clean, white sand. Villa Ker Aimable on the Ave. Baguenaud was rented and kept ready for immediate occupancy. The wives were sent home and the summer spent in sorting the

files. Many large American enterprises were getting out of Paris in the early fall, but the Paris office could not make up its mind to move.

On September 1, 1939, the German army invaded Poland and occupied Danzig. Peremptory orders from New York and a tip from the Ministry of Education precipitated a decision. The move was made on Friday, September 2, in five cars armed with permits from the Government to prevent them from being requisitioned by the military, and filled with the Foundation representatives, Geo. Bakeman, the office manager, clerks from the accounting department, and half a dozen secretaries. They were followed by two trucks, which Gunn had bought to transport the files, driven by Russian chauffeurs. There was no trouble. The weather was good; an extra supply of gasoline had been cached on the farm of Mr. Letort, the accountant, in Alencon; and everything and everybody arrived in La Baule according to schedule. Next day they heard war declared over the radio -

first by England, then by France. The girls were weeping and tears were streaming down the face of Blondin, the tall messenger.

La Baule was soon packed with Parisians and a great crowd of mixed foreigners trying to escape trouble. Then, nothing happened. Miller, of the NS, drove back to Paris on Monday with a laissez-passer from the Mayor of La Baule, whatever that was worth, but he had no difficulty. The staff then began returning to Paris from time to time, sleeping at home and returning to La Baule. One of the Russian chauffeurs married a secretary, a Dutch girl who had been unhappily married to another Russian. There was little to do but eat, swim, sleep and listen to the radio. One telephone call was permitted to Paris each day. Alexander Makinsky, Secretary to the MS., was in charge of the office, with Mme. Victorin, the caretaker. Letort, the accountant, had joined the French Army. Life in La Baule was dull and they began to get on each other's nerves.

By the end of September it was found possible to go to the Netherlands, Belgium, England, Scandinavia and Switzerland;

England was blacked out, France pretended to be, and Switzerland was normal. The group was aided greatly by Henri Laugier, Director of the Caisse Nationale de la Recherche Scientifique, and without his assistance the RF would have been forced to discontinue almost all activities in Europe. Once the staff were on the road, the 600 or more European ex-fellows in all countries were the mainstay. There were friends in influential posts in all the countries. The war revealed the unique position of the RF in Europe as nothing else could have done, a position never fully appreciated in New York. During that winter, Kittredge, of the SS, actually held a conference in Switzerland attended by grantees and fellows from all over Europe including Germany and other belligerents.

But the war had inevitably brought the RF program in Europe to a grinding halt. Dr. Andrew J. Warren had replaced Dr. George K. Strode as the Paris representative of the IHD in April 1938. More objective than the others perhaps because he was

England was blacked out, France pretended to be, and Switzerland was normal. The group was aided greatly by Henri Laugier, Director of the Caisse Nationale de la Recherche Scientifique, and without his assistance the RF would have been forced to discontinue almost all activities in Europe. Once the staff were on the road, the 600 or more European ex-fellows in all countries were the mainstay. There were friends in influential posts in all the countries. The war revealed the unique position of the RF in Europe as nothing else could have done, a position never fully appreciated in New York. During that winter, Kittredge, of the SS, actually held a conference in Switzerland attended by grantees and fellows from all over Europe including Germany and other belligerents.

But the war had inevitably brought the RF program in Europe to a grinding halt. Dr. Andrew J. Warren had replaced Dr. George K. Strode as the Paris representative of the IHD in April 1938. More objective than the others perhaps because he was

recently arrived in Europe, or less experienced, he felt frustrated by the difficulties of accomplishing anything from La Baule, and thought that events had shown the move there to be a mistake. On September 11 he reported to Dr. Sawyer that his position was difficult, cables and letters were lost or greatly delayed, and that New York would be a far better center to work from than either Paris or La Baule. He saw no reason for discontinuing the programs in Turkey, Egypt, Portugal and Scandinavia, or the yellow fever work in Africa, or even the scarlet-fever investigation in Rumania. The Mediterranean was quiet and the Simplon-Orient Express running. Only the Hungarian influenza studies would have to be abandoned and part of the fellowship program would of course become inoperative. On September 1, 1939, there were 95 fellows studying in the U.S. and 207 more under appointment for 1939-40. Since the fellows were all relatively young people, this was the general program which first suffered the effects of war. A letter from Sawyer crossed his: "La Baule does not seem to be

a suitable headquarters for your vast territory on account of its isolation." He instructed Warren to close the IHD office in La Baule and bring the files to New York. It proved a sound decision; it did not restrict his liberty of action and it placed him in contact with the source of final decisions.

X        This was the period which, at the time, was called the "phony war." It seemed to Warren unnecessary to abandon any European country or project at once. The officers stayed with the ship to try to salvage its valuable cargo until certain it was lost. The European program of the Division, born under the circumstances of another world war, had developed with extraordinary vigor, especially in the newly-created states resulting from the Versailles Treaty, and during the following quarter century had borne fruit in state and local health services, schools of hygiene and of nursing, epidemiological studies of great importance in malaria, TB, scarlet fever, influenza, undulant fever and schistosomiasis, and hundreds

of fellowships in all branches of public health. Large sums had been invested in buildings and organizations in countries still economically and socially backward, whose resources were now devoted to defense and whose health programs, without continued aid, would be poverty stricken and curtailed. Under such conditions, the IHD could watch for opportunities to lend critical aid in situations arising out of war, as in epidemiology and nutrition, and indeed, in certain countries further away from the war zone, even to expand its work. The reputation and influence of the RF was great and unimpaired on both sides of the conflict, and the officers, gathered in La Baule, feared that this was not fully appreciated in New York, which might by premature action block avenues still open in Europe. Sawyer, however, took no precipitate action and followed Warren's recommendations. When Fosdick asked if there were not danger to the staff in Europe, Sawyer pointed out that recalling our men might stampede other health and relief organizations who

would think we had special information. He thought the staff could get out in an emergency without instructions from New York.

When Warren announced, at La Baule, that he was leaving in October or November, it caused a certain commotion in Villa Ker Aimable. Gunn was flatly opposed to his going and to his taking the files. It seemed to him at the time, and doubtless to his colleagues, almost like desertion. Warren was a mild-mannered man and slow of speech, but he had great determination. When the time came, Bakeman drove him to Bordeaux, first packing all the folders from the filing cabinets in the back of the car. At Bordeaux they bought a trunk and packed it on the station platform. There was a train ride of 40 minutes to Le Verdon, the deep-water port, and then a peaceful voyage to New York.

The rest of the staff remained until June of the following year. A good deal was accomplished in salvaging projects and rescuing fellows, all of whom were gotten home but one, a

Britisher in Switzerland. Our ex-fellows sometimes reciprocated by rescuing the staff. The SS alone had hundreds of fellows in Europe, many of whom were in the chancelleries of the governments. In a few years more, they might have influenced policy. When Tracy B. Kittredge, the SS representative, was in Norway in April 1940, the Secretary of the Prime Minister called him up and told him to ask no questions but take the night train to Stockholm. In a few days Norway was invaded by the Germans. Unable in Sweden to obtain a visa to return to France, he wired an ex-fellow in Berlin through whom he obtained a German visa, and from Berlin he got to Prague, and thence back to Paris in a few days.

In February 1940, with the war still quiescent, Dr. Warren succeeded in visiting all of the European projects of the IHD except the malaria studies and health work in Albania, which had been invaded by Italy in 1939. Landing in <sup>Genoa</sup> ~~Geneva~~, he proceeded unhindered through Yugoslavia, Bulgaria and Turkey

to Egypt, returning to Paris by way of Greece, Rumania and Hungary. There he found Sawyer, who was anxious to go with him to Belgium. By that time it was the 19th of April, 1940, and Makinsky, who was in charge of the Paris office and who knew everybody, tried to dissuade them. However, since he saw that they were bound to go, he told them "then, for God's sake, get out before April 25," which they did, and after visiting England and Spain, sailed for New York on May 8.

The German armies attacked the Low Countries on May 10, 1940. King Leopold capitulated on May 25 and the Germans entered Paris June 1. The staff at La Baule had already left for Bordeaux in one of the trucks, driven by Makinsky. The steamship WASHINGTON took them on board, went to Lisbon and then to Galway, Ireland. At 5 A.M., out of Lisbon, the signal was given to abandon ship and the passengers swarmed on deck thinking it was a routine drill, got in the boats and were swung out. The loudspeaker announced that the ship was zig-zagging to

escape a submarine. There was no panic, no attack, no heroes.

The Paris staff arrived safely in New York on June 22, 1940.

By that time nine of the eleven staff members of the IHD in

Europe and the Near East had returned to the U.S. for reas-

signment. On June 18, the day after France requested an armistice,

Makinsky had joined the stream of refugees to the south of France

and across the international bridge to Spain and Portugal.

In a few days, he had opened the European office of the RF

in Lisbon.

This is not, however, the end of the wartime history of the Paris office. Letort was demobilized in the south of France and drove to Paris in July, and lived in the office at 22 rue de la Baume, furnishing himself a small apartment on the sixth floor. Various RF officers from New York came and went until the obstacles became too great, and then he was alone, except for Mme. Victorin. She had gone to the office after the armistice, found the door open and had resumed her job of taking care of it.

It became difficult, then impossible to correspond with New York.

There was some money in the bank in Gunn's name; Letort <sup>got it,</sup> put it

in his and it lasted until 1944. There were 2,000 fr. left

when the Americans entered Paris. In the meantime he had nothing

to do but worry.

In July, 1941, there was a telephone call from Dr. Alexis Carrel of the RI and Letort went to see him. Carrel wanted the offices and proposed a three-year contract to expire December 31, 1944. He would take care of the files, which could be stored in a couple of rooms. The contract was signed on Pearl Harbor Day, 1941, but recorded as of November 17 for political reasons.

Carrel established the French Foundation for the Study of Human Problems, a broad and unfocused program, which carried out an old desire of Carrel's who was a mystic, and wrote, during the war, a small book on Prayer. Carrel had secured from the Vichy Government an initial endowment of 40 million francs, with the promise of 25 million frs. a year. He moved

in on January 1, 1942 and took not only the two floors of the RF but a couple more below, besides equipping a big laboratory of biochemistry in Bellevue. He had teams of specialists working on various aspects of man, ranging from sociology to urinalysis. He took over a chateau near Fontainebleau where he housed visiting scientists invited for temporary collaboration, or brought together for symposiums. Nothing ever came of it, but he kept some 125 young people alive, busy, and out of trouble, who had joined in good faith but became rapidly disillusioned.

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In August 1944 the Germans evacuated Paris, taking with them, but De Gaulle considered Carrel a traitor and terminated his program abruptly. Carrel died within a month; the suspicion cast upon patriotism destroyed the old man. He was 71 years old. His staff was cleared and released and some were taken on in the new institution created by the Government on the ruins of the old: the Institute Nationale d'Etudes Demographiques. It opened in January, 1945, but in a new location.

No sooner were the Germans gone than Henri Laugier did the Foundation another good turn. He was now Director of Cultural Relations in the new Ministry of Foreign Affairs and when Carrel was evicted, he requisitioned the offices to protect them.

There was enormous pressure on space in Paris. Drs. Chas. N. Leach, of the IHD, and Daniel O'Brien, of the MS, who were in London, got to France as soon as they were able. The British flew them over in December 1944 in an RAF plane and deposited them at the British Embassy with their luggage. They started for the office on foot and met Letort in the street. It was extremely cold and accommodations were at a premium. The Manager of the Hotel Bristol, where many Foundation people used to put up before the war, conferred diplomatic status on them and took them in. They sat in their offices in their overcoats while the ink froze in the inkwells, and made sure they got back to the hotel before noon when the hot water was shut off for the day.

Leach and O'Brien continued to live in London where the RF had established offices, visiting Paris from time to time. In May, 1945, the war was over and they began picking up the cut threads - resuming contacts with institutions and individuals of the war-isolated countries; getting news from ex-fellows and selecting new ones; recommending grants to relieve acute situations in laboratories, libraries and health services.

In June 1946, the IHD European staff moved to Paris from London - CNL and JHB, and the nursing consultant EWB - and Leach was appointed Director for Europe. He was able to visit Poland, Czechoslovakia, Hungary, Austria and Western Germany, while Bauer, who was loaned to the Red Cross, managed to get to Yugoslavia and Central Europe. In January 1948, Dr. J.B. Grant succeeded CNL as European Regional Director, remaining until the IHD disappeared in a merger with MS to form the new Division of Medicine and Public Health on May 1, 1951.

## The IHD and the War

On September 3, 1939, Britain and France declared themselves at war with Germany, and two days later the President of the RF, Raymond B. Fosdick, met with the directors of the five divisions to discuss the impact of the new situation in Europe on the program of the Foundation. The IHD, being the only operating Division, with its own projects and staff scattered over the spreading field of conflict in Central and Western Europe, stood to lose the most in the critical situation which was developing. Its outposts would be driven back and its staff, of necessity, recalled. At the same time, it was the only Division which might be able to adapt its program to the necessities of a world at war, to continue its research activities, and to maintain, even under the handicap of war, its international cooperation in the prevention and control of disease. Its staff was a highly specialized group, experienced in the problems of the East and of the West, of the temperate and the nontemperate zones. Their services would doubtless be welcomed by military and civilian authorities alike.

Sawyer consulted his associates in the New York office. Dr. George K. Strode, who had returned the year before from the Paris office where he had served for twelve years as Director for Europe, Africa and the Near East, and Dr. Andrew J. Warren, who had taken his place, both possessed a thorough knowledge of the people, the politics and the public health problems of the great strategic area. It seemed feasible to all to adapt the program of the IHD to a world at war without radical changes in policy or methods. In particular, the investigation and control of certain specific diseases, which had long been a major activity of the Division, could be focused on the four great potential destroyers which in previous wars had on so many occasions overwhelmed armies and civilian populations alike and intervened disastrously in the conduct of military operations. Three of these - yellow fever, malaria, and influenza - had occupied the IHD for years and skills had been built up in their investigation and control; the fourth, typhus fever, the

one most to be feared because most difficult to treat or to control, had not received any attention, since epidemics on a grand scale occurred only in times of great social upheaval, as in mass migrations and in war. Clearly an increased staff of laboratory workers would be called for, and recruitment and training of the necessary men should be begun at once. Finally it was anticipated that most of the current projects in Europe and in the Mediterranean Basin would be halted abruptly and the men in charge thrown back upon New York for reassignment. Steps would have to be taken at once to open up some new area of collaboration to absorb the staff and funds which would be released.

Sawyer lost no time but began to intensify the exploration of yellow fever, malaria and influenza in the areas where the frontiers of knowledge in laboratory and field were still barriers to control, and he prepared to take up typhus fever as a subject of intensive study. Dr. Hans Zinsser of Harvard was the outstanding

American authority on typhus and, at Sawyer's request, he offered to train one of his assistants, Dr. John C. Snyder, in the techniques of culture of the organism and serology of the disease.

The proposal to open a new region for the IHD's beneficent penetration created no difficulties. Of the available areas where the IHD had not already put down roots, the largest, most neighborly and most promising was Spanish-speaking South America. Strode was sent in November to make a reconnaissance of the seven southern countries\* in which the IHD had had no recent interest except for a few sporadic projects in malaria and yellow fever control. Surprisingly enough, in spite of the apparently mutual indifference for many years, Strode found them all interested in re-establishing a rapport which for various reasons had been allowed to dissipate. He returned to New York in February, 1940, with his briefcase full of invitations, to find that nothing

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\* Argentina, Bolivia, Chile, Ecuador, Paraguay, Peru, Uruguay

had happened on the battle fronts to hurry the IHD into emergency action.

The invasion of the Low Countries and France in May, 1940, put an end to the deceptive lull. The American Red Cross had been pressing the Foundation for a contribution of a million dollars to its relief fund; now it jumped the appeal to two millions. The majority of the Trustees were opposed to such a gift from the Foundation. They wanted to contribute generously to the alleviation of Europe's distress, but they were anxious to avoid the support of purely relief activities. This feeling was derived from the Foundation's experience in World War I. Then, the RF had taken a large part in war relief projects. When Belgium and other continental countries faced famine, the Foundation had chartered ships to carry food across the ocean. It appropriated large sums to the American Red Cross and other relief agencies. The Foundation had supported Carrel, of the RI, in his work in France on the disinfection of wounds,

and had maintained a Medical and Surgical Research and Instruction Unit. It had waged an emergency campaign against TB in France and fought typhus in Serbia and Poland. In the end, almost  $22\frac{1}{2}$  million dollars were spent in these and other ways.

There was no question as to the value of the effort, but it was discouraging afterward to realize that it had left so few traces in the form of permanent results and activities. For over five years these transient objectives overshadowed, distorted or displaced the normal, constructive aims of the Foundation. Dr. Geo. E. Vincent, who became President of the Foundation in 1917, once said to Fosdick: "I suppose we had to do it, but think of the creative job we could have done with that money!"<sup>\*</sup> When the war was over, the Trustees took stock of the accomplishments and decided in the future to avoid that type of activity. "When used to ameliorate human distress," they commented, "caused, for example, by famine, flood, earthquake

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\* RBF - Story of the RF, p. 28

"or any other calamity, our funds would soon be exhausted, with no permanent relief."\* Now that Europe was at war again, the Officers and Trustees felt that the only way to resist such legitimate appeals as that of the Red Cross was to work out a plan of their own, by which they could, in a soundly conceived and dramatic action, help cushion the devastating impact of war on civilian populations, yet spend their own money in their own way. Since it appeared that such a program would necessarily be in the field of health, the IHD was asked to prepare a suitable plan.

Public health stands in a special relationship to war, which does not block the flow of learning and of application as in so many other domains of culture. War unleashes epidemics, but it also stimulates research in preventive medicine, the control of disease and the special problems of nutrition; it interrupts the normal running of the health machinery, yet it is apt to leave an enduring legacy of accelerated progress and useful

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\* Trustees meeting, December 11, 1934

knowledge. For public health is the first point people can get together on after an immense catastrophe and its attendant social disintegration. World War I was followed by the League of Red Cross Societies and the Health Section of the League of Nations - the least political and most productive of the League's activities. It was also a period of great expansion for the IHD, marking the acceptance of its cooperation by the great nations as well as the small. The war had brought a sense of interdependence upon the world, and in no area of mutual concern was this more clearly felt than in public health. There was a glow of optimism in international circles, and an appeal to continue the common effort in a war upon disease, only later to be disillusioned by politics, nationalism and apathy. The effect on the U.S. had been definitely to break down some of the barriers between America and Europe. "Prior to 1914 we saw American public health as a problem distinct from foreign public health," wrote Winslow. "Since 1918 the prevention of disease has been

"recognized as a common task."\* It seemed to the Directors of the IHD that this war too might produce a climate of opinion favorable to great constructive developments in international health.

Sawyer spent most of April and May in Europe and on his return, in consultation with Strode and Warren, a plan was discussed for bringing help to France, and the problem was presented to the IHD staff in New York on May 29. It should not be in the nature of first-aid, but a constructive effort, aimed at a long-range target. To be handled in the IHD way, it would have to meet an important need, and at the same time fall within its experience and resources, keeping in mind post-war as well as immediate necessities. It might be hoped in this way to avoid military and political exploitation, and the duplication of Red Cross or governmental services.

The chief emergency in France was undoubtedly caused by the five million displaced persons who had taken refuge in the

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\* Winslow: Life of Biggs, p. 289

unoccupied south of France, known as the Free Zone. Apart from the danger of epidemics, they were in need of immunizations, sanitation, maternal and infant hygiene, laboratory services and relief from malnutrition. In the judgment of the IHD group, Regional and Departmental Health Services might be established on a permanent basis within the framework of the Ministry of Health to provide all these things, and the same policy could doubtless be adopted in other war-torn countries.

On June 14, 1940, Sawyer presented these tentative ideas to the Executive Committee of the Foundation, which was impressed by the type of work which the IHD felt ready to carry out. After the meeting, Fosdick detained Sawyer and asked him how he thought the general desire to do something could best be translated into early action. Sawyer "suggested sending a commission to the troubled parts of Europe including France, to find out what could be done." \* Fosdick was pleased with the idea, asked

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\* WAS - Diary, June 14, 1940

Sawyer to work up a program, discuss it with his colleagues, and have it ready over the week-end. On June 17, Sawyer records, "RBF (Fosdick) came in to learn of the plans for a health commission to Europe," and after discussing several names for the project, they could think of nothing better than "The Rockefeller Foundation Health Commission to Europe." Thus was conceived a novel idea of a private war-relief agency, which went on to prove itself viable, and at a certain crisis provoked by typhus in Naples, almost indispensable. It was able to inaugurate some completely new methods in the prevention of epidemics; it created health activities which did not lapse at the end of the war, and it even overcame to some extent, the natural prejudice of the military against civilian activities of a technical nature in war areas. It would probably have created a valuable precedent were it not certain that future world wars will be nothing like the last.

The proposed plan was approved by the Scientific Directors on June 27, and by the Executive Committee of the RF on July 7,

1940, and the RF Health Commission was created to give aid, under the direction of the IHD, to the governments of war-ravaged Europe. Subsequently the word "Europe" was omitted from the title, so that aid might be given to any country with health problems arising from the war, which made it possible, for example, to aid China in malaria control along the Burma Road, and send yellow fever vaccine to Africa and India. France was to have first attention, then Great Britain and other countries. The emergency was to be used to strengthen central health organizations, train health personnel, and through studies of disease, malnutrition and insanitary conditions, to add to the body of scientific knowledge on which the public health depends. Sawyer and Strode were made Director and Vice-Director; Dr. Daniel P. O'Brien, of the Division of Medical Sciences, was added; Warren was to be the New York agent, and Makinsky Secretary, located in Lisbon. Half a million dollars was appropriated to start the work, of which \$200,000 was designated for expenditure

by Sawyer at his discretion.

Since France's problems had been the first consideration in creating the Health Commission, the first move was made in that country. On August 4 Sawyer, Strode and O'Brien flew to Lisbon, which was to be the base of operations in Europe. It was not easy to get to France, or to find the responsible health authorities when they did. There were the difficult border formalities at the Spanish-French frontier, and then a long and arduous trip across France on crowded and halting trains in which they stood for hours making a tight space for themselves in the midst of demobilized soldiers and returning refugees. At Vichy they found that the Technical Services were in Paris. There finally they made contact with the right officials, aided by RF former fellows, and began their negotiations. Sawyer returned to New York, and Strode and O'Brien remained in France.

The battle of France had left confusion and disorganization in its wake from which the country was only beginning to recover in August, 1940. The old Ministry of Hygiene had been replaced by the Secretariat of Family and Health, which combined all the services formerly scattered in various bureaux. An agreement was reached on September 5 to create a National Institute of Hygiene (Institut des Recherches d'Hygiene) in Paris which was to provide direction and technical guidance for the proposed Regional Health Institutes which were to be set up as fast as possible. The Health Commission undertook to loan American experts in nutrition, mother and child health, sanitary engineering and public health laboratory services.\*

A Section of Nutrition was immediately organized under French doctors, and disclosed at once the handicaps which were to harass all similar projects - the restrictions on supplies,

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\* Nutrition: Dr. John B. Youmans; Child health: Dr. Harold C. Stuart; Sanitary Engineering: Daniel E. Wright; Laboratories: Drs. Francis F. Schwentker and N. Paul Hudson.

the difficulty of communications and transfer of funds, and the refusal of the people to disclose what food they had. The first Regional Institute was to be located in Marseilles, and the Americans expected to travel back and forth between Paris and the Provinces. It turned out, however, to be impossible to travel between the Occupied and the Free Zones, and the Commission was finally forced to set up its headquarters in Marseilles and abandon Paris for good. The Bouches du Rhone region was one of the most backward in France, and in addition to nutritional studies, sections of Sanitary Engineering and Public Health Laboratories were formed in June, 1941, all within the framework of the Regional Institut des Recherches d'Hygiene, with Maternal and Child Hygiene, Epidemiology and Statistics, and Industrial Hygiene to follow. These were not emergency services; they were to be permanent sections of a Regional Health Department, the first of its kind in France. Dr. Strode wrote: "It would be hard to imagine a more satisfactory

situation from the point of view of receptiveness and cooperation."

Unfortunately all these hopeful plans were frustrated by the worsening world situation. In June, 1941, on the advice of a high officer in our State Department, the Health Commission personnel had to be brusquely withdrawn. Funds were left to carry on the Paris and Marseilles Institutes for a period and assurance obtained that the Government would continue its support. Subsequent reorganizations have obscured the original design, but both the National Institute in Paris, with its nutrition section and an added statistical bureau, and a branch in Marseilles, survived the war.

It may be added here that the aid of the Health Commission was extended during the war to 20 other governments, in each case meeting some urgent and basic need in a way which might lead to a continuing activity. In England,\* while the apprehensions about influenza proved groundless, the necessity of food rationing required information on the nutritional

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\* Under Dr. Hugh H. Smith and later Chas. N. Leach

status of the population. Mobile units surveyed the country, and at German request, were transferred to Holland toward the end of the war, where the population was suffering from famine conditions in the larger cities. The British Government contributed more than half the funds to the work in England and when the Health Commission was withdrawn, created a Department of Human Nutrition in Oxford University.

In Spain nutrition again offered exceptional opportunities for study, since there had been shortages of food in some regions since the Civil War in 1936. Dr. John H. Janney, released from scarlet fever studies in Romania by the war, began surveys intended to develop into permanent nutrition activities by the health department, but the war again interfered and Janney and his American associates were withdrawn at the end of August, 1941, perhaps unnecessarily, on the advice of a worried State Department official.

Portugal was a sensitive spot during the war. It was in Lisbon that Makinsky of the Paris office had finally come to rest in June, 1940, as Assistant to the Vice-President in charge of the European office of the RF. In 1933 the RF undertook to rescue Central European scholars unable to continue work in their native lands by placing them in other countries; now the invasion of Scandinavia, the Lowlands and France had put them in peril again. In 1940, 56 Professors representing 11 nationalities had been given grants for travel mainly to the Americas, with maintenance for two years. The Health Commission and the IHD had nothing to do with this refugee program, but the Portugese became uneasy over the location of the RF office in Lisbon, which made no secret of aiding Central European refugees to escape through Portugal. Makinsky used the IHD office in the H. Department building for all purposes and the International Police began to make inquiries, due to complaints from German agents. Dr. Faria, Director of Health, courageously bore the

brunt of these criticisms and defended the RF, but he was disappointed to see so many Health Commission people going through Lisbon bound elsewhere. Dr. RBH, IHD representative in Portugal, suggested a Health Commission program for Portugal like that of Spain, but was unwilling to spend Health Commission funds for a project so deviously related to the war. He did approve, however, of an extension of the IHD work in Portugal which consisted of malaria studies, a demonstration Health Center in Lisbon, and a nursing school. In 1941 the budget of the health center was increased to enable it to begin a study of nutrition and of vaccination against influenza.

The Health Commission was concerned with a great many other projects large and small, which ranged geographically from Ireland to South Africa and from Mexico and Peru to China and India. They will have to be passed over in silence, except for one of the most important of its programs which reached into all accessible countries: the fellowship awards, travel grants

and training grants on which it expended some \$350,000 during its eight years of active life.

Meanwhile, the Health Commission was engaged in an intensive investigation of ways of controlling the four great diseases.

The typhus studies were considered of first importance, and had been unexpectedly successful. Epidemic typhus fever was regarded by all who had the responsibility of protecting the health of armed forces or of civilians in war areas as the most fearful of the epidemic diseases which might be expected to occur during and after the war. In most of the major wars of the past, it had caused great suffering and loss of life to soldiers and civilians alike and many more succumbed to typhus than fell on the battlefield. It had been the cause of enormous mortality during and after World War I, in the Balkans, in Central and in Eastern Europe; some 20 millions of people had died of typhus in Russia alone. In epidemic form it is carried in no other way than by the human body louse; hence, except

in the rapid displacements and huge civil disorganization of war, it is confined in general to ignorant peoples with very low standards of cleanliness.

Prevention of typhus, however, had never been a simple matter. Much work had been done on vaccines, of which there were several types in 1939, but those that were not dangerous were ineffective. There was no specific treatment available, and no method of ridding people of lice had been discovered better than disinfestation of the clothing by heat and bathing the body - a cumbersome, time-consuming and expensive method when masses of people were involved, and unsatisfactory because the individuals immediately became reinfested with lice as soon as they returned home. Snyder worked on vaccines, and improved types were made which, while they did not protect from infection, did usually save the life of the patient. Snyder himself contracted typhus while trying to perfect a vaccine. No good drug was discovered, and hope was finally centered on finding an effective

louse poison which would be innocuous to human beings. The IHD Typhus Team worked in collaboration with the D.A. Bureau of Entomology and Plant Q. at Orlando, Florida. The louse-powders were elaborated and screened by laboratory tests on lice in Orlando, and the promising ones were given to the IHD to try out on human beings in the field. A louse laboratory was first set up on the East Side in New York across from Bellevue Hospital and lice to start a colony were obtained from a Bowery casualty admitted to the Bellevue alcoholic ward. Bums from under Brooklyn Bridge were hired to feed the lice, which did not seem to wish to bite the laboratory animals. When several powders were discovered to be very lethal to lice, the testing was transferred to a camp of conscientious objectors in N.H. These were Quakers who were anxious to help the war effort in any way except shooting down the enemy. Each volunteer was infested with 100 lice and various chemicals were tried out. The best were the pyrethrum powders and one of these, MYL, was

used in Mexico to see if an entire town could be deloused, with the result that a disastrous defeat was inflicted on the lice under natural conditions.

DDT did not reach the U.S. until 1942, and was first tested by the IHD in April 1943. It proved to be ideal - better than MYL because its effects were much longer lasting. Each individual was undressed and his clothes given a thorough application of DDT; it was found that this would keep him free from lice for at least a month.

(The Typhus team of (F.L.) Soper, (Wm. A.) Davis, Markham (a bacteriologist) and Riehl (entomologist) were sent to North Africa where typhus had recently been epidemic. The Army, Navy and Public Health Service had jointly created the American Typhus Commission in December 1942, with headquarters in Cairo, and the powders were tried out in two Egyptian villages. The people were undressed and their clothing disinfested with MYL louse powder, since DDT was not available in quantity. Many lice

survived and the Typhus Commission was not greatly impressed; it was not the sort of preventive measure they were looking for to protect an Army for the duration.)

Strode had been to Algeria to arrange for typhus studies since there had been an epidemic there the previous winter. The Health Commission Typhus Team of Soper, Davis, Markham and Riehl was now sent to Algiers, although there was no typhus there at the moment. An office and laboratory were arranged at the Pasteur Institute through the generosity of its Director, Professor Edmond Sergent, and the Team devoted itself to an attack on the louse in a local prison for men, and it was then decided to attempt to delouse a village, as had been done in Mexico. A small community called L'Arba was chosen but Sergent warned Soper that he would never get the clothes off the Mohammedan women, even by employing nurses (as in Egypt) because of religious and social taboos. The Team talked this over and experimented with a small agricultural hand-duster. Soper dusted Riehl as

he stood and they were delighted with the results. The powder, blown forcibly up the sleeves, down the neck and around the waist band, penetrated everywhere. They carried out a full-scale dusting experiment in the prison without undressing the subjects, and then tackled L'Arba, where they met with enthusiastic collaboration from men and women alike when the effect of the powder on the lice became known. Soper was able to make a convincing report to the American Typhus Commission on the efficiency of insecticide powder and the possibility of dusting people with their clothes on. The great advantage was that it took two or three minutes per individual instead of 15 to 20.

On September 26, 1943, Soper learned there was typhus in Naples through a British broadcast of a refugee's story, and when the Allies got to Naples on October 11, they began to fear the infiltration of an enemy more dangerous than the Germans. Soper went to Gen. Julius Holmes, head of the Allied Military

Government in Algeria, whom he had known in Brazil, and told him we had the answer to typhus. The RF Team could go to Naples at once and organize louse control in the population. But the Army had had its fill of civilian agencies and were hard to persuade. They asked for a demonstration on lousy prisoners in a POW camp and Corpsmen of the Army were trained in the technics of louse control, which proved very effective. However, October and November went by without any move on the part of the Army. On December 2, Soper went to Holmes again and told him he had been invited to go to Morocco. Holmes had that day received a wire from Naples that an epidemic of typhus had broken out in the civilian population. (Appeared in prison, where the conditions favored lousiness and transfer of infection - used to be called "jail-fever." Italian soldiers repatriated from Russian front developed cases in February 1943 in Foggia and Bari.) As a matter of fact, the first civilian cases had occurred in April. More in July; Naples had been bombed and in the resulting

disorganization typhus spread easily in spring and summer.

Families lived in air-raid shelters, large caves and old quarries underground where possibly 200,000 persons slept. There were new cases each month, but the great epidemic rise did not begin until November. A disease which spreads most rapidly in winter in temperate climates when cold weather promotes overcrowding, more clothing, discourages bathing and prolongs life of both lice and rickettsias.

On December 6, 1943, Soper got his orders and the four flew to Naples on December 8 in officers' uniforms but without insignia as to rank. An Army dump turned up half a million tins of louse powder (MYL) but there were no dust pumps. It looked as though they would have to go back to undressing the people and powdering them from the tins, which were perforated for dusting. The dump was enormous and miscellaneous beyond belief, and Soper went back again to make another search. While he was standing there, a truck came up with 108 small Hudson dusting pumps. This

The USA Typhus Commission took charge and IHD Typhus Team given responsibility for mass delousing of civilian population.

was somewhat miraculous, and reminiscent of a Homeric battle with the gods ranged on Soper's side.

The Naples anti-louse campaign has been written up in detail elsewhere.\* Never have so many lice been destroyed by so few in such a short time. Powdering the cases and their contacts began December 16, and the first station for mass delousing of the population was opened on December 28. (Dusting began on December 15 with the compulsory dusting of 700 passengers leaving Naples on the first passenger train to depart after Allied occupation.) While typhus was building up, 50 public delousing stations were opened with an estimated capacity of 100,000 persons daily. The first two stations (in a school and in a hospital) began by capturing children in the street and dusting them by force. When these had experienced the unprecedented comfort of a night's sleep without lice, fleas or bedbugs, they returned with their families, and thus the delousing stations became popular overnight. One of these stations dusted 837 persons

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\* Soper et al, Collected Papers 1947, No. 48

the first day, 2,200 on the third, and 3,585 on the seventh.

At this time the daily cases of typhus were mounting. The epidemic curve had risen gradually in November to 40 a week; it skyrocketed in late December to a peak of 224 a week, and then began to fall, slowly at first, and soon with sharp precipitation. The epidemic had passed its peak in 15 days. There were 600 cases in January, 101 in February, 19 in March, 7 in April, then there were no more.

From mid-December until the epidemic subsided, three million persons were dusted in Naples and vicinity. DDT was used toward the end, but MYL turned the tide. Curiously enough, the educational value of the whole episode was not great. No intolerable repugnance to lice was aroused. A survey in July of the districts where the greatest number of typhus cases had occurred and the most intense powdering had been done indicated that the epidemic and the dusting had not inspired any "louse-consciousness."

Over a third of the children who had been powdered were infested

again. In one of the districts most affected by typhus, 53 per cent of the children were louse-infested, although everyone lived within a ten- or fifteen-minute walk of a free delousing station open eight hours a day.

Typhus played an insignificant role in World War II - perhaps the first major conflict in which the rickettsias had not influenced the outcome. (The decision to concentrate the efforts of the Health Commission Typhus Team on louse control was more than justified. The Naples epidemic gave the opportunity for a striking demonstration of the rapidity with which louse-powder can control typhus.) When Germany threw up the sponge, hundreds of thousands of refugees swarmed into Northern Italy, Switzerland and France. The Swiss called for a cordon sanitaire, and our Army asked for the opinion of the Health Commission Typhus Team. Soper made a survey along the North Italian border. The louse control technics were being thoroughly applied and summer was coming on, when typhus begins naturally to decline. He

recommended that the people be allowed freely to go wherever they desired, well powdered with DDT, and no typhus at all resulted.

When our armies crossed the Siegfried Line, they found typhus everywhere in the slave labor camps, the POW camps, and the notorious concentration camps of Belsen, Buchenwald, Dachau, etc. The British counted 3,500 typhus cases among Belsen's 45,000 inmates. At the approach of the Allied armies, the prisoners escaped into the countryside. Never had there been such a scattering of typhus. The camps literally exploded into the surrounding areas and floods of displaced persons left Germany and Austria - but not until they had been dusted with DDT. The disease was no longer a terror to armies, to refugees, to concentrations of prisoners or to the dwellers in slums - typhus had been licked.

*Yeds - League of Nations  
Fosdick, R.B.*

*910  
P+P  
International relations*

Memorandum on the Connection of the Foundation  
with the League of Nations

*by Raymond B. Fosdick, March, 1930*

When the Committee on Review, composed of trustees of the Laura Spelman Rockefeller Memorial, reported on the question of the social sciences, they used the following description: "The subject matter of the program is to be found in the manifold varieties of social organization and social progress, particularly as these bear upon the nature and conditions of social behavior." In other words, a well considered plan in the social science field would necessarily include the application of economics, political science, sociology, and applied subjects to the solution of modern social problems.

The program of the Social Science Division of the Rockefeller Foundation is, of course, international in extent. Indeed, in no other field is the scientific approach to social problems so urgently needed. The natural sciences in the last hundred years have revolutionized the methods of living of the human race. They have given us telephones, automobiles, airplanes, radios, and countless other methods of transportation and communication. These inventions have suddenly compressed the world - jamming together into a single community widely diverse peoples and civilizations. The world is infinitely smaller than it used to be. When Admiral Peary reached the North Pole in 1909, it took five months to get the news to New York. Now we can talk daily with Admiral Byrd at the South Pole. Abraham Lincoln never saw a trolley car, a telephone, an automobile, or even a bicycle. Today all these new inventions have bound the world together in a new propinquity.

All this has had a marked effect on human life everywhere. To begin with it has affected our economic life. The world of today consists

of a single economic organization. No longer are countries self-contained or self-supporting. There is not a nation whose economic life is not completely dependent upon imports from a score or more of other nations. Moreover, every year adds to this mutual dependence of nation upon nation. Every year the interrelationship becomes more intricate, and the pattern, with its thousands of criss-crossing threads, more involved. There is scarcely a commodity the curtailment of which would not affect human life at a dozen points. There is not a man or woman in America whose daily life is not in constant touch with that of peoples scattered across the seas in five continents - peoples whose customs are strange to us, whose language is unknown, of whom some of us, perhaps, have never even heard, but without whose labor our entire machine civilization would come tumbling about our ears.

One of the real dangers which the world faces today lies in the fact that economic internationalism has far out-stripped political internationalism. We have been trying to run a 20th Century industrial world with the social apparatus devised for an 18th Century agricultural civilization. In everything that relates to trade and commerce we have cheerfully accepted the contributions of modern science: its steamships, airplanes, radios and telegraphs. But side by side with this new system we have tried to maintain our old political system of water-tight compartments backed up by battleships and machine guns. These two systems cannot live in the same world together.

The new world which modern science has given us is characterized not alone by economic cohesiveness. There is a growing dependence of nation upon nation in matters that pertain to all sorts of human problems. The fact is, modern life in all its phases is rapidly overflowing national

boundary lines. There is hardly a single social question which does not have its international implications. Is the question one of health? But health is no longer national in scope. With an influenza epidemic sweeping the world, a problem was created which far outran the efforts of individual nations. Bubonic plague cannot be confined within the boundaries of a single country, and, as we here in the United States have learned to our sorrow, poliomyelitis is no respecter of flags. Modern science has facilitated the travel of germs as well as of men, and the problem of disease is one which challenges the brains and resources of humanity without regard to national boundary lines.

Is the question one of protecting women and girls from becoming the victims of illicit traffic? But here again this traffic is international in scope; the Argentine is defenseless unless cooperation can be secured with France.

Does the question arise of curtailing the devastating commerce in drugs? But once more we are confronted with a problem which knows no boundaries - a problem, indeed, whose only solution is to be found in harnessing together in a great cooperative campaign the individual efforts of nations.

Such illustrations as these could be multiplied many times. How can we break down the old isolations of human life in the presence of these new mass problems? How can we harness social intelligence to the tasks which our new propinquity forces upon us? Where can we find a focal point for the new attack? It is a significant fact that the machinery of the League of Nations in Geneva constitutes at least the beginning of an answer to these questions. Whatever we may think of the League - and this is not the place to argue its merit or lack of merit - in the last few years it has become a focus of cooperation - a convenient agency for handling

situations relating to human welfare which no nation acting alone can meet. Never before has civilization had at its command any centralized machinery for undertaking responsibilities which no single nation can assume. The Health Section of the League is a case in point. Here has been organized a common campaign on disease, backed by the financial resources and moral support of fifty-two nations. In order to inform all national health authorities rapidly and effectively of the development and spread of epidemic diseases, a centralized epidemiological intelligence service has been set up; information is sent out at least twice every three weeks, and a regular monthly bulletin is issued containing statistics and charts on the incidence all over the world of Asiatic cholera, typhus, relapsing fever, dysentery, smallpox, anthrax, scurvy and other diseases. In other words, a competent agency is constantly on the watch-tower, with dependable working relations with all countries, giving definite and reliable information concerning these great plagues when they first show themselves, and before they get out of hand. Obviously this is a task which no national government by itself can undertake.

Many illustrations could be given of the use that is being made or could be made of this machinery at Geneva. Most of these uses represent the application of approved social techniques to problems that affect the human race regardless of boundary lines. The question of double taxation of foreigners in both their country of origin and residence; the codification of international law; the troubling question arising from the private manufacture of arms; the control of human slavery; the division between states of hydro-electric power; the problem of trade cycles; the difficulties arising in two basic international industries, coal and sugar; the

standardization of international statistics and the general coordination of international economic information; the principles underlying arbitration in commercial contracts; the necessity for a universal system of marking harbors and rivers for shipping purposes; the freeing of international intercourse from vexatious national restrictions; the promotion of a genuine basis of intellectual cooperation - these are only some of the problems which lend themselves to technical study and scientific approach. Every one of these problems involves research; every one makes necessary the introduction of the expert. Scores of the best brains obtainable - economists, political scientists, engineers, educators, administrators - have in the last ten years been working in Geneva on problems like these, by the solution of which we may be able to bridge this gap which modern science has created between our material development on the one hand and our agencies of social control on the other.

Any organization which has at hand the resources which the Rockefeller Foundation commands, and is interested in the development and application of the social sciences, cannot afford to overlook this new opportunity which the machinery of the League of Nations presents. To take advantage of this opportunity does not necessarily involve large sums. Much of the research must obviously be financed by the League itself with the aid of its own funds. But it is not always easy to convince the Finance Committee of the Assembly, which is responsible for keeping the League's budget within reasonable limits, that a somewhat remote or very thorough-going study is essential to the clear understanding of some international difficulty. There is a clear field of experimentation and demonstration where private funds can help to pave the way for subsequent governmental action. That this is recognized in Geneva

has already been shown by the acceptance of funds from private sources in connection with the League's health work, its opium work, the survey of the traffic in women and girls, the Library, the publication of the banking laws, etc. In so far as activities of this type fall within the scope of the Division of Social Science, an opportunity is presented of such strategic value that it can scarcely be overlooked.

# Ch. 9 - GKS 1944-51

- 1-3 IHD adjustment to war; now nearly over - staff ready for new situation - pick up threads - continuity imp.
- 4-7 WAS rating - choice / new director - break with past? - Tr. conservative - GKS selected - loyalty to Rose.
- 7-16 Future uncertain - new internat. concern about P.H. - creation / UNRRA - WAS app'd. dir - stroke took over - significance
- 17-23 Summary / HC work + future - IHD in the war - (China) - GKS proposes memo - P.H. not let man - qualified to restore IHD
- 23-34 GKS joins IHB - Concepts / WR, FFR - WAS compound - impact of war - GKS char. + training (Brazil) - career in IHD - Rel. E FFR
- 34-40 Rel. E WAS; Studies memo: IHD an operating div - coop. E GKS - place of the lab - P.H. educated to S.H. - Resident staff members
- 41-49 Effect of UNRRA on IHD plans - 2 new fields - MC + Phys. Hyg. - topics: white man + native - lack / knowledge - FFR + Sinker
- 50-57 Physicists unprepared - GKS + Harris - J.H. - opportunity vanished - Reception of memo by RBF - by Scientists - Tompkins
- 58-64 Planning moves in Europe after war; opening Paris office; food to Holland; reconnaissance in Europe (IHB); aid to China; new nations imp.

Glenn typed cc.  
8/17

and chose to let the brunt fall mainly on <sup>the aid to</sup> ~~appropriations~~  
~~to strengthen~~ Health Services rather than on the laboratory. (Refer to table  
of comparative expenditures by the 4 directors). This is understandable,  
for Sawyer himself had organized the JHD Laboratory in 1928, and  
under his direction it had developed in 7 years from a modest affair  
in 2 rooms of the RI, into <sup>a large</sup> ~~the~~ superbly equipped laboratory and  
brilliant team of scientists whose coordinated investigations were  
yielding exciting results in the mid-thirties in yellow fever, influenza  
and malaria. Sawyer can hardly be criticized for considering this the most  
productive area of the JHD field, and in fact he carried the Sci. Div. with him.  
Taking over from Russell, he gave <sup>fresh</sup> impetus to research ~~when~~  
he took over from Russell, increasing <sup>of funds</sup> the allocation to Laboratories  
and cutting down on State and Local Health Services. As long as  
communicable and deficiency diseases continued to overshadow all

\* Sawyer spent 26% of his budget on Specific Diseases, and 7% on Laboratories = 33% on these two,  
while Russell spent 22% and 1.6% resp, or 23.6% on both. Aid to Health Services, 77K, 13%

other health problems in tropical and backward regions, it seemed logical to him that an adequate understanding of these diseases should have priority in the IHD program. The spirits of the public health men on the staff, however, were depressed. To <sup>though important, must remain the</sup> them, investigation ~~as far as the IHD was concerned, should be the~~ handmaiden of sound public health administration and practice, if the great objective of the IHD was to <sup>remain</sup> be what it had always <sup>namely,</sup> been, <sup>working with governments to promote the health and well-being of rural people in distress because of preventable disease.</sup> The exigencies of World War II, <sup>soon</sup> overwhelmed all these differences and dissatisfactions. It imposed its own agenda on the IHD, and for the duration no one questioned the concentration on selected diseases, in laboratory and field.

This in broad lines was the situation which Stroh inherited from his predecessors. In view of his administrative <sup>his admiration for Rose</sup> <sup>conservative</sup> backgrounds, and his well-known philosophy of public health, his platform, which was presented ~~monumentum~~ to the Scientific Directors ~~presented~~ at their October meeting in 1944, contained no surprises. [or radical departures from well-tested principles.] More communicative than his predecessors, he took counsel freely and liked to discuss issues in advance, which pleased his associates and staff who had felt (somewhat) excluded under Sawyer from the processes of thought which led to decision and action. Stroh's decisions, however, were his own and he accepted responsibility for them. A man of solidity and common sense, there <sup>probable attitude and</sup> <sup>basic</sup> was a predictability about his course of action on matters of policy which built up a sense of security in field and home office.

His training and experience was typical of that of all of  
 Rose's young men in the early days, who, without benefit of  
 diplomas in public health, started from scratch to organize a  
~~national~~ hookworm campaign in some neglected corner of the vast and  
 wormy tropics, and from that to develop a simple type of rural health  
 with whatever they could find to construct it with.

Service, Storde's field experience began in Brazil which, in 1917  
~~20's~~ with its huge tropical area, deficiency of communications and  
 heavily parasitized rural population scattered over hinterland and  
 jungle, constituted a training ground in technical assistance as  
 and as inviting as  
 difficult, any ~~place~~ in the world. Almost the whole of the tropics

outside of the Americas had been parceled out to one or another

Independence  
 Sept 7, 1822

European power, but Brazil had been its own master for 120 years.

Hardly a nation as yet, its loosely federated and wildly

heterogeneous States were strung along 4,000 miles of  
 Atlantic seaboard, each with its peculiar character and  
 government, ~~and~~ communicating with the others ~~by~~ by boat, as though  
 in a great archipelago. Fighting the hookworm was a  
 pioneering, administrative and political job, calling for diplomacy  
 and goodmanship rather than ~~and~~ and yellow fever belt.  
~~not~~ science in the hookworm. Storde had a special flair for  
 dealing with Latin Americans and within 6 years he was made  
 Director for South America just as Russell succeeded Rose in the  
 directorship of the IHD. Russell and Storde appreciated each other's  
 qualities, and in the general reorganization of the RF in 1927, which  
 (which had enjoyed a sort of independence under Rose, more closely integrated)  
 disbanded the International Health Board, and set up the IHD in its place, Storde  
 became an Assistant Director of the new Division and was transferred  
 to the Paris Office to take the place of Seliskar M. Gunn as Director

for Europe, Africa and the Near East, a post he held for over eleven years.

All of this was fertile <sup>soil</sup> ground for the IHD between the wars, in each <sup>in Roach's words</sup> "ground harrowed by the war, ready for new seed" in Roach's words\*, was of its three realms of action: Europe, rich in the quality of young

men and women competing for fellowships in every phase of public health training, and flourishing with new schools, institutes and public services of

health; ~~in~~ the Mediterranean and tropical Africa, <sup>proved</sup> incomparably productive

in the investigation and control of the two great diseases which were the classic of the IHD,

targets, malaria and yellow fever. In 1927 the field staff ~~of the IHD~~

were on the brink of revelations which were to alter all our epidemiologic

conceptions and modes of attack on the two most feared of the enemies

of man. Stode was in complete agreement with Russell on the place

of the laboratory in this scheme of things — a <sup>close and</sup> reciprocal relationship with <sup>studies</sup> the field,

which in the end could lead to large-scale undertakings in prevention and control.

Storke, in Paris, was ~~in charge of these activities~~ for eleven years,

directly responsible to Russell, with whom he established a very

satisfying working relationship. They understood and liked each other, <sup>as Gunn & Russell now had,</sup> and Russell had confidence in Storke's judgment and <sup>his</sup> loyalty to the whole well-balanced program which Russell had skillfully built up on the solid foundations laid by Wickliffe Rose. Storke could count on his support. Russell <sup>had the faculty of putting</sup> ~~had the knack of putting~~ his finger at once on weaknesses

and oversights, but he would always support.

Sawyer succeeded Russell in 1935 and had no more than got his bearings when clouds of war on the horizon of Europe disturbed his plans and began to influence policy. He brought Storke to New York in 1938 as an Associate Director and expert on Europe. This was a promotion, but Storke was not as happy, as assured or as important as he had been in Europe. He found himself no longer an executive, but a sort of minister without portfolio - a counsellor without <sup>(defined)</sup> fixed

responsibilities. Sawyer did not have Russell's ability to delegate authority nor was he one to rely greatly on counsel.

The situation was clothed with a vagueness which contrasted with

~~the~~ <sup>Stroke</sup> feeling of confidence and security ~~he~~ <sup>he</sup> had enjoyed in Paris.

Contributory to his state of dissatisfaction was doubtless the partial

abandonment by Sawyer of the equilibrium between administration and

research, and the <sup>original</sup> ~~the~~ reciprocity between field and laboratory which

Russell had maintained. Sawyer's happy inspiration which led to

the creation of the R.F. Health Commission <sup>in 1940</sup> put an <sup>early</sup> end to this uneasy

period and provided Stroke with a much-desired outlet for his energy

and ability. ~~But~~ <sup>Still</sup> with these activities, at their height, he was <sup>now</sup>

called upon to chart for the Scientific Director the course he proposed

to pursue, as he took Sawyer's place and his responsibilities in the SHD.

His first concern was naturally to restore unity to the activities and staff of the IHD, scattered by the way, <sup>almost</sup> divided in two, (in order to adjust program to current needs, by the priorities given to laboratory research, which ~~had~~ <sup>had</sup> already ~~begin~~ <sup>of the IHD</sup> begun to divorce the ~~the~~ Laboratories from its traditional types of operation. The current needs would soon be vastly different. There would be a necessity everywhere for <sup>setting up</sup> the creation a rehabilitating of health and <sup>there would be</sup> services, institutions of teaching and research, and a lack of trained personnel to staff them; the defenses against diseases would all be down. These <sup>but from which interest had appreciably shifted.</sup> were ~~the~~ problems the IHD had been <sup>created</sup> ~~organized~~ to tackle, Stroe started with the premise that the IHD was an operating division, unlike the other divisions of the RF, and this had always meant having a staff spread around the world, combining executive tasks with field and laboratory work, cooperating with governments everywhere on a

The Division used its own projects in selected fields of public health, ~~for the purpose of~~ staff to deal with problems which called for research of an intensive kind, but "as a rule," he wrote, "the IHD worked in cooperation with governments to build up and improve official ~~promoting and developing~~ public health services" throughout the world.

which would become permanent activities of government after the withdrawal of support.\* Stroke thus fell back on the fundamentals laid down

by Rose in the beginning, and until the fog which cut down his visibility at the moment should begin to lift, these seemed to him still

sound guides to fruitful action under the actual circumstances. His

memorandum conveyed no suggestion that investigation be abandoned,

~~and insinuations~~ <sup>apprehensions</sup> that he was bent on destroying the Laboratory had no

foundation whatever; his desire was clearly to reintegrate the laboratory

into what he considered to be the characteristic world-wide health

<sup>Just as ~~Rossett~~ <sup>Sawyer</sup> was constantly trying out new diseases in the laboratory,</sup>  
Stroke was in the lookout for new administrative and educational fields to enter.

program of the IHD. <sup>^</sup> The emphasis belonged, he thought, on working

with governments, and his innovation (if it can be so-called) was to

\* IHD Ann. Rep. 1945, p. 1.

There were good reasons why a well-integrated plan of public health administration and education should be at the heart the core of the new program of the I.H.D. The need would soon be tremendous - all of Europe was facing a long period of reconstruction, and there was an awakening of a new nationalism in the nonindustrialized areas following the dissolution of colonial regimes, with a corresponding need for technical assistance in every field. Sargis's move into South America in 1940 had revealed a powerful desire to take advantage of the new concepts and techniques of public health and to remove them from the vitriatic influences of politics. A constructive public health program would bring the I.H.D. into cooperative association with these new movements among the peoples with whom it was most qualified to deal.

of the IHD,  
 Change the order of importance of the triple objective, putting the  
 envisaging continued aid to health services which  
 even yet were too often nonexistent, or equipped  
 with health machinery of antique vintage,  
 attack on specific diseases last, but elevating to first place,

even above aid to state and local health services, the education of

represented by  
 public health personnel - the thousands of fellowships, the millions

of dollars invested in schools of hygiene and of nursing - which "may

have been, our most significant contribution to public health."

The words are Storde's, but they expressed what had ~~gradually~~

come to be the almost unanimous conviction of the RF. with regard

to the fellowship policy.\* [For one thing, a general appreciation of

health needs and a comprehension of IHD objectives had made it no longer

necessary to use the urgency of a major disease to gain an entrance

into any country. But principally] Public health education meant

\*Rose inaugurated the program; Russell spent 11% of his budget on "public health education";  
 Sawyer, 14%; Storde 25%.

# GKS III Memo

## 2. PH Education

F's, travel grants, support to Schs / H's, PH N.

This may have been our most significant contrib.

F's: not to best in individs, but to those needed for special posts.  
Resident staff members avoid gross mistakes.  
Special F's guaranteed position where need is general.

" " also for new JHD staff members.

Tr gr.: Senior people who will benefit from contact & inter-organiz.  
Schs H: Hopkins, Harv, Toronto, London - aid new depts.

N. schs: rec. to PH practice - we give consultant service. F's.  
Financial aid to 17 schs in 11 countries (6 in US, 2 Canada)  
Undergraduate courses in PH in medical schools (used to be in MS)

SUS

PH Ed. 1944

Subs 1 PH. N. (RF 44/108.)

Es.

BKS

PH Ed 1945

\$ 1. m. Haw. Sch PH wa 10 yrs

Sch. opened 1922; \$4,687,103 in all

Hawaii - \$8,030,800 in all

Toronto 1,394,070

U. of Mich 535,000

3KS

PH Ed - 1945

PH Ed. in Jamaica - TA. Sch. offers instruction  
to HO's, PHN, San. Insp., Col. techn., H. Educ. from BSW

5/11.

PH Ed. 1946

1. Tr. Sta. - Br Dept / Colonial Devel & Welfare, Govt. of Jamaica  
and IHD: theor. & prac tr. of PHN. Sanit. in Kingston.  
Courses lead to Certificate from Roy Sanit Inst, London
2. Sch N - 4 in So Am (Bogota, Ec., Monte, Caracas)  
1 in Europe (Lisbon)
3. Sch. Inst of PH - - JH, Harw, Toronto  
Chile, Stockholm, China

for the countries inviting the collaboration of the JHD, and this was

the training of future leaders, decisive for the ultimate  
which, in JHD terminology, meant turning all  
responsibility for it over to government.

success of any enterprise, ~~in foreign countries~~. And

every field man of the JHD knew that the stream of returning  
dominating reason long-term advisory + demonstration  
fellows was the principal justification for maintaining an program

and a resident staff member in every country. These young men,

bursting with knowledge, self-confidence and an understandable feeling

of superiority as they returned to their home lands, would have

found themselves too often frustrated in ~~any attempt to apply~~ <sup>the application of</sup> their

newly acquired <sup>knowledge and skill by their</sup> ~~abilities~~ for lack of authority, prestige and experience

staff member on the spot who  
were it not for the JHD, which curbed their self-conceit, protected them

from politically shrewd and jealous colleagues and superiors, and offered

them employment in its own projects, which being half governmental,

inducted them gradually into positions of responsibility and esteem. This

## Stabilized representation

Became 'geographical' rather than functional-

Could influence & screen requests for aid, intercepting

those which were unacceptable to JHD & RF - often converting them into something with which - saying no constructively

In backward countries particularly, the JHD rep. really became a rep. in residence for the whole RF - unescapable altho other Divs. sometimes resented it - useful at times for obvious reasons & as an observer on the spot.

A structural asset to JHD - not enjoyed by any other Div.

Knew the problems, conditions & people

Selection of Fs a very important function, together with helping them adjust when they returned. JHD Fs always had a guaranteed job waiting.

type of activity underlined the great advantage which the IHD enjoyed over other divisions of the Foundation, in having resident staff members in every country in which it had a program. Russell, in Army fashion, had moved his staff about with considerable freedom, but Stroe was impressed with the <sup>cumulative</sup> influence and <sup>accomplishment</sup> ~~growing achievement~~ acquired by a more stable staff through long residence. It

permitted, through friendly acquaintance, an increasingly informal relationship with local authorities; it provided an intimate knowledge of the problems and peculiar obstacles of the country, and of the kind of attack which would prove feasible under prevailing conditions; and not least, it enabled the staff member to use his judgment and experience in the selection\* of the young men and women to be sent abroad on fellowships, minimizing the influence of politics and nepotism, and assuring the provision of trained personnel to <sup>advantage of</sup> ~~take~~ unfolding opportunities. ~~Stabilizing~~ the field staff was one of Stroe's effective contributions to the unity and morale of the Service. Fellowship training <sup>by itself</sup> without ~~the~~ subsequent practice similar to <sup>a medical student's internship</sup> ~~an~~ experienced under guidance and protection, is not an asset likely to be immediately seized upon and utilized by national authorities of a far different school and fairly incompatible ideas. This health education and <sup>the</sup> foreign technical aid program worked hand in hand to make the IHD effective; and were indeed mutually <sup>possible</sup> ~~independent~~ (over)

One of the representative's important functions was to uncover good fellowship material, & see that fellows were usefully employed in his return home.

plan

Thus the Public Health Education, <sup>plan</sup> depended on the State and Local Health Services Plan for its effectiveness, and their joint impact in backward areas went far to offset, in the minds of Shode and the field staff, what had seemed to many, in a golden period of discovery, the over-riding importance of research under the banner of "advancement of knowledge".

~~But~~ <sup>nevertheless</sup> Shode was determined to preserve the laboratory as an integral part of his new <sup>when war-time projects had expired,</sup> program, by bringing it into closer liaison with the field <sup>studies</sup> work in epidemiology and control of <sup>selected</sup> diseases important to the areas in which he proposed to work.

( to 41 )

The creation of UNRRA, however, ~~had~~ introduced a new factor into the situation, and along with this <sup>was a</sup> ~~there~~ revival of interest on the part of the U.S. Government in its Latin American neighbors, which crystallized in 1942 in the heavily endowed <sup>created to bring war-time aid to other American states in health, economy and education; but destined to become a permanent institution. This</sup> Office of the Coordinator of Latin American Affairs, was strong indication of a dawning era of international activity which was bound to displace the SHD from its lonely position as a ground-breaker. It was a long-awaited <sup>and welcome</sup> development, but since the in the health field, SHD's place was in the van, not in the procession,

~~and~~ Strode foresaw that it would call for new tactics on his part, governmental forces moved in upon him.

as large a "Competition is undesirable," he wrote in his memorandum;

"as other international agencies enter the field, we should withdraw."

Unoccupied niches would still remain for a long period, but

it was clear that the time had come to explore entirely new

fields of activity for the SHD.

42

as the fundamental measure of protection,  
Rose had concentrated on sanitation,  
and Russell and Sawyer <sup>had emphasized the study of</sup> the agents of disease.  
Strode now proposed an investigation of a third great  
field still largely unexplored - the impact of man's physical  
environment on his functions and activities.

Among various possibilities which for one reason or  
another had never previously been taken under serious  
consideration by the IHD, Strode <sup>at this time brought two suggestions</sup> selected two to bring  
to the attention of the Scientific Directors. The other was a plea  
for the study of human physiology in its adaptations to  
the whole gamut of climatic variation from the equator to  
the poles, in the hope of establishing scientific norms for  
the control of environmental factors important to human health.

<sup>One</sup>  
The ~~other~~ was the controversial problem of medical care -  
how its coverage might be increased, its content improved and  
its cost more equitably financed in populations of varying affluence.

II The problem of medical care, with its direct connection with medical education  
was to  
and its social and economic ramifications, become almost without dissent

# Phys Hyg

metropolitan

Many vast, remote areas of the earth lying within the frigid & torrid zones have become centers for Sci, industry & strategic undertakings. Men from other climates making permanent habitations there have to meet the hostile climates ~~either~~ by adjustment of their own physiology and by modifying their environments. Their success hinges upon their endurance. Must learn to cope & endure imposing severe phys. & mental strains. Any ~~one~~ <sup>satisf.</sup> sol. to problems of pers. Hyg, Mts, nutrition, clothing housing & other essentials of health & comfortable living must depend on a study of human physiology under <sup>climatic</sup> stress, & Sci knowledge in the field is fragmentary. Feeling of insecurity in people facing the unknowns of supposedly dangerous climates increases the hazard, & in WW II, great emphasis was placed on "psychol. acclimatization". Beyond well in advance of departure for such outposts. The mind as well as the body must be taken into account, & rest, <sup>pleasant</sup> recreational ~~activities~~ activities as important as protection from excessive light, heat, humidity.

3  
First Faculty at J.H. Sch. Hys. 1919

Wm H Welch

W. H. Frost - Epid (Hd. of Dept. Epid & PH Admin)

Wm H Howell - Physiol. Hyg. - made Dean after Welch.

Wm W Ford - bact

E V McCollum - biochem

R. W. Hagner } med. Zoology

Wm W. Coss

R. Pearl } biostatistics

L. J. Reed

C G Bull } immunology

R R Hyde

J H Gregory - San Eng

Dr Arthur Newsholme - Resident Lecturer in PH Admin (succeeded by Allen Freeman)

# Physiological Hygiene

a regime of food, clothes, housing, exercise + occupation  
calculated to keep his mental processes normal and his  
body temp. at  $98.6^{\circ}\text{F}$ .

Not easy for the white man. Tropical people at the  
stage of hunting, fishy, gathering go naked, but whites, who no  
layer need clothes for warmth, continue to wear it to protect tender  
skin, for status, adornment, sex-distinction + convention. They  
often attempt as missionaries, doctors + tech. advisors to change local  
habits to conform to standards fixed in an alien culture, rather than  
trying to modify them into some reasonable ~~adjustment~~ adaptation to imitations  
of ways + practices adjusted on the continents to the needs of the environment.

Difficulties lie not so much in the nature of the tropics as in the nature of Western civilization.

Clothing is a symbol of W. civiliz. + its importance to the northerner is symbolic of all the exotic elements of his civilization which accompany + embarrass him in the tropics.

"White man's burden" is not the burden of educ. + improving + gov. the poor benighted natives; it is the burden of his own culture which he has carried into an alien environment." An conditioning becomes nec. because people wear clothes + live in houses ill-adapted to the climate. Inability to compete may be cultural rather than biological.

# Imposition of foreign cultures-

by Drs. missionaries

In Brazil, dignitaries in topies used official  
garb evolved in London. Paris - striped trousers,  
cutaway, starched collars.

Primitive diet better than Western, for native  
labor - any deficiencies in native food gatherers  
& hunters & fishers?

6 Exercise in Queensland 6

Our housewives have to do the housework & shopping without help.

9

~~Phys~~ Drinker, Cecil -

Prof Phys, Haw. Sch. PH, 1923-48  
Dean - 1935-42

Drinker, Philip (much younger than Cecil)

Prof Industr. Hygiene -  
(air conditioned chamber)

one of the principal interests of the IHD and will be discussed  
 at some length below, but physiological hygiene as a subject of  
 study encountered unexpected difficulties. There was no question  
 of its importance. Both the torrid zone and the polar regions  
 were rapidly becoming areas of scientific, industrial and strategic  
 enterprise requiring the residence over long periods of people adapted  
 from birth to quite different conditions, yet little was known about  
 the process of  
 acclimatization, or the powers and limits of human accommodation  
 to extremes of climatic variation. If man <sup>could</sup> ~~can~~ survive in more  
 different kinds of environment than any other animal, it was because he  
 unfavorable  
 has been clever enough to modify ~~a~~ environments rather than try to adapt  
 himself to them. He moved <sup>away from</sup> ~~out of~~ the warmer, <sup>isotherms only</sup> as fast as he <sup>learned</sup> ~~could~~  
 how to keep warm, and, <sup>if any</sup> few scientific studies had been made of the inheritable adjustments in physiology <sup>which</sup>

Man could adapt to cold climates more successfully than to hot ones. occurred on the way, ~~except the loss of pigment in his skin~~. He had found the return journey <sup>to the tropics,</sup> ~~wherever he has been~~ <sup>individually or</sup> tempted to make it ~~en masse,~~ beset with difficulties and dangers, <sup>was</sup> If he is now unable to return with some unknown measure, to safety to the tropics, it may be due in <sup>lack of scientific knowledge of</sup> the nature of his maladjustments.

Turning to the peoples who never left the tropics, it was striking <sup>that</sup> the lands <sup>they inhabited</sup> <sup>were in general the</sup> underdeveloped regions of the world, whose deficiencies and general lack of progress had only begun to arouse a universal concern after the war. They made up  $\frac{1}{3}$  of the earth's land area and contained almost  $\frac{1}{3}$  of its population. Economically, <sup>they were</sup> an irreplaceable source of raw materials and would <sup>have</sup> been an insatiable market for goods were it not for their miserably low standards of living, <sup>cast of</sup> static economy, <sup>primitive</sup> society and the barrier of tropical disease. Politically, they were of enormous

concern to the free world as, with the decline of the

colonial powers, exploitation gave way to self development.

[Back to p. 44] The way out of it?

^ Such stagnation was a challenging ~~can~~ blamed for this

anachronism in curious contrast <sup>with</sup> ~~the great~~ <sup>forward</sup> ~~sweep~~ in the 20<sup>th</sup> century without a simple explanation;

could some of it be attributable to the <sup>evolutionary</sup> effects of climate on peoples

nurtured for untold generations in an environment which ~~has~~ denied

them the incentives and achievements of more favorable latitudes?

The question <sup>was</sup> a lively one, and never settled. The "cornucopians," <sup>the</sup> characterized by physical rather than <sup>the</sup> physiological obstacles, ~~and~~ looked on as Lee <sup>them</sup>, impressed the tropics as the lands of the future,

an inexhaustible storehouse of untold wealth and an expansion

chamber for ~~a~~ ~~repressed~~ ~~and~~ <sup>under pressure</sup> populations, unable to solve

an elementary problem in multiplication; others thought <sup>the obstacles so unremovable that</sup> it <sup>was</sup> hopeless to expect ~~that~~ the <sup>tropics</sup> ~~will~~ ever <sup>to</sup> be the source of any important increment to human welfare and prosperity.

\* Lee, "Climate & Economic Development in the Tropics"

Science had little to offer in support or rebuttal of either side of this controversy. Herodotus pointed out that climate had swayed the course of civilizations, and <sup>subsequent</sup> historians have accepted this as axiomatic and without need of scientific confirmation.

Hippocrates elaborated the well-known concept of "air, water and places" as having an important influence on human health, and physicians have been sending patients to health resorts and "watering places" ever since without knowing exactly why. Doctors in Panama during the construction of the Canal had observed the unfavorable effects of the <sup>and productivity</sup> climate on the health of the American employees, but there was no body of knowledge to consult on the precise etiologies of the anemias and neuroses of the tropics. Fifty years later Abel Wolman complained that he could

not find that anyone was engaged in serious research on <sup>which in most institutions was relegated to a minor position (if it had any at all) in the medical research program.</sup> <sup>or "stress"</sup> mental physiology. The IHD itself, in its special interest in  
 \* In Stevens, p 288

tropical diseases, had never gone beyond the influence of climate in the multiplication of the insect vectors of yellow fever and malaria, and the longevity of hookworm larvae in the soil. That there was a more direct connection than this between climate and disease was common knowledge, since there was some <sup>mysterious agent in</sup> ~~some~~ tropical environments, <sup>which</sup> suppressed all signs and symptoms of scarlet fever and diphtheria, while it enhanced the clinical severity of other diseases such as leprosy, yaws and tuberculosis. Public Health action <sup>could attempt</sup> ~~comprised~~ little more than sanitation and the control of communicable diseases, attending to the most <sup>obvious</sup> ~~conspicuous~~, but in all likelihood not the only, or even the most difficult obstacles to the development of the tropics. There was <sup>always</sup> a palimpsest of injurious forces at work: a top layer of ~~that Henry James called "the inimitability of the human predicament"~~ seemed in those inhospitable latitudes to bear a relationship to climate not ascribable to disease.

predominant  
insect-borne infections masking somewhat the <sup>underlying</sup> usual array of  
the organic and communicable diseases common to mankind everywhere,  
and below these that obscure residuum of disturbances which bore  
a relationship  
~~ascribable to disease but referable to climate or other~~  
not ascribable to disease.

Environmental component. It seemed foolish to become resigned to  
what Henry James had called "the inmitigability of the human  
predicament" <sup>simply</sup> because man, reacting in <sup>purely</sup> traditional and <sup>unreceptive</sup> fashion,  
had not stumbled upon any satisfactory solution. For successful  
domination of jungle, savannah and desert would depend in the long  
run on human adaptability and control of the <sup>conditions</sup> irreconcilable through knowledge.

Getting the IHD interested in such physiological studies was  
not a new idea on Strod's part; Russell had taken it up  
in the early 30's  
years before with Cecil Drinker, professor of <sup>physiology</sup> at the Harvard School  
of Public Health. Russell had been director of the Board of Health

## Phys Hys

Schs of PH & Trop Med have been more concerned  
with attacking the dis rather than promoting the  
health of man in the tropics

Laboratory at Panamá and knew ~~that~~ the problems ~~were~~ confronting  
 large-scale enterprises in the tropics. The schools of Hygiene were the  
 indicated bodies to direct the investigations because the physiological  
 approach to public health was in their earliest tradition — the first  
 director of the Johns Hopkins school had been a physiologist, and there were two  
 Nevertheless the schools of public health and of tropical  
 medicine have studied the factors favoring disease rather than  
 those favoring health.  
 noted physiologists in the faculty of the Harvard school. Russell did not  
 have much success. The physiologists felt they could not leave the School  
 for any extended period, and Russell did not believe that life in the  
 tropics could be <sup>adequately</sup> simulated in an air-conditioned chamber in Boston or that  
 a laboratory in Panamá could be operated by remote control. He would settle  
 for nothing less than long-term, full-time studies on the spot. Nothing  
 the trouble was,  
 came of the project, and Russell drily remarked that, "physiologists won't  
 leave home." At least, they did not <sup>seem to</sup> have an overwhelming interest  
 in what had appealed to the IHD as an important and fruitful

field of investigation, since although a common ground would not have been difficult to reach, no further proposal was made by the School for the next ten or twelve years. There is of course something to be said on the other side. <sup>It now appears that</sup> the human organism reacts to the stresses of an unfamiliar and somewhat hostile situation such as, <sup>that provided by</sup> the bewildering tangle of a tropical environment, <sup>through</sup> disturbances of the endocrine balance, and the complicated ~~analytic~~ methods of detecting and measuring these were not available <sup>until 20 years after</sup> Russell's time. Physiologists were hardly prepared of analysis to take the problem to the tropics until the techniques had been worked out at home; it might well have been <sup>turned out to be</sup> premature and relatively unrewarding.

It is also clearer now than it was then that more disciplines than physiology <sup>Stresses are mental as well as physical; and nutrition is based on a successful agriculture and contentedness in social and economic factors. How shall we rank illiteracy + ignorance as handicaps?</sup> will have to collaborate to find <sup>all</sup> the answers. <sup>How shall we rank illiteracy + ignorance as handicaps?</sup> The nonclimatic, and the only indirectly climatic components of the <sup>environmental</sup> complex must be sorted out by clinicians, nutritionists, psychologists, anthropologists, economists, agriculturists and ~~all the~~ other

Gorgas's dictum that it should cost no more to keep a man healthy in the tropics than to keep him warm in Canada was an oversimplification of the problem.

social and natural scientists to reach ~~any~~ <sup>a</sup> satisfactory conclusion as to what is holding back the tropics. The impact of the environment on human life and activity comprises much more than the effects of light, humidity and temperature; it really involves <sup>while it may be necessary to take it apart and study it</sup> human ecology in its tightly integrated totality, and <sup>piecemeal</sup>, such studies require ~~a~~ highly intelligent & enlightened coordination for their interpretation. In 1944 a new proposal from Philip Drinker at Harvard suggested that his Department ~~should~~ <sup>had</sup> recognized this and when in ~~May~~ <sup>1944</sup>, Philip Drinker asked the ~~Foundation~~ <sup>of Industrial Hygiene</sup> be strengthened and enlarged to enable it to carry out field studies of a continuing kind in various parts of the world in order to gain new knowledge. ~~Harvard's agreement was even reached to tie in field studies in physiological and understanding of the effects of environmental conditions on the human organism.~~ <sup>man was to give his whole time to it, and there were</sup> A first-class <sup>man</sup> plan for the cooperation of nutritionists and ~~any~~ <sup>other</sup> specialists <sup>and had a strong appeal to the officers of the RF,</sup> necessary to a well-rounded study. The project was a sound one, but

it was wrecked on the same rock as Russell's. The physiologist in view turned <sup>finally</sup> out to be unavailable, no other of his quality could be found, and Harvard <sup>was forced to</sup> drop <sup>the</sup> <sup>matter</sup> ~~the subject for the time being~~. Johns Hopkins School of Hygiene, also interested in this field of study, suggested adding it

and health insurance schemes which seek the promotion and preservation of health.

subject as a sort of rider to its ~~own~~ <sup>a</sup> ~~proposed~~ plan of expansion, but this was not acceptable to the Foundation, and was

~~turned down in 1947.~~ It is regrettable that <sup>for one reason or another</sup> ~~a competent and~~ no good way was found out of this impasse, for not only was it urgent to acquire such knowledge at once for the benefit of the rapidly expanding human race, but the physiological ~~willings~~ <sup>was</sup> ~~was not available at that time to lead up these studies,~~ approach was one leading directly toward the modern concept of health as something positive to be gained by guided effort rather than <sup>through</sup> ~~merely~~ a negative evasion of disease. Such a study could be of value to personal hygiene and industrial hygiene; to physical education and to ~~general~~ health education in general. However, the opportunity soon vanished. The time was approaching for

Raymond B. Fordick, the President of the Foundation, to retire, and the

Trustees were unwilling to consider any important changes in program on

the eve of a new administration. Mr. Chester I. Barnard, his

Successor, was <sup>already</sup> extremely interested in all aspects of human ecology <sup>especially</sup> as it might concern present and future population pressures, and was beginning to <sup>think of this</sup> as a broad field of exploration which might unite all the divisions of the

R.F. in a coordinated program of study and experiment. In the face of

this bold concept, physiological hygiene shrank to the dimensions of

a single piece in the convoluted design of a vast picture, and

disappeared as an end in itself.

(who thought of human ecology?)

Strode had been greatly encouraged by his consultations with the President. His relations with Mr. Fredrick were satisfactory and congenial and he felt that he had his backing on the salient points of <sup>his</sup> Policy. <sup>Shared his</sup> Fredrick ~~had~~ great respect for Wickliffe Rose and thought that much of the prestige and success of the RF had stemmed from Rose's convictions and his realization of them in the IHD. Fredrick had become President of the RF in 1936, shortly after Sawyer was appointed Director of the IHD, and he fully <sup>recognized</sup> ~~appreciated~~ the place of <sup>research</sup> the Laboratory in the solution of public health problems, especially those of the tropics and the underdeveloped regions. In his President's Review for 1944 he made a clear point of the fact that "the control of diseases bears a direct relation to the state of knowledge concerning them, and the work of the New York Laboratories of the IHD is therefore a basic and fundamental part of its program." But he <sup>also emphasized</sup> ~~also went on to echo many~~ of the balancing considerations brought out by Strode in his memorandum. "There are still many

localities in the U.S. and many countries beyond our borders equipped with public health machinery of an early vintage, that cannot be expected to make the most of modern concepts, methods and tools. The IHD is interested in the modernization of <sup>such</sup> state and local health services by preparing personnel, furnishing expert advice and giving financial support. Stroe could feel therefore that any action to restore the basic orientation of Brickliffe Rose would have Fosdick's whole-hearted support. Fosdick seldom intervened directly to influence IHD programs. He doubtless felt less competent to criticize projects in medicine and public health than in the Social Sciences. Preoccupied by the war and somewhat in awe of science, he trusted the staff and scientific directors ~~in~~ <sup>although neither Sanger nor Stroe had Russell's gift of selling</sup> in technical matters and allowed the IHD to work out its own course. However, he was attentively observant of everything that went on, and he

attended ~~and participated in~~ every Board meeting, taking part in his friendly, appreciative and encouraging way. Like his predecessors, he was eager to get the divisions together, hoping to obtain a less compartmented Foundation in which divisional programs would complement and strengthen each other, but this he failed to secure both

because of the war, and because of inherent obstacles not to be overcome by the curtain which had existed from the beginning between the JHD and the Trustees, he left for his successor to tear down.

peaceful means. He was a moderator seeking to conciliate

(contrasting)

~~divergent points of view by logic~~ and disliked intensely faction, in matters of policy or administration.

discord and ill-temper. For twelve years the Foundation functioned harmoniously under his convictions and intelligent guidance.

The Scientific Directors were also very favorably impressed by Strode's Memorandum. On the Board in 1944 were Goodpasture of Vanderbilt; Parran, then Surgeon General of the U.S.P.H.S.; Bishop, Holbrook and Mustard who were State or City Health Officers; and Reed the biometrician at Hopkins.

Thus the Board was heavily weighted on the side of field activities  
 in <sup>general</sup> public health <sup>and epidemiology</sup>, as opposed to laboratory investigation. The only  
 laboratory scientist was <sup>who was attending</sup> Goodpasture ~~and this was his last meeting~~, for  
 he was substituted the following year by Fair, the sanitary engineer,  
 when the Board became 100% public health. It should be noted

However that all of these men had served at various times ~~as~~ as  
 Scientific Directors on  
 Sawyer's Boards, and had given full approval to his investigative  
 program at that time. Sawyer in fact had never had a majority of  
 scientists on the Board, but of course the Scientific Directors from the start  
 had rejected the idea of acting by majority; if there were any determined  
 opposition to a proposal, it was dropped. The unanimity behind Strickland's  
 return to former policies indicated an anticipated transformation of the  
 world picture with the end of the oppressions of war, with the priorities  
 shifting from the urgency of resolving questions important to the war effort,

to the urgency of giving aid to populations struggling out of the war's debris. The initiative always lay with the officers of the Division, who submitted their docket of projects to the Board for approval, but the Scientific Directors had always been private counsellors as well as official policy makers. The strongest influence in the shaping of the new IHD program <sup>was</sup> undoubtedly exerted by Thomas Parran, whose opinions carried unusual weight because of his position as head of the Public Health Service, his excellent <sup>sagacity and long experience,</sup> judgment based on a natural <sup>and</sup> his familiarity with the unparalleled experience in international health scene. He was also thoroughly at home in the IHD for he ~~was entering on his third term as~~ <sup>had collaborated,</sup> Scientific Director, besides an early connection in Ross's early antimalaria experiments in the United States, and was now entering on his third term as <sup>in all he served the Division for 12 years, longer than any other of the 23 Sci. Dir.s who spanned the period from 1929-1957</sup> Scientific Director. His advice and support were very valuable to Stordeur, at various times, as he started on the thorny business of reshaping the IHD.

There was plenty to do at the moment. The Paris Office would have to be opened at the earliest possible opportunity to send emergency aid to strategic points in Europe from which rehabilitation of medical and P.H. services might radiate. These points were the institutes of hygiene and the health services in which the IHD had shown its interest before the war, and whose skeleton staffs would undoubtedly include the survivors of the hundreds of young men & women trained on RF fellowships over 25 years of fruitful collaboration.

Recovered from his long internment in a Japanese prison in Manila, Dr. Chas. N. Leach, was sent to London in September, 1944, to be ready, and spent his time between the London School of Trop. Med. & Hyg. which had given him office space, and the Oxford Nutrition Laboratories created with N.I.C. funds during the war and destined to become a permanent part of the University. The American troops entered Paris on December 2 and, through the exceptional courtesy of the British, Dr. Leach, O'Brien (of the M.S.) & John Marshall representing the rest of the RF were flown via an a transport plane on Dec. 6, arriving in Paris while the Allied armies were taking over. There

was no difficulties about occupying the old office at 26 rue de la Banque;  
 the office had never been closed. Robert Letort, the French accountant, with  
 the assistance of Mlle Rey, had remained in possession throughout the war,  
 and with support and protection from influential friends in the Govt., had held  
 the fort against friend and foe alike. Even the RF funds, in deposit in the  
 bank at the outbreak of war, had remained untouched and at Letort's order, and he was  
 drawing the last 1000 francs as his American colleagues dramatically reappeared.  
 They did the necessary things and returned to England in Dec. 22, to stay  
 there until the end of the war.

The Nutrition Lab. which the H.C. had established at Oxford turned out more  
 useful than could have been anticipated. In Feb. 1945 the Germans consented  
 to nutritional aid in Belgium + Holland and the equipment needed for mobile  
 units was immediately available. Surveys were made as areas in the Continent  
 were liberated to guide relief work, and whole populations were found

on the brink of starvation. In N.W. Holland during the winter of '44-'45, the Caloric intake fell to 1200 calories a day, and in March & April of '55 By June it was brought to 1500 calories, while the inhabitants seemed almost an extravagance, to 800 or 1,000. Dr Leach found Prof. <sup>N.H.</sup> Swellengrebel, a noted Dutch malarialogist and collaborator, in his bed in a state of dangerous emaciation; <sup>Sw., whose intensity of purpose in the war in malaria was well-known to his colleagues, much</sup> and brought him both success and news of the outside world. <sup>much</sup> secured almost as, cheered by the description of the marvelous efficiency of the new insecticide DDT as by the food <sup>with</sup> which Leach probably saved his life. In the spring the mobile units ~~had~~ reached Belson and the other great prison camps, and by Sept. were in Düsseldorf, Essen and Berlin.

The Foundation was plunged into the greatest activity by the ending of hostilities. The IHD began at once to resume contacts with individuals and institutions in war-isolated countries in which it had operated. Leach was made Director of the Paris Office and rapidly assembled an IHD staff experienced in P.H. administration, nursing, engineering, laboratory, and emergency

grants were made for equipment and supplies, in order to set in motion every  
 sort of P.H. activity in a Europe staggering under the consequences of the worst  
 catastrophe in history. One of the most useful activities in the long run was  
 the distribution of complete sets of a score of P.H. journals covering the period  
 from 1939 to 1946, to 23 institutes of Hygiene in 17 countries all the way from  
 Holland to Turkey. In that first year after the war, 114 fellowships  
 and travel grants were given to European health workers, whose countries had been  
 isolated for 5 years from the literature and science of the rest of the world.  
 Balanced against the vast need, private funds were utterly inadequate, but  
 based on knowledge accumulated over the years,  
 they were applied with a speed and discrimination, and filled a gap until the greater  
 resources of UNRRA could be mobilized. — ~~Europe was then faced the terrible~~  
~~epidemics which in the past had been the miserable aftermath of great wars,~~  
~~but health standards had sunk to an appallingly low level.~~ The  
 extraordinary useful <sup>recommendations</sup> reconnaissance of Dr Johannes H. Bauer of

They were received everywhere by children with masses of flowers and little speeches in English. Adults did not restrain their tears. It was the first contact with the outside world in 6 long years of total isolation. We had never heard of penicillin or DDT - there was lack of everything, drugs, equipment & even clothing. People wore rags, and standard suits were barefoot. More than 84 m. worth of supplies were sent in during 1946.

virtually Every important microbiological and medical research lab-

oratory of Europe is an example of what was going on in every field of health

activity. <sup>no one could have been</sup> Bauer had been Director of the IAD Lab. in NY and was <sup>medicine</sup> perfectly

<sup>better</sup> fitted to aid in the rehabilitation of institutes of health. Assigned

<sup>to Poland,</sup> at first to the American Red Cross mission. He and two others were flown to Warsaw in Ambassador Lane's private plane in Sept. 1945 to estimate the need for relief. In succeeding months he

visited every country in Europe except Bulgaria and Albania. The whole staff of

the Paris Office traveled most of the time for the next two or three years, and the

Annual Report for 1948 still characterized <sup>this</sup> ~~the IAD work~~ ~~was extended to the Far~~

~~sets~~ as reconnaissance, due to unstable conditions everywhere.

If Europe was in temporary trouble, the Far East was facing a

stupendous task whose end could not be foreseen. Americans, who had

always shown a peculiar attachment for China, sent millions of dollars

for emergency relief through a dozen locally coordinated voluntary

## 100 new countries in U.D.A.

Paul Hoffman

1/4 billion people in a "revolution of rising expectations" - get rid of poverty, illiteracy, chronic ill-health - U.S. interested for moral, political & business reasons - a great new economic frontier. Income per cap. as. \$90 in 1950, \$100 in '59. Gross income incr. 3% per yr. but pop. incr. 2% - a gain of only 1% (\$1 a yr.) - too slow - need faster econ. growth or will suffer catastrophic disillusionment. - democracy, freedom + fall victims of authoritarian tyrannies - Econ. aid, not charity, + divorced fr. international politics - thru incr. internatl. trade. Should double rate of per cap. income growth in decade. - will need \$2 B. Must not try to buy goodwill with it. The reason for underdev. is insuff. use of physical + human resources. Do it through the UN (pre-investment operations) wh. does not seek political or commercial advantage

Agencies — the American Red Cross, the Am. Bureau for Medical Aid  
 to China, the United China Relief (the last comprising 9 different different  
 organizations). The RF applied its smaller funds to the building up of  
 essential services and educational institutions, until in 1949 the Communists took  
 charge and that channel was abruptly closed. But besides the Western  
 Nations and the Communist Block, there remained a third of the world  
 characterised as "underdeveloped" to avoid the derogatory  
 term "backward." In this <sup>and once colonial</sup> vast area, comprising the major part of tropical  
 and near-tropical Asia, Africa and the Near East, 19 new nations emerged  
 after World War II with a population of at least 650 million people. Impatient  
 to enjoy the benefits of their new freedom and <sup>quickly</sup> anxious to reach the self-  
 sufficiency and independence which others had achieved <sup>only after</sup> through centuries of  
 slow development, they ~~have actually unprepared~~ could not without financial and technical aid  
 on a large scale to overcome the initial shortages of capital and skilled personnel

Lowell, + changing aspects of centuries

Pres. L. said the colonization + exploitation of u. d. a. and their peoples took the form in the 1600's / changing their religion; in 1700's, their laws; in 1800's their trade; + in 1900's their H. In the prow of the conquering ship in those 400 yrs. stood first the priest, then the lawyer, then the merchant - today the physician.

necessary to modernize their agriculture and establish their industries and  
 But for any such implanted economy to become self-sustaining, it must be founded on  
 education, technical training, health and social services.

Communications,

to combat the low

productivity, high illiteracy and short life-span which were their chief handicaps,  
 and lift the level of living above that of mere subsistence.

"Disinterested assistance from abroad is welcomed," wrote Dean Rusk, "and modest

investments of time and money yield high dividends in human welfare." In India,

which contained 40% of all the people in the underdeveloped countries, the RF had

now suspended its program in health services and education, and was soon to add

its cooperation in <sup>scientific</sup> agricultural improvement.

## Chapter 9

George K. Strode

By the summer of 1944 the wave of battle had passed over Rome and was cresting in the north along the Arno, while the populations in its wake strove to repair the damages of war. The farming population of the coastal plain north and south of Rome, relieved of one danger, was now confronted by another hardly less destructive - the ancient enemy malaria, which began at once to exploit the disorganization and devastation brought about by war. By extensive land reclamation, intelligent irrigation, screening, and the wide application of Paris green as a larvicide, malaria had been brought under reasonable control in many areas when Italy entered the war. By 1939 it had been reduced to little more than a tenth of what it had been in 1924 when the IHD, in collaboration with the Italian health authorities, had instituted a long series of fruitful experiments in mosquito control which radically changed the traditional method of fighting the disease, which had been with quinine.

The man chiefly responsible for bringing about this change, which was in fact a bitterly fought revolution, was Professor A.

Missiroli of the National Department of Health, who emerged as the principal malariologist of Italy. World War II canceled half a century of painful progress. Malaria had always been coastal in Italy because the mosquito mainly responsible for its transmission, Anopheles labranchiae, preferred to breed in the slightly brackish water of deltas, lagoons and coastal marshes.

Now, due to the sabotage of the great drainage works by the Germans, who intentionally flooded the lowlands with brackish water, and to the disruption of civilian antimalaria services, the Anopheles multiplied unchecked and malaria came back with a vengeance, laying low a population stripped by a reduced infection rate of its biological immunity, and by war of its sanitary defenses. Rome, with its great civilian and military population and the thousands of recuperating soldiers thronging its beaches in the summertime, was an island threatened by a rising tide of malaria, as it had

been so many times in the past. Early in the spring of 1944, the Surgeon of the Mediterranean Theater of Operations of the U.S. Army asked the RF Health Commission team working in Italy to make some studies of the use of DDT for the control of A. labranchiae, since it had proved so effective against lice in the typhus campaign.

Dr. Paul F. Russell of the IHD staff, who was now put in charge of the Malaria Section of the Public Health Division of the Allied Military Government, was ordered by his chief, Brigadier G.S. Parkinson, in April 1944, to coordinate the malaria control activities of the Army and to get civilian control under way again; he was also authorized (at his own request) to carry out field tests in malaria control with DDT in cooperation with the Allied Forces. Preliminary reports from the U.S. of the lethal action of the extraordinary chemical on mosquitoes and other insects made it seem likely that it would be able to stop malaria as well as typhus. Russell and Soper lived together

in Naples and the two concocted a plan to carry out a house-spraying experiment with DDT in the Bonifica di Castel Volturno, a marshy area north of Naples which had been drained and partly settled before the war, but had been flooded again by the Germans, who destroyed the pumping stations, at the time of the Italian armistice in September 1943. Both were eager to see whether DDT was as good as its promise. At Russell's instigation, the Surgeon General of the Mediterranean Theatre of Operations invited the RF to assign staff members to his Section for malaria investigations. The moment was opportune since the typhus epidemic was practically over, and good use could be made of the Health Commission funds and staff members. There was no difficulty this time in persuading the High Command to accept the RF civilian personnel; they had demonstrated their usefulness in the victory over typhus.

Russell set up a Malaria Control Demonstration Unit under Soper's command and obtained the necessary supplies and equipment

from Major General Stayer and Colonel Stone of the Army; in May, when not one new case of typhus was found, Soper transferred his energies to malaria. He brought L.A. Riehl, the entomologist of the Typhus Team, with him, and Russell asked the Health Commission to send him Dr. H.W. Kumm, a physician and entomologist, and F.W. Knipe, a sanitary engineer, both from the staff of the IHD.\* During the spring and early summer, Riehl, with help from the Italians, treated the inside walls of every house and structure in the Volturno area with DDT in powder and in solution, and carefully studied the effect on the mosquito vector of the disease, Anopheles labranchiae, and on the human infection rates throughout the summer. The persisting dry residue of the liquid spray, long after the solvent had evaporated, killed all mosquitoes resting for even a few minutes on a treated surface, and the toxicity of the thin, invisible deposit remained almost undiminished throughout the malaria season. The effect was to stop malaria transmission at once, a result astonishing to those

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\* Of the former Typhus Team, Dr. Wm. A. Davis followed our armies to the north, and Floyd S. Markham remained in Naples closing out the typhus work.

who had been forced in the past to locate every anopheline breeding place within a mile or two of the homes to be protected, and cover its water surface with larvicide at weekly intervals, including large marshy areas which often required the use of planes for this purpose. This was probably the first extensive experiment of its kind to be carried out in a civilian community, although the Army began, at about the same time, to use DDT in the South Pacific islands as well.

So promising were the results of the Volturno experiment that the Tiber Delta was next selected for a practical application of the new method. Kumm and Knipe, on their arrival in June of 1944, were assigned to the new area, the one to study dosage and effects of spraying, and the other to develop improved spraying equipment. Summer was well advanced when they went to work, and the malaria rate rising steeply, but the complete destruction of the multitude of mosquitoes on the sprayed premises and their almost complete absence during the rest of the summer made it

appear very likely indeed that a single, all-inclusive treatment in the spring would suffice for the entire season. Both the military and the national authorities authorized the experiment and agreed to suspend all other anti-malaria measures during the year 1945.

The Roman Campagna was probably the most notorious and intractable malarious spot in the world. It had remained uncultivated for centuries, and Rome was compelled to obtain its milk from Milan and its vegetables from Naples. It had also been the cause of a frightening mortality within the city of Rome from the time of the Carthaginian War till well into the 20th century. Popes and Cardinals had died of malaria in the Vatican century after century, and the efforts of Caesar and Augustus, of Sixtus V and Pius VI, of Napoleon himself and of all the engineers from the Risorgimento to the Second World War had failed to dislodge malaria from this little region lying round about a city which was in many ways the center of the world.\*

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\* Hackett, 1937.

It was the battleground of man's longest, most intensive and least successful conflict with his worst enemy.

This was well-known territory to the IHD, whose Malaria Experiment Station in Rome had collaborated for many years with government in investigations and experiments in malaria control under the direction of Professor Alberto Missiroli. One of the main objectives was to study the biology and behavior of A. labranchiae hoping to discover vulnerable points which could be attacked to advantage. Each vector species characteristic of a given malarious region has its own peculiar habits and practices different from all the others, which is what makes malaria such an interesting field of investigation. And now suddenly DDT provided a master key to all the different problems and seemed to make quinine, drainage, screens and larvicides obsolete at once. It exploited the single trait which almost all anophelines have in common, whatever their species - the habit of resting after meals. It was the undoing of A. labranchiae. A thorough spraying of the interiors of dwellings and outhouses on the

delta was carried out by Knipe between February and June, 1945, and was extended north, east and south by military units to cover the Campagna between Rome and the sea so as to reduce to a minimum the infiltration of anopheles from outside. After the slaughter, one of the team remarked, "The total catch of anopheline mosquitoes by all our inspectors during the whole season over the 120 square miles of our sprayed area, probably does not equal the number formerly found in one day in a good-sized pigsty."

Every effort was made to find evidence of malaria transmission. Only one new infection was discovered throughout the summer of 1945 in an infant born while the mother was having an acute relapse of the infection. One of the most interested observers was Missiroli, who had been fighting malaria on the delta for 20 years. He summed up the results in a few words: "Non un caso di malaria primitiva si é verificato nel Delta del Tevere, ed Ostia ha conseguito una salubrità che non aveva mai visto da

duemila anni in poi, cioè da quando si ebbe l'invasione della malaria in Italia."\* (Not one new case of malaria was found in the Tiber Delta, and Ostia chieved a state of health she has not enjoyed for 2,000 years, that is, since Italy was first invaded by malaria.) Angelo Celli, in his History of Malaria in the Roman Campagna\*\* showed that the effects of war and of the resulting breakdown of agriculture and drainage had repeatedly caused a crippling resurgence of malaria in the past whose effects had taken centuries to erase. "After this war," as Fosdick put it, "it took one thorough application of DDT."

The discovery of this powerful weapon at once changed the tactics of malaria control everywhere, and in Italy, which had been harassed by this enemy so long, it opened up some startling possibilities. Missiroli, whose intelligence and imagination had brought him to the top in the field of malaria control, quick to see its enormous potentialities, dropped his unpromising

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\* Missiroli, A., 1946

\*\* John Bale, Sons and Danielsson, London, 1933.

experiments with drugs and began to experiment with DDT in the summer of 1945 and by November was ready with a plan to extend its application to every malarious locality in the country as rapidly as possible, and thus end the disease in Italy once for all. The only insuperable obstacle seemed to be the lack of funds. This was to be overcome in an unexpected fashion.

The United Nations Relief and Rehabilitation Administration (UNRRA) had been created by 43 Allied and Associated Nations on November 9, 1943, to provide liberated populations with food, clothing and shelter to assist them to resume productive activities after the war, and to "aid in the prevention of pestilence and in the recovery in the health of the people." The motive for entering the international health field was the remembrance of the conditions which followed the First World War. The health work was only a part of UNRRA's total effort, yet about 168 million dollars were spent for medical and sanitary purposes.\* It was by far the largest cooperative international health project the world has ever seen.

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\* Sawyer, W.A., 1947

The man selected as best qualified to direct this huge enterprise was Dr. Sawyer, Director of the IHD. Sawyer was due to retire at the end of August, 1944, and Dr. George K. Strode had been appointed by the Trustees in April to succeed him. On April 15, 1944, Sawyer was offered the job of Director of Health for UNRRA, the appointment to take effect as soon as possible; the Trustees gave him leave of absence for the last three months of his term, and he went to Washington on June 1 to take up his new duties.

Under Sawyer the program of UNRRA took on much the same character on a huge scale as that which he had impressed on the RF Health Commission. As soon as circumstances permitted in war-torn countries, UNRRA teams fought not only typhus and malaria, but cholera, diphtheria, tuberculosis and venereal disease; helped with nutrition, brought technical aid and supplies, and through fellowships and travel grants provided training for health workers and brought health authorities up to date in what

had been happening during the years of the war in unoccupied countries. The feeling was strong, as it had been in the RF that though the aid was planned to meet an emergency, it should when possible serve long-term ends through projects whose effects would persist after the war.

An UNRRA mission was sent to Rome early in 1945 under the energetic leadership of S.M. Keeny and its relief program got under way at once. Professor Missiroli's bold proposal to eradicate malaria in five years was accepted; supplies and equipment were furnished by UNRRA, and it was financed by the counterpart funds in liras raised by the Italian Government through the sale of UNRRA relief supplies to those who could pay for them. The campaign was completely successful and it is greatly to Missiroli's credit that he put forward his plan so quickly and firmly when many of his colleagues thought he was talking nonsense. In 1945 there had been half a million cases and some 400 deaths from malaria; in 1951 there were a few hundred cases, presumably

relapses from previous infections; and in 1953 only one new case was found in the entire country.

Keeny was anxious to have some of the UNRRA money invested in a permanent way for the future benefit of Italy and he discussed this problem over a luncheon table with Soper, whose Tiber Delta campaign was coming to a victorious conclusion. Soper, it is said, proposed the eradication of the malaria mosquito from Italy. Keeny, who had been impressed with the singular attributes of DDT, was willing to go part way, and in the end they settled for an attempt to eliminate Anopheles labranchiae from Sardinia.

Sardinia had the advantage of being an island with no mainland within flight range of a mosquito. It was quite a large island, it is true, of some 9,000 square miles, somewhat larger and considerably rougher and more primitive than Massachusetts, but Anopheles gambiae had been exterminated in 1941 over 12,000 square miles of rough and primitive country in Brazil, without

the aid of DDT, and there were 20 precedents for eradication in the complete liquidation of agricultural pests in the U.S. after they had spread over large areas. Sardinia was a region of high, rugged mountains and wide marshy plains, a sparse population and poor internal communications, but flying over the island, Keeny and Soper could identify nothing which suggested an insuperable obstacle to the enterprise. It is true that, seen from the air, mountains lose altitude and marshes shrink, but in the outcome, it was not the difficulties of the terrain so much as the biology of the mosquito which gave the most trouble. Labranchiae had shown itself on the mainland to be completely domestic, which means that it would enter any man-made structure without hesitation in search of food or of shelter from daylight or weather, to ripen its eggs or to hibernate. Most of its life was spent under a roof, and in fact the species seemed to depend for survival upon man and his domestic animals, which provided its only food and cover. It was a fair supposition that, in a

thoroughly sprayed island, every female labbranchiae was bound sooner or later to come into deadly contact with DDT. It had been necessary to exterminate gambiae by the more difficult method of locating its breeding places and covering them with larvicide. There was a difference, however, between the circumstances of the Brazilian campaign and of the Sardinian which was not overlooked: labbranchiae was no recent invader fighting for a beach-head in the already balanced life of the island, but an indigenous species perfectly adapted to its environment by ages of evolutionary adjustment. It would undoubtedly be more difficult to uproot.

However, the argument for a try at eradication was a cogent one. Partial control of a disease like malaria is an unending financial drain, and the more successful it is, the more it tends to be neglected as the suffering is relieved. In the long run eradication, if possible at all, is less expensive, and in Sardinia the chances of success were good. There was urgent

need to do something for Sardinia, the most malarious region of Italy, and according to U.S. Army Medical Reports, the third most malarious region in the world. It presented the curious anomaly of an underpopulated and undeveloped area in a country in desperate need of more room and more food. It was hard to think of a better use for the UNRRA fund than clearing the malaria mosquito out of Sardinia. After conferences with the Italian health authorities, who weighed the advantages against the hazards of the enterprise, it was decided to recommend the experiment. It was to be a joint project of the Italian Government, UNRRA and the IHD. On October 29, 1945, UNRRA agreed to the use of the Lire Fund in this way and made a substantial contribution of its own. Sawyer was an advocate of mosquito eradication as the safest and most economical means of getting rid of malaria. The year before, he had suggested to the American National Malaria Society that malaria in the U.S. might be vanquished once for all by exterminating the vector mosquitoes.

"The success beyond all predictions," he wrote, "of the major strategy in the extermination of A. gambiae in Brazil had fired the imagination of malariologists everywhere."\* Soper had approached the Foundation on the subject and in October the Scientific Directors of the IHD, on the recommendation of Strode, approved participation of the Health Commission in "an all-out attempt to eradicate Anopheles mosquitoes from the island ... to determine whether or not the species eradication technique is applicable to the problem of malaria control in the Mediterranean region."\*\* All were excited by the singular opportunity presented. Missiroli, it should be added, who was thoroughly acquainted with Sardinia, was never convinced that the plan was feasible, but IHD support had been a boon to him over many years, and once the project was decided on, he went out of his way to help the Health Commission with all his knowledge and influence.

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\* Sawyer, W.A., 1944. He described the Sardinian project in a paper on "The Achievements of UNRRA," 1947.

\*\* RF Health Commission, Minutes of Meeting of the Board of Scientific Directors, October 26, 1945.

The work was carried out by a special agency of the National Health Service, created by Royal Decree on April 12, 1946, and called the Ente Regionale per la Lotta Anti-Anofelica in Sardegna,\* known as ERLAAS. The campaign began on May 13, 1946 with an entomological survey of the Island, and was continued until October, 1950.\*\* The IHD was in administrative and technical command from start to finish; UNRRA furnished equipment and supplies; and the Italian Government financed the operation from the Lire Fund. The mosquito under attack, Anopheles labranchiae, was discovered at once to have a different character from that which had been described on the mainland. It was found breeding in every type of surface water, standing or running, brackish or fresh; it sought protection in natural as well as man-made shelters. Great hope had been placed on killing the relatively few hibernating females resting in dwellings and outhouses during the non-breeding season, but these were found holed up in every sort of natural refuge as well as human construction, in the villages

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\* Regional Agency for the Anti-Anopheles Campaign in Sardinia.

\*\* Logan, John A., 1953.

and in the uninhabited mountains. During the four and one-half years of the campaign, this resourceful mosquito was fought in the water and on the land, in every season and at every point. Marshes, pools and sluggish rivers were cleared of vegetation and dosed with larvicides at weekly intervals; houses and huts and caves were sprayed with DDT. Malariology, entomology and engineering cooperated in what resembled a military operation. The amount of trained and untrained labor employed at one time reached 33,500. Malaria transmission was stopped almost at once, for although it is a persistent and relapsing infection, it began to fade away at a rate never witnessed before in Sardinia. In the summer of 1944 there had been 80,000 new cases; in 1948 only 300 could be found by intensive search, and in 1949 all the doctors, nurses, schoolteachers and scouts could turn up only one new infection, the origin of which was never traced. Since 1950 there has been no malaria transmitted in Sardinia. It is one of the few benefits Italy obtained from the war.

But the last pair of A. labbranchiae were never killed. In 1950 it took 330 man-days to find one, but that was one too many labbranchiae. We must suppose that there are strains of this species on Sardinia far less domestic than those on the mainland. Separated for a long period of geologic time, the two populations may have become modified in different directions, the continental form becoming increasingly dependent on man and his domestic animals, while the original wild strain preserved its independence under the primitive conditions of Sardinia. This is true, we know, of Aedes aegypti, the yellow fever mosquito, which in East Africa lives in uninhabited jungle, but in the Americas is a house haunter, breeding only in artificial containers and living and biting indoors, an easy victim to DDT.

Thus the attempt to eradicate labbranchiae failed, as did the effort on a much grander scale to eliminate the vectors of yellow fever in the Western Hemisphere, which also were found to comprise both wild and tame mosquitoes. The yellow fever

effort brought to light so much knowledge with respect to insect vectors and viruses that no one has ever questioned its value. The lessons learned during the tough and disappointing battle in Sardinia will also benefit the malariologists of the future when confronted with the choice of carrying control measures to the point of stopping malaria transmission or of going all-out for eradication of the vector. There were valuable side-products of the Sardinian campaign - malaria extinguished; 100,000 acres of marsh-land cleared and drained; the employment of thousands of laborers during a critical period, as in the U.S. during the depression; the potentialities revealed for rehabilitation and development of the Island. Nevertheless, there has been an uneasy feeling that in spite of the valuable results, the 12 million dollars spent in Sardinia did not yield a proportionate return. This comes to about \$2.00 per capita per year, four times what it cost to eliminate malaria from the rest of Italy. The difference represents the calculated risk which was carefully

weighed in advance. All of Italy had a stake in this adventure, not only the Sards, and a stake is by definition something which may be lost. It was a risk worth taking. Let us agree with Logan, who directed the operation, that "the additional expenditure represents an investment in the future of the Island."\*

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The startling demonstrations of the control of epidemic typhus and malaria were the most dramatic accomplishments of the Health Commission, but by the time its funds were expended long after the war was over, it had a long catalogue of varied performances to its credit. Strode had planned and directed the European and North African programs of the Health Commission from the beginning, and when he succeeded Sawyer in the IHD, the war had still a year to go, to be followed by an extended post-war period of readjustment to peace, full of activity of

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\* The sources of funds were:

UNRRA supplies	\$ 778,000
"Lire Fund," about	11,600,000
RF	576,000
Bank interest	20,000

Calculated from the final accounting in lire (Logan, 1953)

more enduring consequence than war-time aid to nations collecting themselves to face an accumulation of health problems with broken-down and obsolescent machinery. In 1944 the Foundation added a million dollars to the Health Commission funds to enable it to cope with the demands of this critical period. The soundest way of spending the relatively modest funds at the disposal of the Health Commission was clearly to help rehabilitate schools and institutes of health, most of which had been originally created with RF aid (as in London, Zagreb, Warsaw and Nanking), to put national and local health services back on their feet, and to help recruit their depleted staffs with numerous fellowships and travel grants. Groups of selected individuals were sent abroad to study, and on their return home were helped with equipment and supplies to get them going. Over \$350,000 was allocated for this purpose alone, because of its basic importance to the morale and self-sufficiency of staffs cut off for five years from knowledge of world events in their particular fields.

Especially useful were back numbers of medical and public health journals which the RF had, with foresight, bought and stored during the war and now parceled out among the institutional libraries. With the purpose of stimulating the resumption of contacts and communication, the Health Commission paid the travel expenses of most of the foreign delegates to the Ninth Congress of the International Council of Nurses held in \_\_\_\_\_ in May, 1947, and to the Fourth International Congresses on Tropical Medicine and Malaria, convened in Washington in May, 1948. Both were of the greatest importance to a world in recovery (convalescence); 748 nurses came from abroad to attend the former, representing 39 countries; and 325 foreign delegates from 45 countries attended the latter, of which Dr. Sawyer was organizer and secretary.

There were also certain more specific problems which the Health Commission had attacked because of their acute relationship to the war, but which had continuing importance far beyond

V-day. These, it was agreed, could not be abandoned unsolved until more permanent agencies could be found or created to take them over. The principal activities of this kind were three: the nutrition studies and experiments which had been very productive indeed of new knowledge and ideas during the period of war restrictions on food; the future manufacture of yellow fever vaccine to protect residents and travelers in Africa and South America, a permanent responsibility which the IHD did not feel it should assume; and continued search for the ideal anti-malarial drug, not yet even approximated, which would destroy or sterilize all forms of the malaria parasite in the human body.

All three of these activities were left in good hands.

Nutrition studies, a major program in England, France and Spain, led to a permanent Department of Human Nutrition at Oxford University and an active laboratory of nutrition in the National Institute of Hygiene in Paris. In Spain, when the Health Commission

was forced to withdraw, the study was carried on by the National Department of Health. Towards the end of the war, famine conditions prevailed in the large cities of Holland, and two mobile nutrition units used in the English studies were transferred to Holland, with the permission of the German Command and the participation of Dutch scientists.

The high point of the yellow fever work carried on by the IHD since 1916 was the development of an effective vaccine which began to be manufactured on a fairly large scale in the IHD laboratories in 1937. Production was stepped up from 1942 to 1946 as a war measure, and thirty and a half million doses of vaccine were made and over 27 million distributed without cost to governments, health agencies and other official bodies. At the end of this period, the IHD felt that further production of vaccine could not be justified on the grounds either of advancement of knowledge or of further demonstration of its value, and therefore went out of the business entirely on December 31, 1945,

transferring the responsibility of its manufacture and distribution to five governmental institutions: the National Institutes of Health of the USPHS, the National Yellow Fever Service of Brazil, the Carlos Finlay Institute of Colombia, the Wellcome Institute of Medical Research in England, and the South African Institute for Medical Research in Johannesburg, South Africa. (Is there one in India?)

Malaria was the most serious medical problem our armed forces had to face in World War II, for the drugs available throughout the war were relatively ineffective; they could neither prevent the infection of human beings by mosquitoes, nor the infection of mosquitoes by human beings. The Health Commission cooperated with several biochemical laboratories, trying out the most promising drugs in areas of acute malaria. After the war the investigations were stimulated by research grants of the U.S. Public Health Service, and the results evaluated in the field under guidance of the National Research Council in collaboration with the Armed Services.

In all, the RF appropriated two and one-quarter million dollars to the IHD between 1940 and 1944 for the Health Commission's work; this was not all committed until the end of 1947, nor all spent until 1952, which thus concluded a period of 13 years' activity in projects arising out of the effects of war. One of the chief satisfactions was that the careful preparation in advance to meet the anticipated problems of epidemic disease had, as in no previous war, forestalled such calamities as widespread outbreaks of typhus and yellow fever. Unfortunately, the great discoveries in malaria treatment and Anopheles control came too late to prevent this disease from constituting the greatest health obstacle the armies had to contend with, but the Italian work of the Commission provided the experimental basis for the campaign which has released Italy from the disastrous tribute in human lives and material resources which she had paid annually to malaria for 2,000 years. This unprecedented achievement, attributable in large part to the discernment and tenacity of

Missiroli in the difficult days immediately after the war, has encouraged the WHO to press for the eradication of the malaria parasite from the world.

So much for the RF Health Commission which, as we look back on it, seems an extraordinary enterprise for a private institution to carry out in the war areas of the most widespread and destructive conflict in history. To plan and hold to a constructive health program under such conditions instead of indulging in the opportunism of emergency relief required foresight, wisdom and courage in equal amounts. It could have been conceived only by an organization like the RF with long experience in international work, and a flexible policy adaptable on short notice to any situation. To carry out the program, in turn, the staff and expert personnel were forced to live and move about under arduous and sometimes dangerous conditions. Nothing was easy. Transportation and communication were always uncertain and difficult; half a million doses of influenza vaccine were

sunk by submarine on the way to England; permission for civilians to engage in the most helpful activities was hard to obtain and subject to inordinate delay; procurement of equipment and supplies was a heart-breaking task calling for the utmost patience and persistence; there was scarcity of experimental animals in England and Spain; the transfer of funds was extremely involved, and at times impossible; and in the end when all this had been achieved, some sudden turn of events might render it in vain. The atmosphere of tension; the hardships and dangers of life and travel in France, England, Italy, Spain, Africa and China; the restricted diets and the lack of soap and fuel; and more depressing than anything, the constant spectacle of human suffering, make us realize the courage and resolution of the Health Commission members in carrying out a difficult and exhausting mission.

## CHAPTER 9

### END OF AN ERA

By the time the United States became a belligerent in World War II Sawyer had convinced the military authorities in Washington that the IHD could be of maximum usefulness to the war effort by assignment to public-health tasks unsuited to the medical corps of the armed services, working as a civilian team in the fields of its special competence and experience. The staff was so organized and distributed, in fact, that it was able to adjust rapidly to the new situation without much dislocation or abandonment of its traditional methods. No one doubted at the time that this would facilitate the return to its normal peace-time activities; the problem was to convert a program determined in large part by the exigencies of war into one of its own election, and it was taken for granted that the IHD would easily slip back into its old ways and resume the pursuit of its long-established objectives. (This assumption turned out in the event to be wrong; finding its proper role in the postwar world was to prove a more difficult and revolutionary transformation than the adjustment to war.)

In 1944 it was time to be planning for the future. The summer of that year brought decisive changes in the military situation. Tremendous events occurred in rapid succession --- Rome fell to the Allied Armies on June 4, and two days later the British and Americans landed on the Normandy beaches in operation "Overlord;" the Russian summer campaign was a sweeping success, and some thought the Germans might be defeated before the end of the year. The Japanese were in

no better plight. By June the land and sea forces of the United States began to close in on them, and in October their fleet was destroyed in the greatest naval battle ever fought, leaving their armies sprawled across China and South East Asia in an appalling situation. "The war," wrote the President of the Foundation in his annual Review, "draws to its inevitable conclusion. The magnitude of contemporary developments is so great that their full meaning cannot be adequately appraised now and possibly not for a generation."

It was not easy to discern what would be the shape of things in the new world which was to come out of the old, but it was clear, that whenever the final peace should come, the first job of the IHD would be to pick up the broken threads, get in contact with former fellows in countries which had been walled off by the conflict, and help with money and equipment to set on foot the institutions and activities which the Foundation had been promoting and supporting before the war. This was an area in which the IHD could be particularly useful, and its staff was strategically located for quick action. Throughout the war its Health Commission had operated as close to the front as the military would allow. Staff members in England were pressing to be permitted to return to the Paris office which had been the headquarters for Europe, the Middle East and Africa; and in the Far East an office had been obstinately maintained, first in Shanghai, then in Manila and now in Delhi. However radical the adaptations which the IHD might have to make in the future, there was an obligation in the chaotic situation which would follow the war to establish a continuity with the past, since

by long acquaintance with the men and the health problems of Europe it was better prepared than any other agency in its field to channel relief and technical aid at the earliest opportunity to the points of greatest need.

This had to be taken into consideration by the Trustees who were called upon in the spring of 1944 to choose a successor to Wilbur A. Sawyer who was due to retire at the end of August. They had been casting about for some months for the right man. The task was difficult because the war was in violent crescendo, outstanding men qualified for leadership in possible lines of future activity were generally not free and indeed the future itself was unpredictable. Great and irreversible changes were clearly in the making which could call for a complete transformation of IHD aims and methods, a breaking of the molds demanding unusual foresight, originality and statesmanship. There was a current of opinion in favor of seizing this opportunity to break with the past and scan the future from a completely fresh viewpoint, under a leadership uncommitted to the old traditions and policies. On the other hand, the now mature IHD, with 30 years of highly successful operation to its credit, saw no reason for seeking a director outside the organization, and good reasons for not doing so. It was deeply involved in war activities, and would almost immediately have to call on all of its accumulated knowledge and experience to tackle one of the greatest reconstruction jobs of all time. With confidence in its own strength and flexibility, it felt able to adapt to any new circumstances and meet all challenges as it had been forced to do throughout its history. An organism of unrestricted geographic range, it was conditioned to deal with unfamiliar situations

and to adjust itself to every kind of social and political environment.

This view prevailed. The suggestion that an acting director be chosen from the IHD staff to carry the war program to conclusion was overruled and at the annual meeting of the RF on April 5, 1944, Dr. George K. Strode was selected to succeed Sawyer. This was a logical choice, for Strode was Sawyer's first assistant and his right-hand man in developing and administering the war activities of the IHD under conditions of great difficulty. He was now an Associate Director, in charge of the field operations of the RF Health Commission, for which he was well fitted by his long experience in Europe, Africa and the Near East where he had represented the IHD for 12 years.

Strode was a public health administrator, not a scientist, and the appointment was heartening to staff members in the public health field whose morale had been depressed by the priority conferred upon laboratory investigation by Sawyer's decisive backing and the pressures of war. For Strode had been brought up in the IHD, and in 28 years of administrative service spent mainly in foreign countries he had risen rapidly through positions of increasing responsibility until he was now second in command, with a reputation for soundness of judgment in the appraisal of situations and projects, and for unusual ability in promoting and organizing public health programs. There was nothing devious or visionary about him; his mind was logical, conservative and realistic, he was forthright in his opinions, and if he never became very adept in the art of compromise, he was at least a good listener, while his honesty, common sense and friendliness made him well-liked at home and abroad. As a chief, he had shown himself to be open-minded and approachable, and the

atmosphere of the Director's office was to be warmer than it had ever been before, encouraging a greater freedom of discussion and debate on the part of the staff, to whom he seemed more human and familiar, and less isolated by his office than his predecessors. His appointment was therefore generally well-received, with some reservations on the part of the laboratory men, and it was taken to mean that there would be no radical changes in IHD policy during the postwar period while the world was recovering its balance.

Like all of Rose's men, Strode had received the indelible impress of Rose's extraordinary vision and drive, which out of nothing had created an international movement of far-reaching influence not only in the tropics with their special problems, but in the most advanced countries as well. It was to be expected that Strode would try to restore traditional policies which had been temporarily swept aside by events, and would seek to unite again under a single banner the forces of the IHD which had become divided during the war. This banner was Rose's fundamental policy of working with governments to build and improve their healthservices, and by study and experiment to help themselves certain critical disease problems which were an obstacle to progress. All the other functions and activities which the IHD had assumed over the years---the creation and support of schools of hygiene and of nursing, the great fellowship program, the travel grants to health officials in key positions; the development of laboratory research in New York and in the field---important and even essential as they had shown themselves to be, were ancillary to the main design.

The fact was, however, that Rose's world had ceased to exist, transformed by a new international outlook and by the disintegration of its

colonial empires, and the IHD itself, in the course of evolution, had undergone irreversible changes in the 20 years since Rose's time. Thus Strode was faced with two basic problems, each containing a dilemma and a threat to the established order which he wished to restore: how to keep his relatively small craft afloat and on course amid the strong but still ill-defined currents of national and international transition and resurgence and how to reunite the IHD behind a tightly integrated program, which Rose had firmly believed to be the key to its success. The health problems of the great areas in the tropics and subtropics where the IHD had pioneered were not those of 30 years ago; the slashing attack on endemic disease, at first so rapidly successful, had disclosed social and economic roots which retarded their suppression and which could no longer be ignored. There had also been a great reversal in the international attitude which, from almost complete neglect had become a burning zeal to sanitize and modernize all the backward regions of the world. Two of the three great diseases which had always formed the core of the IHD program---hookworm and yellow fever---had now been so thoroughly explored as to pose the question of their early replacement. Besides, the IHD had adopted the invariable practice of setting a time limit to every cooperative undertaking so that Government would know in advance when it would have to assume complete responsibility. Rose used to say that when he embarked upon a project, he made sure he had a return ticket. The self-limiting nature of such operations had begun already to deplete some well-worked veins and to propel the IHD into new fields of enterprise. The general suspension of much of the routine activity of the IHD during the war provided an

opportunity for bold and imaginative reconstruction, but what form this should take had to remain for the time being conjectural. Where Rose's vision had extended to an almost limitless horizon, the visibility was now heavily obscured by uncertainty and turmoil in a world still at war.

The most important of the unknowns which were bound to affect the future of the IHD was the probability of international health work by governments on a large scale after the war, along the very lines which had been traced by the pioneering leadership of the IHD. The world crisis had revealed an interdependence among all peoples which had never been so evident before. The allied and friendly nations, recent collaborators in destruction, were now penetrated with the necessity not only of repairing as soon as practicable the immense damage caused by the war, but also of modernizing the backward two-thirds of the world in which the old paternalistic colonialism was about to become extinct. No peace could be lasting which tolerated the enormous disparities in standard of living between the underdeveloped areas and the rest of the world. This feeling on the part of the more advanced and industrialized nations was compounded both of humanitarian concern and material interest, but whatever the motive, it foreshadowed a collective assumption of responsibility in a cause which had previously engaged the efforts of the IHD alone and which had formed the core of its program.

World health was at last receiving general recognition as a prerequisite to world progress and stability. The Dunbarton Oaks Conference in 1944 definitely linked a durable peace with general welfare,

in which the public health, including particularly that of backward and tropical peoples, was perceived to be an indispensable ingredient. This was reaffirmed the following year in the Constitution of the World Health Organization which declared that the fullest attainment of health was "basic to the happiness, harmonious relations and security of all peoples." Ironically enough, the intensive health work which became such an important specialized activity of the U.N. and other international agencies as soon as peace was declared, was so much more rapidly successful in reducing death rates than the programs of agricultural improvement, industrialization and socio-economic uplift were in raising the level of living, that this splendid and unprecedented movement itself was in a few years to create a situation of uncontrolled population growth which gave more concern as a potential threat to the peace and prosperity of the world than the problems which it had undertaken to solve. This as we shall see soon began to disturb the officers of the RF and had its influence on the destiny of the IHD.

The immediate task to be faced at the end of the war was to put the machinery of agriculture, industry and public services in running order again. Health experts remembered the deplorable health conditions following the first World War in disorganized populations whose hastily reconstituted health services, ill-supplied and understaffed, were unable to cope with the overwhelming problems of sanitation and infectious disease. The state of dislocation and destitution which was the aftermath of the long struggle, the tardy and chaotic efforts at relief, and the devastating epidemics of typhus, cholera and malaria

which followed, were vivid in the minds of all who had lived through that appalling time. Not to be caught unprepared again after a greater and more destructive conflict, the Allied Governments, in surprising anticipation of events still uncertain and far away, conferred in London as early as 1941, and set up an Inter-Allied Post War Relief Committee, with a subcommittee on medical problems to make estimates of Europe's needs when its population of 135 million should again be free. As the war approached its end, it was possible to delineate the dimensions of the disaster. The United States Government, which had already set up its own office of Foreign Relief and Rehabilitation Operations as well as the Lend-Lease Administration, now proposed the creation of an international organization "to provide for the liberated populations aid and relief from their suffering; food, clothing and shelter; aid in the prevention of pestilence and in the recovery in the health of the people; and for preparations and arrangements for the return of prisoners and exiles to their homes; and for assistance in the resumption of the urgently needed agricultural and industrial production and the restoration of essential services." Five months later, on November 9, 1943, forty-three Allied and Associated Nations, which were far stronger than the corresponding group in 1918 and more aware of their own stake in world recovery, signed an agreement creating the United Nations Relief and Rehabilitation Administration (UNRRA), pledging a great amount of money to aid devastated nations to re-establish themselves after the war.\* Of

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\*International health work never quite ceased during the war. The Old Health Organization of the League of Nations maintained an office (continued page 10)

this fund, no less than 168 million dollars were earmarked for medical and sanitary supplies and services, which made it by far the largest international cooperative effort ever attempted in the field of health. "These huge sums," writes Goodman,\*\* "may be compared with the \$414,000. which was the largest annual budget of the Health Organization of the League of Nations (1931), or the 6 million dollar budget for 1950 of WHO."<sup>1</sup> Powerful forces were preparing to move into the international health field which for thirty years had been almost a preserve of the IHD.<sup>11</sup> The problem of the IHD, overshadowed by this immense organization, was to seize an opportunity to put its

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and a skeleton staff in Geneva, but in May, 1944, all that remained, the Epidemiological Intelligence Service, reduced to two officers, was transferred to the United States as a "research unit," later to become the Epidemiological Intelligence Service of UNRRA. In January, 1945, UNRRA also took over the duties of the Office internationale d'Hygiène publique with respect to international sanitary conventions. UNRRA was a temporary organization created to deal with the devastation resulting from the war, and was an invaluable link between pre-war and postwar intergovernmental health activities. It was absorbed by WHO, created by a resolution of the United Nations Conference held in San Francisco, California, in 1945.

\*\*Goodman, N. M. 1952. International Health Organizations, p. 138.

<sup>1</sup> The appropriations of the RF for Public Health (the IHD and Health Commission combined) in 1944 were \$3,200,000.

<sup>11</sup> The Health Organization of the League of Nations carried on extremely useful technical studies and an epidemic information service of great value, but direct assistance to governments was limited to expert advice and to technical and financial aid to China in 1938-1939. The annual budget of H.O.L.N., apart from RF grants, never exceeded \$250,000. (Goodman, 1952).

peculiar knowledge and experience to effective use.

UNRRA proceeded at once to look for a competent and experienced director for its medical division, and fortunately there was one person at hand who fitted the bill exactly, with the prospect that he might be almost immediately available. This was Sawyer of the IHD, a man thoroughly acquainted with the international scene and actively engaged on the same problems with which UNRRA was now preparing to grapple on a vastly greater scale. It was Sawyer who had conceived the idea of the RF Health Commission and had directed its activities for the past four years on the fringes of battle, in the wake of moving armies, and sometimes under fire. Though due to retire in a few months at the age of 65, he was extraordinarily robust in mind and body, and this was an opportunity tailored to his particular abilities and recent experience. To the RF the appointment would be advantageous since it would prevent any possibility of overlapping or friction between the two programs. Sawyer was offered the position in April (1944), a few days after Strode was appointed to succeed him on his retirement at the end of August, and accepted after brief consideration. The RF gave him terminal leave of three months and on June 1, 1944, he became Director of Health of UNRRA. Strode began to substitute for Sawyer in June and assumed the office of Director in September. He was 58 years old, which assured the IHD of 7 years of experienced and judicious administration during the abrupt changes at war's end and through that unsettled period which Fosdick foresaw would have to pass before the full impact of contemporary events on the future course of the RF could be appraised.

Strode found himself director of both the Health Commission and the IHD. These had complementary programs which had been successfully dovetailed throughout the war, for while the funds were kept separate on the books, both were under the same direction and the expenditures were approved by the same board of Scientific Directors. The Health Commission had accomplished what could be done by a private organization in Europe, Asia and Africa to repair or attenuate the damages of war while it was still in course. Strode had been the principal agent in gauging the possibilities and organizing the numerous projects which it had been found possible to attempt --- the control of typhus and malaria in strategic areas, the study of nutrition in rationed populations, the manufacture and distribution of yellow fever and influenza vaccines on a large scale, and even the organization of health services where conditions permitted, as in unoccupied France after the Armistice.

The officers and Scientific Directors did not look forward to any slackening in the activities of the Health Commission after the close of hostilities. Millions of people would be struggling out from under the debris of ruined cities, and hordes of displaced persons would find themselves homeless and destitute. The fear was rather that this might easily overwhelm its resources, and the Trustees at the end of 1943 promptly voted the Health Commission another million dollars, not a large sum in comparison with the funds at the disposal of UNRRA, but all that Sawyer thought his limited staff could expect to spend profitably. The Health Commission did not feel dwarfed into insignificance by its giant

collaborator; its work was actually rendered more effective by the existence of UNRRA, which was prepared to take upon itself the heavy load of emergency relief. The huge scale and temporary character of its wholesale operations left ample scope to The Health Commission for its own program of more lasting support to carefully chosen objectives. Its experienced staff, drawn in large part from the IHD, had the advantage of an intimate knowledge of the different peoples, their new leaders and their health problems; they could depend on the former fellows trained by the IHD, and on the institutions it had helped to create before the war. And there was the cheering thought that the medical director of UNRRA would be Sawyer himself. The Health Commission therefore faced no critical change in the immediate future.

But in charting the future course of the IHD, Strode was confronted with some difficult problems---more difficult in fact than those posed by the war. During this war as in the previous one, and indeed whenever the IHD had shouldered health problems provoked by disastrous events such as floods or epidemics, it relied on its habitual policy of building for permanency. The IHD was ill-fitted for emergency relief work which usually left no trace and was better entrusted to specialized agencies like the Red Cross. Throughout the war the IHD, with the approval of government, had departed as little as possible in the administrative field of health work from its long-established patterns. It had even found an opportunity to open up new territory in the Spanish-speaking countries of South America and to channel to a previously neglected area the personnel

and funds that had to be withdrawn from Europe and the Far East. The only other active international health agency in the Americas at that time was the Pan American Sanitary Bureau, which had existed for over 40 years as an instrument of the associated countries of the Western Hemisphere for the exchange of information and advice on endemic and epidemic diseases of common concern; it did not engage at that time in public health activities inside any of the member states. Two years or so after the war the Bureau was reorganized and began to deal with the disease problems which overlapped frontiers; it was under the direction of Dr. Fred L. Soper, loaned by the IHD for that purpose, and the two programs did not come into conflict. The U.S. Government too, at the time that it was pressing for the creation of UNRRA, had a revival of interest in its neighbors to the south which crystalized in 1942 in the heavily-endowed office of the Coordinator of Inter-American Affairs (CIAA) whose object was to lend war-time aid to health, economy and education throughout Latin America. This started out under the direction of Nelson Rockefeller who was familiar with the policies of the IHD, which he had no intention of displacing. This organization soon took on a permanent status as the Institute of Inter-American Affairs, but the opportunities for useful work in Latin America were innumerable and the IIAA and IHD managed generally to keep out of each other's way.

Thus, in spite of geographic restrictions, shortages of men and material, and rival organizations, the IHD succeeded during the war in maintaining an international program surprisingly true to form and of more than token significance. It was able to display something like

its normal activities in some 50 countries, mainly in the Americas but embracing also in a wide arc the countries on the fringe of the war from Portugal and Southern Europe through the Near East to India. Even in China it had been possible to maintain a foothold throughout the war. The RF had been in friendly collaboration with the Chinese people for over three decades and had invested 45 million dollars in medical education, public health work and rural reconstruction. Financial support of various projects was continued until the Communists took over in 1947. When the RF's China Program was interrupted in 1937 by the Japanese invasion, it accompanied the dispersed authorities and institutions as they were harried from region to region and sought refuge farther and farther south. The IHD continued to carry on malaria investigations at Chefang near Chungking and to aid in malaria control along the proposed route of the Burma-Yunnan Ry. until the whole country was involved in war and the staff had to be evacuated by air to India in April, 1942. It was expected that the close of the war would put an end to dislocations and restrictions almost everywhere and restore liberty of action to the IHD.

But it was apparent that liberty of action did not mean freedom to return to the prewar program. Rose's basic principles might be held to be immutable, but the program itself would have to undergo a major revision. The problem of huge competing agencies was only a cloud on the horizon, but the storm warnings were out and the IHD must be prepared at any time to take in sail. Some key members of the staff were expected to resign after the war, attracted to Universities which were actively seeking qualified men for their depleted faculties in a restricted market, and the great difficulty of replacing them at that

time in their special fields would mean abandoning certain lines of work. Most urgent was the need for reconstituting the vital disease-control program of the IHD, where veins which had yielded the richest ore were now virtually worked out. The hookworm, which had launched the IHD on its international career, had almost ceased to be a particular target of attack. Hookworm campaigns were no longer needed to scare up an interest in rural sanitation, and hookworm disease, refractory to all intensive methods of control, had been absorbed into the general programs of rural health services. Yellow fever, the most important of the original triad of diseases chosen by Rose, and the core of the IHD offensive against man's most destructive enemies, had now been under intensive study for almost 30 years and had yielded most of its secrets to investigation in laboratory and field. It had not been eradicated, but it was reduced to impotence, and nothing but the war-time need for vaccine in large quantities had kept it so long in the repertory of the IHD. Only malaria, of the "big three," had survived the war as a continuing problem of the first magnitude, but the subtleties of its parasites and vectors, and the endless variation in its patterns of transmission had baffled the IHD base laboratory, which versatile as it was, had so far been unable to provide any useful leads for the field observations and experiments. Some worthy successor would have to be found to yellow fever which had linked the central laboratory so long and so productively with the chain of far-flung epidemiological outposts, a collaboration under a single direction which had developed into a powerful instrument in the hands of the IHD and had distinguished it from other agencies of research and application in disease control.

Both Russell and Sawyer had foreseen this situation and between them had taken under more or less serious consideration at least 20 other diseases of international importance. There is no need to list them all, but they fell roughly into three categories. Some, unsuited to the methods and objectives of the IHD, were of particular interest to university groups or health departments which were given grants-in-aid to clear up some enigma of etiology or transmission, as for example the epidemiology of amebiasis and cancer, the causes of the common cold and the improvement of smallpox vaccine. Some were taken up because they had assumed unusual importance during the war, such as infectious hepatitis (the common infectious jaundice), epidemic typhus fever and the respiratory viruses. Finally, those that seemed to have potentialities of arousing the long-term interest of the IHD were assigned to staff members for examination and evaluation in typical endemic areas or in the laboratory in New York where the expediency of more extensive operations could be weighed. Some of these had been dropped after a few years because they did not fulfill the conditions warranting prolonged investigation leading to a general attack, and among these were undulant fever, schistosomiasis and yaws --- very important diseases in many parts of the world but with characteristics which militated against their inclusion in the main program of the IHD. Of the lot, 5 diseases had survived this screening process and Strode, when he came to office, found the IHD actively engaged in studying their nature and the feasibility of their control. Each had its attractions and its disadvantages from the standpoint of the IHD, and none had yet acquired the standing of yellow fever or malaria in its general program.

Tuberculosis, pervasive and destructive, had from the very beginning been a perennial candidate for a top position on the IHD's list of the enemies of human welfare, but the gage of battle was never taken up. A chronic disease with roots in unfavorable social conditions and one which dogged families for generations, it was not vulnerable to the weapons of the IHD or adapted to the time-span of its operations. Such was its challenge that no director could bring himself to drop it entirely, but neither could any be persuaded to take it on in earnest. It remained always peripheral to the central undertakings of the IHD, and when, as Strode came in, it had begun to prove amenable to new means of immunization and chemotherapy, no pioneering effort of the IHD was needed to stimulate and orient the universal onslaught which then began.

Louse-borne typhus, which the IHD had taken up in 1940 as a major component of its war-time program, was an epidemic disease of armies and pilgrimages and hence a special and intermittent problem, but the group of rickettsial infections to which it belonged — scrub typhus, murine typhus, Rocky Mountain spotted fever and others — offered a continuous challenge in almost every continent and climate, besides being akin to the insect borne virus diseases which the IHD was particularly qualified to handle. This was a definite possibility for a postwar line of investigation.

Sawyer had begun in 1939 to make surveys here and there of nutritional deficiencies, which had come into the limelight in the early 30's as a previously disregarded factor in every public

health situation, and whose importance had been underscored by the rationing of food during the war. The significance of nutrition to health, especially in the tropics, was more and more clearly appreciated, and its mysteries were fast dissolving under scientific scrutiny, yet the field of application of these discoveries was virtually uncultivated and as a program for the IHD, there was the added qualification that reconnaissance studies and relief projects required basic laboratory support. In contrast, however, to the typhus studies, these demanded such special skills and equipment that the IHD would have to create a new laboratory and assemble a new staff to deal with problems far removed from the microbiological ones of its past experience.

Sawyer had also instituted in Alabama in 1936 a study of immunization against rabies with the idea of applying modern techniques of virus cultivation and modification to the standard methods which had remained almost unchanged since the discoveries of Pasteur. But rabies, important as was its threat to advanced and backward peoples alike, depended for its control on the passage and enforcement of special legislation, matters which lay outside the scope of private agencies like the RF and rendered it a purely laboratory problem with little recourse to its international facilities. It was expected that the continuation of the laboratory investigation and the application of its results would be transferred to the State authorities after the war.

The one disease of the 5 which seemed to fit most of the requirements as a substitute for yellow fever on the IHD slate was

influenza, always a world-wide menace, and, like yellow fever, able to terrorize and upset the world. The catastrophe of 1918 could be repeated at any time, and there was no defense. The causal agent was a cultivable virus, and the IHD was better staffed and equipped for its study than any other agency at that time. Sawyer had given influenza high priority in laboratory and field, since it was of great potential importance to the Armed Services in case of war, and he had built up a laboratory group equivalent in ability and prestige to that engaged on yellow fever. The disadvantage was that no one could suggest any way of preventing the spread of the disease except by vaccination since, unlike yellow fever, transmission was direct from person to person and there was no insect vector which could be suppressed; but while yellow fever virus was always of one type immunologically, that of influenza comprised many variant strains which did not generate effective immunity to one another, and new ones kept appearing from time to time by resurgence or mutation to put the current vaccine out-of-date. There was no effective method of prevention or control in sight, but many laboratories were starting to work on the problem and the immunology and epidemiology of the disease were such that the IHD, with its peculiar facilities and mobile staff would have no particular advantage over any other thoroughly competent laboratory group.

This did not of course exhaust the list of diseases of paramount importance, but there were a priori reasons for rejecting the others without trial. Many were already under intensive inves-

tigation and attack, as for instance leprosy, polio, and such great pestilences as cholera, plague, smallpox and typhus, which made the distinctive pioneering and coordinating action of the IHD superfluous; others were still unassailable in any effective, large-scale and economical way, including some very important communicable diseases like trachoma and the three banes of warmer climates: filariasis, amebiasis and schistosomiasis. Russell had included the last two in his list of projects in experimental control, but neither proved to be within range of the weapons of his time. As for noncommunicable diseases such as heart disease, cancer and diabetes, the IHD had always felt that its peculiar organization and facilities gave it no advantage in this field; that effective means of prevention were yet to be discovered; and that these diseases were not yet the chief obstacles to progress in the countries where it had chosen to work.

Even such a brief consideration of the possibilities open to the IHD for future intensive action in what had always been its principal field of operations, the investigation and control of specific diseases, reveals that Rose, by good fortune as well as good judgment, had hit, first off, upon the three diseases that would best serve the main objectives of the IHD, which were to extend to rural populations everywhere the coverage of an efficient public health system; to demonstrate the feasibility of curbing certain overwhelming causes of sickness and death that were holding up progress in underdeveloped regions; and by providing opportunities for special training and employment to make public health work in many countries

a career instead of an avocation for physicians, engineers and nurses. To these ends hookworm made its great contribution to public health by refusing to yield to any measures other than the constant sanitary and educational pressures of permanent rural health services; malaria, which hung like a pall over half the farmland of the world and kept up the vicious cycle of ill-health and underproduction, converted the scattered public-health administrators of the IHD into an intercommunicating team of epidemiologists strung around the world and initiated the modern approach to global disease control; yellow fever, the great marauder, forced the IHD to take the final step of combining the field studies with basic laboratory research, which in a very few years gave it undisputed leadership in the almost virgin field of the viruses, and the power to enter with confidence any field of microbiology. It was borne in upon the officers of the IHD that these three diseases, which had been indispensable to the development of its program, were virtually irreplaceable. It was a warning that the IHD should begin at once to plan for a new type of activity that would utilize its unique combination of strategically located field stations and a resourceful laboratory and administration at home; it was the possibility of taking a panoramic view together with the centralized scientific technical and administrative support which had won the victories over yellow fever and malaria.

The evolution of this highly successful scheme of operations, while it had taken place in a series of logical steps, had nevertheless caused uneasiness to Strode and other veterans on the staff, apart from the approaching need to find a replacement for yellow

fever. This uneasiness was due to the disposition of the laboratory with its able personnel and incomparable equipment to follow lines of research unrelated to the work in the field, and recalled the first unfavorable reaction of the Scientific Directors to Russell's request for a base laboratory in New York in 1928. fearful that it might lead the IHD away from the type of work which Rose had established as its legitimate province, the protection and the promotion of health in rural populations. Now, at the end of the war, the administrative staff in the home office and the field, who were still of Rose's opinion, felt that these apprehensions were in part justified by the increasing detachment of the laboratory, and were reinforced in their views that the plans now in the making for the future of the IHD should resist any substantial modification of its original character and design.

Rose considered the role of the IHD to be essentially administrative and advisory. He had satisfied himself that the three diseases he had selected could be controlled with the means at hand, and when problems arose in the course of the work he referred them as a matter of policy to research institutions such as the Rockefeller Institute and university laboratories, or to expert commissions dispatched to the sites of trouble. He refused to allow the IHD to lose headway in channels of unpredictable investigation during the critical period when recruitment of staff barely kept pace with the expansion of program. The "well-being of mankind" meant reaching the maximum number of people in the shortest possible time with the equipment of knowledge and methods we already possessed. To both

Rose and Gates there was an aspect of urgency to every new project which ruled out any marking of time or diffusion of effort. It was a policy supported by President Vincent\* of the RF and by Rose's scientific adviser, Dr. Simon Flexner, and was sound enough in those early days when the control and prevention of hookworm disease, yellow fever and malaria (in its North American presentation) could be reduced to a few standard procedures in which the field staff could be indoctrinated in a few weeks.

But Russell, who succeeded Rose in 1923, found himself in serious difficulties almost at once as his fast-multiplying projects, thrusting out in every direction into unfamiliar territory, encountered serious gaps in our knowledge which were roadblocks to progress in all three diseases. Thus the commonest device to prevent the spread of hookworm infection, the pit privy, was accused of creating greater hazards than it suppressed, by polluting the ground water; the slender spiral organisms, the leptospiras, which Noguchi had identified as the cause of yellow fever, were suspected of having nothing to do with the disease; and the pictures of malaria that began to develop in Italy and the Balkans, in India and the Far East, and in South America, differed from each other in puzzling ways, and none of them was like the rather simple summer phenomenon in Arkansas which had been the object of the preliminary experiments in control. Russell believed that those who were in the field fighting a disease were the ones best situated to investigate its natural history and the reasons for its spread; control and research should not be split between two separate organizations if the work

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\*Fosdick p. 45

were to be made constantly more effective and economical. It was already evident that the Rockefeller Institute and the universities were not prepared to rush to the aid of the IHD in all parts of the world when it ran into difficulties, and now, with his large,

## Lab and Field - Rough Outline

Creation of Lab. - 1928; Research under WR, FFR & WAS; Advent of War: influence on program and staff.

Changing relations between Lab, Spec. Dis. and PH as exemplified in hw, yf, flu, mal, typhus; divorce of sci. staff from PH staff.

GKS's difficulties with Sp. Dis. program in lab and field; ll inherited projects; memo to Sci. Dirs.; fading of yf and typhus (JHB); review of diseases: proposes malaria.

Staff difficulties; loss of key men; JHB first, MT acting; criticisms of GKS; why men left; staff and salary policies; why men remained. RMT Dir. - questions GKS.

Postwar doldrums - '45-'48; Lab as RMT found it (staff too lge. for prog.); shift to malaria ('45), rick and strep ('46), flu; New quarters (Payments to RI) '47; new viruses (gathering a team '49).

RMT's "lab and field" attitude; search for a new dis. unproductive; malaria disappointing (nothing in sight); IHD caught unprepared; new approach: RMT to So. Am.

RMT's rec. of Lima not accepted; threat of closing lab (RF & Sci. Dirs.)  
Change of Presidents due (7/1/48); nothing new possible ('47-'48);  
Comm. on Review.

MT's trip to Africa and results; CIB and Sci. Dirs.; RMT's and MT's plans ofd. HHS.; MT restored to V. and made Dir.; RMT to Egypt.

IHD merged with MS; GKS succeeded by AJW; Lab survives but PH dropped along with Sp. Dis., as once predicted.

Adaptation to new postwar conditions, foreseen by RBF & CIB.

The new viruses, united as "arbor" v. - character, groups, epid.; staff equip. and tech. knowledge ready; contrib. of malaria res.; new frontier; field stations established; logical succession to yf.

## Chapter 10

### The Laboratory and the Field

1. In 1928 the IHD acquired a new function, that of scientific research in a laboratory of its own, as a corollary of its field work abroad in the investigation and control of yellow fever. Russell set up the Yellow Fever Laboratory in New York City, in one of the buildings of the RI, since there it was more-or-less equidistant from the two endemic areas of yellow fever and outside the zones of natural occurrence of the virus. This step was something more than a natural expansion of the scope of the Division; as we look back on it now, it takes on the importance of a major turning point in the history of the IHD. It raised the gravest doubts at the time among the majority of the Scientific Directors who, while they agreed with Russell that epidemiological investigation in the field was a necessary part of the control of any disease, they thought a research laboratory to be a deviation from the proper business of the IHD, and only reluctantly approved it because it was shown to

be indispensable to the all-important yellow fever work.

2.           There had been strong opposition in the beginning, not only among the Trustees and Officers of the RF, but also within the IHD itself, and by Wickliffe Rose, its first director, to any participation on its part in research and investigation whether in the field or in the laboratory. (This was a frustration to the field staff in the early hookworm campaigns who were unable to take advantage of the opportunities for experimental research in therapy and prevention, and whose only outlet for their natural inquisitiveness lay in elaborate analyses of the dispensary data, which they later learned was statistical epidemiology. Epidemiology in those days (1914) was restricted to smallpox, and research by health departments was frowned upon by doctors as a waste of the taxpayers' money since it "did not save lives." This was not Rose's reason.) Rose was a firm believer in the need for research, but not by the IHD.\*

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\* In the Annual Report for 1917, Geo. E. Vincent, the President wrote (p.33): "The Foundation is impressed by the need of fostering research in the field of preventive medicine," - undoubtedly by Rose and Welch.

He was impressed, as Gates had been before him, with the unnecessary lag between our knowledge of the sources and modes of some of our most widespread and destructive diseases, and the application of this knowledge to their prevention and control. Three diseases in particular seemed to him to stand out from the rest in the amount of damage they were inflicting around the world, their vulnerability to ordinary suppressive measures, and the lack of any organized resistance on the part of long-suffering humanity. He chose these three - hookworm disease, yellow fever, and malaria - as the first objects of attack by the IHD, which was organized to take the offensive at once against the enemy with the weapons at hand, and he refused to let it become bogged down in uncertain (unpredictable) channels of research during the critical period when recruitment of staff barely kept pace with expansion of program. Unknown aspects of diseases and the search for better avenues of attack were referred by Rose to research institutions, university laboratories, or commissions

of experts which he assembled for the purpose. As early as 1915, on his return from his trip around the world, he sent Samuel T. Darling and Marshall A. Barber to the Far East to evaluate the causes of anemia in tropical areas. In the early 1920's after the schools of public health had been established, he financed expeditions to the West Indies, Central America and China by Dr. William W. Cort and his associates of the newly created School of Hygiene and Public Health of Johns Hopkins University to study the life history of the hookworm in the soil. In doing this he had two ends in view: to obtain the desired information and to stimulate the new schools of hygiene which he had been instrumental in creating, to engage in research, which he and Dr. Wm. H. Welch thought to be an indispensable component of their activity, a combination of teaching and research in public health such as Welch had introduced into the medical schools. For a long time the IHB served to bridge the gap between the university laboratory and the practice of public health.

3.

For the IHB, the most natural and available research center was the RI, and its Director, Dr. Simon Flexner, offered to undertake to solve problems arising in the course of IHB work which threatened to slow up disease control, such as the development of a practical and efficient rural privy for hookworm prevention and the identification of the causative organism of yellow fever. Flexner, who was also a Trustee of the RF, thought it would amount to duplication of effort within the group of Rockefeller Boards for the IHB to undertake laboratory or field research on its own account. Dr. Vincent, President of the RF, was in full agreement with Rose's policy and wrote to Dr. Cole of the RI in 1918:

"It is the function of the Institute through research to provide the scientific knowledge of a given disease. The task of the IHB is to apply this knowledge in the field. While this latter work has research phases, these have to do with practical procedure rather than with fundamental inquiry."\* It should be emphasized again that Rose was profoundly convinced that human

Expand - see card

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\* Fosdick, p. 45

quote WR (card)

progress was dependent on the extension of knowledge, and when he became President of GEB and IEB in 1923, he made support of research the core of both their programs. (See card.) But as Director of the IHB, he conceived that the "well-being of mankind" meant reaching the maximum number of people in the shortest possible time with the means at hand, at least until application should catch up with knowledge, and in fact there was no research carried on by school and local health departments at that time or for many years thereafter. To both Rose and Gates there was an aspect of urgency to every project which ruled out any marking of time or dispersion of effort in investigation that could be carried out by others. Not only were people dying who might be saved, but rapid initial success in hookworm and yellow fever control was essential to the future development of this young and unimposing enterprise.

4. Frederick F. Russell, however, when he succeeded Rose as Director of the IHD, which was always invading fresh territory

and finding itself in novel situations, was faced almost at once with difficulties, which were sometimes roadblocks, due to serious gaps in our knowledge of all three diseases, which had not been evident at first. It was obvious that the RI was not interested in the same diseases that he was and was not organized to carry on extramural activities; its busy staff could not be expected to rush to the aid of the IHD when it called for help in some distant corner of the world. Furthermore, Russell believed that the search for new knowledge about a disease should be part and parcel of the effort to control it, and the two could not be split between different organizations. "Research work and applied knowledge," he said, "must advance hand-in-hand; either alone may

be sterile."\* He began at once to develop field research on a scale such as Rose never contemplated and to encourage his field staff to engage in epidemiological investigations, especially in connection with malaria control where it had become essential to know more about the biology and behavior of the many species

Began to develop 2  
field staffs -  
Specific diseases  
and public health-  
Some of his staff did  
not understand-VH,JAF,  
HHH. This was PH  
research.

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\* RF Annual Report, 1934, p.20

of mosquito which transmit the infection. A number of public health administrators and consultants on his staff turned themselves into epidemiologists (usually of one disease) which led E.L. Bishop, one of the Scientific Directors, to remark that the IHD had a "mixture of geographic and functional personnel," corresponding to Rose's original programs of aid to state and local health services, and control and investigation of specific diseases. (Opie's Jamaica T.B. survey in 1928; Opie's Phipps project in 1930; by 1931, investigation and control - see card; FFR's T.B. "home station" presented to Scientific Directors, January 24, 1930 - rejected and given to Opie at Phipps; JAF, VGH & HH antagonistic and many of field staff "impervious"; Bishop's geographic and functional personnel - a new "phase," not for universities.)

5. For yellow fever, however, Russell needed a base laboratory under his own command. There was a growing doubt as to the nature of the organism that was believed to be its cause, and a question

whether African and American yellow fevers were identical. He had once suggested to Rose the creation of a laboratory equipped to handle such problems, but Rose resisted the idea as opposed to his general policy and as unnecessary for the success of the campaigns against the yellow fever mosquito. But in 1928 the RF underwent a reorganization and adopted a new objective broadly defined as "the advance of knowledge," since it seemed to the Trustees that the "margin between what men know and what they use is much too thin."<sup>\*</sup> This was in contrast to the considerations which fifteen years before had prompted the creation of the IHD, namely, that medical science had far outstripped its application,<sup>\*\*</sup> but it was in line with Russell's aims and convictions and he made the most of it.<sup>\*\*\*</sup> Fortunately, for his cause, his staff in West Africa only a few months before had discovered a laboratory animal - the rhesus monkey - that was

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\* Fosdick, p. 140

\*\* Fosdick, p. 45

\*\*\* The resolution creating the IHD on April 13, 1928, defined its functions as related to "field operations, surveys and research in P.H., the development of official health organizations through aid to their various divisions and units and through training of personnel."

see card on "lag"

quote Confucius

susceptible to yellow fever; for want of such a tool, experimentation in this important field had been virtually paralyzed for 25 years. Studies on transmission and etiology of this often fatal disease were now possible without the use of human volunteers, an enormous step forward, and Russell, pressing for his laboratory, brought all these powerful arguments to bear on the Trustees and the Officers of the RF. By this time even Vincent had changed his mind and wrote in his last report just before he retired in 1929: "The RF, even in the attempt to apply existing knowledge to the protection of the public health, is forced into seeking further facts about the nature of certain diseases. This opens a vista of research in preventive medicine and hygiene."\*

However, he said that to the RF, the control of a disease "is not so much an end in itself as a means of setting up a permanent organization (for) sanitation, C.D. control and hygiene."\*\* Under the reorganization, that was still to be the chief aim of the IHD.

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\* The RF: A Review for 1928, p.47

\*\* President's Review, 27/38

See Gray 408

(FFR's memo to Scientific Directors, fall of 1929, proposed "home base" for T.B. - Jamaica Survey, 1928.)

6. The Scientific Directors accepted the yellow fever laboratory,

but with some reservations (see Bishop's card on Africa) since it also opened "vistas of research," in Vincent's words, in directions

which they did not approve. They agreed that a central laboratory

had been of value to the development of the yellow fever program,

but what Russell wanted now was a general microbiological labo-

ratory as an organic part of the IHD, capable of investigating

any disease whose prevention and control were handicapped by

lack of scientific knowledge. (He had in mind T.B. and Opie,

to which the public health men and epidemiologists on the Board

were strongly opposed.) This the Board turned down as a threat to

IHD unity and objectives. It was in the field, not the labo-

ratory, that the IHD had developed its combination of epidemiolo-

gical investigation and the development of public health machinery,

a type of work in which universities and research laboratories

African yellow  
fever work pure  
lab, a university  
job

like the RI were in general unable to engage. The majority of the Board was therefore opposed to any extension of the laboratory work of the IHD beyond that necessary for the support of its field work (supported by the Trustees' Committee on IHD in defining "research" by IHD - see card) since it could not bring about the desired relations with government.\* The proposal to submit diseases to laboratory investigation in New York which were not part of the field program awoke fears that the laboratory might become increasingly independent of the field and even overshadow the international public health work in the long run. In any case, it was a threat to the tight interrelationship of all IHD activities which Rose had jealously preserved.

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Russell could not agree that the laboratory he had in mind would threaten the unity of the IHD; on the contrary, he argued that it would only add strength to the scientific underpinning

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\* Frost, Winslow, Bishop and Dublin were against the creation of a general research laboratory; Cole and Smillie were inclined to support Russell.

which supported the entire work, "a leaven for the whole organization."\* Both Russell, and Sawyer who succeeded him, were disposed by training and experience to consider the laboratory approach as basic to the understanding of communicable diseases and a prerequisite to effective "shoe-leather" epidemiology which sought to draw conclusions from the circumstantial evidence to be found in the environment of known cases of a disease. Observation and analysis might well lose their way unless guided and confirmed by experiment. What an impact the discoveries of Pasteur and Koch had on the erroneous notions of infection based on centuries of clinical observation! Russell felt strongly that the lack of a base laboratory was a handicap to the development and success of the IHD program, which he was anxious to expand. (For example, the eventual fading and replacement of the yellow fever program would soon have to be considered.) He stated in his annual report for 1927: "The time is ripe to

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\* Defined as "an influence that, spreading silently and strongly, changes conditions or opinions."

initiate a new project - acute epidemic respiratory disease."\*

He had already set on foot a small project for the observation of the spread of respiratory diseases under tropical, temperate and arctic conditions, with aid from the RI in the examination of naso-pharyngeal flora, but while the epidemic pictures were interesting and suggestive, the scientific basis was lacking for their adequate interpretation. It was evident that these multiform and confusing infections would have first to be disentangled in the laboratory before the epidemiologists could hope to obtain a clear picture from their analyses of epidemiological data collected in the field. (FFR was still advocating that the lab and the field should advance hand-in-hand.) But the early Scientific Directors, without minimizing the importance of the laboratory, were convinced by the T.B. project that Russell could only see T.B. as a germ disease and did not understand

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\* Annual Report, 1927, p. 191

statistical epidemiology; by field research, he meant lab research in the field. They were strongly of the opinion that priority and maximum emphasis should be given to the work in the field, exploiting (utilizing) to the full the advantages which the IHD possessed over almost all other institutions interested in such problems, namely, its international outlook with the opportunity to create field stations in any continent and climate for the study of endemic diseases in their natural settings (and the facilities for coordinating field investigation, laboratory research). It was large-scale experiments and demonstrations in the prevention and control of selected disease, not lab research, that brought IHD into collaboration with governments, and resulted in improvement of the public health services. (cf. contrast of yellow fever activity in Africa and in South America under Soper) (Field studies meant to the Scientific Directors investigations for the public health and epidemiology angle, not conventional lab research.) So, for the first six

years, the IHD laboratory devoted itself exclusively to yellow fever. Neither hookworm nor malaria seemed at that time to be promising fields for the laboratory approach at home base.

8. Russell was patient and canny; he did not give up his project, but he waited for a more favorable climate. The yellow fever program was a prodigious success, (with the lab contributing important discoveries which greatly facilitated the epidemiological work in the field. In 1931 he asked for \$175,000 more for Specific Diseases which he took from state and local health and added five special staff members, which some of the Scientific Directors took to be the first crack in the previously monolithic IHD, but approved since mainly for yellow fever.) and Russell had been very successful also as an administrator, winning the confidence of the Trustees (see card of resolution, 1928) and the Scientific Directors. He had introduced innovations and had impressed his personality on the organization he had received from Rose, but he had shown balance and judgment. In making

investigation in field and laboratory a function of the IHD, he abandoned little (?S.L.?) of Rose's program; he believed very firmly that effective public health work must be "a composite of research and application."\* There was no ambiguity about this, for he had written: "Field research in epidemiology is necessary to the application of scientific knowledge in the development of an administrative program."\*\* (The Scientific Directors wondered, however, whether by "field research" he did not mean lab research in the field rather than their concept of public health and statistical investigation.) In 1933, when he had been Director for ten years, he pressed again for a research laboratory of broader scope and this time it was given to him, although not unconditionally. The Scientific Directors, a different lot by that time, at their October meeting (1933) changed the name from "Yellow Fever Laboratory" to "Laboratories of the IHD in New York," as of January 1, 1934, "in the expectation

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\* RF Annual Report, 1934, p.20

\*\* Annual Report, 1927, p.191

"that the laboratory will be asked from time to time to undertake investigations related to the field studies of still other diseases."\*

This was a reminder that the new laboratory, like the old, existed to forward projects initiated in the field, and that between the two it was expected that there would always be the closest coordination. Russell was quite willing to subscribe to this (see attached slip). (He had disposed of T.B.) He proposed malaria as the second disease to be taken up by the laboratory, one with which the IHD had had long field experience and about which he was now convinced laboratory research would yield knowledge of importance to the practical work of prevention and control.

AJW - (15)

There was some delay in finding the right man for the project, but Russell persuaded Dr. Lowell T. Coggeshall to abandon his clinical work at the University of Chicago in 1935 and undertake the direction of malaria research for the IHD. Russell was still keenly interested in respiratory infections, particularly influenza,

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\* Emphasis is mine. Quoted by Gray II 416 (my paging-LWH). The Scientific Directors in 1933 were Dochez, Fitzgerald, Jordan, Smillie, Thompson and Leathers.

and began the preparations for its study as well, but he retired on September 1, 1935, before work had time to get under way on either disease. Russell's chief contribution was to endow the IHD with a new function which increased its efficiency and enhanced the value of its accomplishment. It was now thoroughly committed to research both in the field and in the laboratory, and in his last annual report (1934)\* he took satisfaction in noting that the new orientation of the RF, in its promotion of the well-being of mankind, was in line with the basic principles of the IHD as well as of the Scientific Divisions, since "throughout all public health work there must run the motif contained in the second part of the motto of the RF, 'through the increase of knowledge,' (for "it is not results alone that count, but what is important above all is improvement of methods."). As an essential outgrowth of field activities," he reported, "a large amount of research work was done during the year by members of the public health staff." And he added, with an eye on his critics, "each

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\* RF Annual Report, 1934, pp. 20,21,69

"year there is a closer interweaving of the interests of the laboratory work and field activities," but there is less in this than appears, for up to the time of his retirement the laboratories had dealt only with yellow fever. It was when they began to extend the scope of their work that a crack appeared between the interests of the laboratory workers and those of the "public health staff."

9.           Neither Sawyer, who succeeded Russell, nor Johannes H. Bauer, the new Director of the IHD Laboratories, had Russell's confidence in the practical possibilities of laboratory research on malaria, but they were both enthusiastic about influenza. It was a virus disease and, like yellow fever, it was of international importance, able to terrorize and upset the world; it was pioneering work, since the virus had only recently been isolated in England in 1933; it was suitable for the IHD, since a world-wide study was indicated and the Laboratories, still occupied with yellow fever, were splendidly equipped to handle

any kind of virus; and top personnel were available to carry on the research. Dr. Thomas Francis, Jr., of the RI, had begun to study influenza virus as soon as it was discovered, and Russell had helped him secure material from Puerto Rico and elsewhere through the collaboration of the staff of the IHD. By 1935 he had become the leading American expert on the disease and in 1936 he was willing to transfer his activities from the RI to the Laboratories of the IHD because of better facilities and the great interest of Sawyer in his work. It was Sawyer's hope that study of this widely distributed virus from the advantageous viewpoints of the IHD might yield results comparable to those obtained in yellow fever.

10. It may be stated at once that this hope was not in the end fulfilled with regard to either malaria or influenza. As a fine piece of laboratory research, the malaria studies revealed new facts about the parasite and the immunology of the disease which aroused the interest of malariologists everywhere, but they

produced no leads which could aid in its eradication and so coordinate them with the field work. As the prospect of obtaining an effective vaccine faded away, the general attention turned to a search for better drugs, but the IHD Laboratories were not staffed or equipped for pharmacological research and the studies were brought to a close in 1942. During the war, the lab limited its activities in malaria to testing new synthetic compounds elaborated by Feiser, on malaria parasites in lab animals, and, in the case of two promising drugs, on human population in malarious localities.

Harvard (21)

11. As for influenza, there was no difficulty in adapting yellow fever techniques to the investigation of this virus and in fact new discoveries were made which advanced the knowledge not only of influenza but of viruses in general so that the studies were continued for 13 years (1936-49) and were not surpassed by any other group of investigators. During World War II it became the principal research activity of the Laboratories. Influenza

laboratories for research and epidemiology were also created abroad (by RMT) in Hungary (1936-39) and Argentina (1940-42), as well as in connection with the State Health Departments of Minnesota (1937-45) and California (1937-47), but the program failed to take root. The only method of forestalling influenza epidemics which gave any promise of success was the wholesale immunization of population groups, but this measure, so discom-  
forting, expensive and beset with difficulties of application, was far from being as successful as vaccination for yellow fever. This was owing to the protean nature of influenza virus which, unlike that of yellow fever, displayed from epidemic to epidemic seemingly unending series of unpredictable variations in its immunological properties which made a standard vaccine impracticable. If a new, aggressive strain is identified before it has become widespread, attempts are usually made to prepare a specific vaccine in time to protect populations threatened by invasion, but mass immunization to influenza has never been

(note attached to yellow p. 21 - chapter 10)

Ann. R. 35/19

## Shift of IHD Program 1935

### WAS' 1st Report:-

"The year 1935 was a significant one in the history of the public health work of RF since it marks more sharply than any other year the shift in program from the old to the new."

Began under FFR, and not yet wholly ended

From creation and development of technically competent local, state and national health services to securing additional facts necessary to effective and economical control of disease

Dominant feature of new program in field research

Efforts concentrated on a limited no. of clear-cut PH problems, with emphasis on the need for studies of disease in its environment and on closely related laboratory investigation

The old was administrative; the new, the advancement of knowledge in public health and hygiene

1935: schistosomiasis, yaws, T.B., undulant fever, scarlet

(note attached to yellow page 22 - chapt. 10)

SM/424

### Reduction of IHD Budget by Trustees (1929)

Resolved that it be the policy of the Trustees gradually to reduce the total of such annual (IHD) budgets in the interests of competitive consideration among various kinds of activity, and to promote intensive rather than extensive operations.

(Did not much affect FFR, but did WAS and GKS)

adopted as the standard method of control by health authorities anywhere. As the situation became clear, the IHD found little reason to believe that laboratory research was on the track of an effective method of stopping the spread of epidemic influenza through the world.

12.           However, the main reason why the IHD closed its field stations and eventually abandoned the study of influenza altogether was one of policy rather than the fickle immunological behavior of the virus. The virus in its various transformations did not remain localized but soon spread to great distances along every route of travel, and was regarded everywhere with such concern owing to its past performances that after the War it became an object of general study. All the university and public health laboratories equipped for virus work became observation posts and were organized by WHO into a network of sentinels, with its center in London, for the purpose of spotting the origins and courses of influenza epidemics. Thus the IHD laboratory

lost its "relations with the field" as visualized by the Scientific Directors, and became itself just another field station, collecting the material for examination from its own environment. It was no longer a pioneer, and no longer the base of a strategic chain of outposts of its own. This was a postwar development, but even when Strode assumed the directorship of the IHD in 1944, at a moment when the laboratories were under the pressure of war-imposed activities, there were already indications that influenza was losing momentum and was not going to be a satisfactory answer to the question of a core program for the IHD in the field of infectious diseases in times of peace. It was a job for university and public health laboratories. To Sawyer, however, who stepped from laboratory to general administration in 1935, this question of a laboratory program seemed happily settled for a long time. The yellow fever work, the Foundation's most important enterprise, was at the exciting stage of perfecting a living vaccine, and Russell had made it possible to have two other strings to his bow - malaria and influenza - both offering distinct possibilities.

13. Sawyer was also soon to be immersed in preparations for war and his problem as regarded the Laboratories was not to find a program, but space, staff and funds for the swelling tide of work which began to flow in. In his new position he remained devoted to the interests of the laboratory which he had organized and directed for eight years; he liked and appreciated his successor, Dr. Johannes H. Bauer, and dropped over to the RI from his office (in Rockefeller Center) once or twice a week, much more often than either Russell or Strode. The appropriations for public health declined to less than half of Russell's expenditures and the rapid expansion of the Laboratories, at what seemed to be the expense of the field, could not fail therefore to lead some of the public health staff to accuse Sawyer of partisanship, but it was actually the result of several causes. One was the appropriation of a million dollars to the U.S. Public Health Service in 1934, under the Social Security Act, for aid to local health services, which made it possible for the IHD to discontinue

its support of rural health units in the U.S., a program which had cost \$140,000 in 1934, and some three million dollars over the years. Soon the effect of the war was to promote the diversification and growth of the Laboratories and at the same time to impose geographical restrictions on public health and epidemiological work in foreign countries. As the area of hostilities expanded, the field staff had to be withdrawn from Europe, the Near East and much of the Far East and reassigned to other countries or to the Health Commission, a wartime operation of the RF which has been described,<sup>\*</sup> and it was found expedient not to fill the normally occurring vacancies in the public health staff. The Laboratories, at the same time, rose to a peak of strenuous activity, producing yellow fever vaccine in huge quantities, striving to understand and prevent infectious jaundice, improving the vaccine for epidemic typhus, attacking the manifold problems of influenza, and assigning specialized personnel to medical scientific work with the Armed Forces. Sawyer's appointments

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\* See p. 11, Chapter 8, The IHD and the War

reflected the inequality of opportunity in the scientific and administrative fields. To keep his staff at 70, 31 new members were taken on during the nine years of his administration, of whom 27 were specialists in some scientific field (or were assigned to the investigation of a specific disease), 3 were public health nurses, and only one was an administrative health officer.\* The rough balance which Russell had maintained between the two groups was thus upset, and the complexion of the staff was significantly altered during the course of the war.\*\*

14. That the growth of the laboratory took place at the expense of the field was also necessitated by a more limited budget than that which Russell had enjoyed. This was due to a new policy of the Foundation (see statement of Trustees on budget reduction in SM) (in various degrees to the war, the depression, ?

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\* Dr. Harold D. Chope

\*\* By the time Russell retired he had built up a staff of 76, of whom not more than a dozen had received special training in laboratory science.

the competition for funds of the other four Divisions of the Foundation (created in 1929 and now rapidly growing up), and a new President.\*) Russell had been able to obtain from the Trustess adequate funds for both the laboratory and the widespread public health and field activities of the Division, including considerable outlays for the building, equipment and endowment of schools, and institutes of health. His average annual budget over a period of 13 years was three and one-quarter million dollars; Sawyer had to do with a million dollars less. Forced to retrench, he followed his inclination and satisfied the exceptional demands of the times by giving priority to the investigation of communicable diseases so that during the nine years of his directorship he spent roughly three times as much as Russell on the Laboratories and one-third as much on promoting state and local health services.

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\*Dr. Raymond B. Fosdick, 1936-48.

15. Perhaps the most undesirable consequence of wartime pressures and dislocations was the almost complete divorce in the end of the Laboratories from the field and public health program of the IHD. A cleavage had been developing for some time as each engaged in activities in which the other could take no fruitful part. Field studies and operations in hookworm, malaria, tuberculosis, rabies, undulant fever and malnutrition in various parts of the world had not raised problems which necessitated the collaboration of a base laboratory; in this respect yellow fever had proved to be a brilliant exception rather than the rule. But even in yellow fever, the Laboratory, in its dedication to the perfection and manufacture of an attenuated living vaccine, had almost lost touch with the epidemiological work going on in the forests of Africa and South America, while its intensive studies of induced immunity in influenza, malaria and typhus fever had no relation at all to any projects of the IHD in the field. It had become in effect an immunological laboratory. Since all the activities

(note attached to yellow p. 31-chap. 10)

## Causes of Malnutrition

Inadequate food production

Low purchasing power of the population

Defective dietary habits

Absence of gross malnutrition is not evidence of nutritional adequacy.

Clinical cases of malnutrition represent only a fraction of the total.

Growth and development of children, resistance to infection, physical and mental fitness often affected in the absence of overt manifestations of malnutrition.

Only long-term studies can help determine the role played by minor quality and quantity deficiencies.

were related in some way to the war, this dissociation was considered to be largely unavoidable and temporary, so that no one was concerned about it at the time.

16. On the contrary, owing to a Trustees' action in 1934, it was generally considered that the IHD staff was now permanently unified as it never had been before. Until Sawyer's time the staff had always been divided into two distinct categories, "field directors" and "special members," appointed on different terms and listed separately in the annual reports. Under Rose, the distinction lay between public health men with indefinite tenure (although they were reappointed annually) and those appointed for specific purposes or to jobs presumed to be of limited duration. This solved the problem of what to do with experts and specialists on the staff who had accomplished what they had been employed to do. For many years, for example, all the professional men working on yellow fever were special staff members since the expected early eradication of the disease would render

their services no longer necessary. Under Russell this classification grew impracticable; the research projects which Rose created to solve specific problems were now merged with the general program; yellow fever had become perennial; the laboratory staff enjoyed the same tenure as the field staff; and temporary appointments became infrequent. Russell, in the end, divided his staff into those with public health training and administrative experience in the field (all M.D.'s<sup>\*</sup>) and the rest who comprised scientists, specialists of all sorts (mainly yellow fever workers) engineers, nurses and newly appointed personnel in the probationary period - a diversified group with a wide range of salaries and ineligible to the RF pension scheme. The economic aspects of such segregation disturbed the Trustees, who acted to homogenize the staff when Sawyer was appointed Director and placed everybody on the same footing as to tenure, salary, scale, and pension rights.

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\* With one exception, Miss F. Elisabeth Crowell, the Consultant in Nursing.

17.           However, the Trustees with a stroke of the pen could not abolish the essential division between the laboratory staff and what Russell called his public health staff, whose members were no more interchangeable than before. The split feared by the early Scientific Directors was a fact. In effect, there were now at the end of the war two staffs enjoying a minimum of common purpose and intercommunication; the men with scientific training, now in great demand, and the doctors, nurses and engineers normally engaged in health consultation work and epidemiology abroad, whose assignments had been dislocated by the war. There was a feeling among many of the older members of the staff, who had a vested interest in a basic public-health program, that in the 20 years since Rose had relinquished the helm there had occurred something more radical than a shift of emphasis due to a time of war; that the IHD was changing its bearings under the pressure of new currents of opinion and was no longer heading toward the goals for which it had been

established, and which had brought it to the pinnacle of its prestige and influence. If the course had indeed been altered, this had begun with the creation of the IHD Laboratories; had been accentuated by the war and fostered by two Directors in succession who believed that an intensive effort to increase our knowledge of the great diseases gave promise of more enduring benefits than trials and demonstrations of modern health practices in all parts of the world.

18. At this juncture Strode became Director of Division (Sept. 1, 1944), and as a public health man by training and persuasion, set about restoring the balance which he felt had been disturbed, much as the final architect of the Tower of Pisa began to correct its inclination while it was still in the course of construction. He foresaw that at the end of the war the Laboratory was liable to embarrass his plan to put the IHD back into the business of working through governments on problems of public health and epidemiology. The Laboratory should play an important role in

this, but its program was such that it had developed fields of its own unrelated to projects of the IHD and its staff obtained the clinical material it required in influenza, typhus, scarlet fever, rabies, nutritional and other diseases without resorting to IHD contacts and machinery in the public health field. Strode would need more public health men, but with the cost of everything going up he could not expect to increase the staff he had inherited from Sawyer or probably even to maintain it.<sup>\*</sup> More disquieting than all, there was as yet no firm program in view for the Laboratory after the war, which might be over within a year.

19. Strode went into the purpose and scope of the Laboratory in some detail at his first meeting with the Scientific Directors in October, 1944. The future held many uncertainties, but with all the destruction and dislocation which had taken place there

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\* In 1945 the staff comprised 27 scientists engaged in special fields of laboratory research, 21 medical and public health personnel working abroad on the epidemiology and control of specific diseases, and 22 public health administrators.

was bound to be great need of technical and financial aid in the old and new nations alike. This would be the "primary" activity, to "aim at better permanent government health work," while the Laboratory program would be "secondary," in the sense of supporting the first by "extension of knowledge which may be necessary for the primary group of activities to attain success." Here was the new laboratory policy in a nutshell, a return to the original concept of the function of the Laboratories when they were released from their restriction to yellow fever in 1934.

20.           Reviewing the possibilities open to the Laboratories under such a policy, Strode was forced to discard on consideration many diseases which seemed promising at first sight.\* He passed over without mention a number of diseases which had been taken up in the past by former Directors and then dropped as unsuitable, including amebiasis, cancer, dysentery, scarlet fever, schistosomiasis, typhoid fever, undulant fever and yaws. Then there

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\* GKS, Comments on Policy and Program, mimeographed statement presented at the Oct. 26, 1944 meeting of the Scientific Directors.

were the diseases in which the IHD was still actively interested.

The yellow fever work, the mainstay of the program from the beginning, was obviously "approaching the stage of diminishing returns" and must soon, though not too abruptly, be closed down.

The "interest in typhus fever emerged from the war and the officers are inclined to discontinue it...when peace has returned," especially in view of the number of other groups working on the subject. The other great pestilences besides yellow fever and typhus - cholera, plague and smallpox offered little to reward long-term research; all were preventable by sanitation or immunization and their continued terrorization of certain regions of the globe was due not to lack of knowledge but to lack of effort to control them. Strode listed a number of important diseases - diphtheria, infective hepatitis, rabies, tuberculosis and syphilis, in all of which the IHD still had modest projects on foot, but which for one reason or another had remained of minor interest. With all these candidates out of the running, there

remained three possibilities with all of which the IHD had had considerable experience - the diseases of nutritional deficiency, influenza and malaria.

21. Nutrition, in terms of its importance to the well-being of mankind, might well replace yellow fever in the IHD program in laboratory and field, but it would mean a different kind of laboratory and a staff of biochemists, physiologists and medical nutritionists. Furthermore - a clinching argument against it - a major permanent international organization dedicated to food and nutrition was already in course of formation.\* Rather than compete with this, the IHD might better confine its interest to the public health aspects of nutritional problems through collaboration with health services in their solution (as it was already doing in many places) and with universities in the (both Harvard and Oxford) preparation of specialized personnel (it had assisted the Harvard School of Public Health to establish a Department of Nutrition).

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\* The Food and Agriculture Organization (FAO), a specialized agency of U.N., created at an international conference at Hot Springs, Va., in 1944.

So much for the deficiency diseases. They occupied a prominent position in the printed outline of the IHD program in every annual report; they had never achieved more than a token representation in laboratory or field, and no nutritionist had ever been taken on the staff. As in hookworm disease, progress depended on changing ingrained habits and customs rooted in the traditions of ignorant populations, a process which would extend over more than a generation and imposed a time scale out of proportion to that which the IHD thought it prudent to anticipate for any project. Nevertheless, the avoidance of a problem so general and so outstanding, especially in the tropics, and in which there were still so many unknowns, disturbed the IHD. The amount of space which Strode devoted to it in his brief presentation to the Scientific Directors indicated the attention which the officers had given it, and undoubtedly they welcomed the entrance of the Food and Agriculture Organization into a field which the IHD was unsuited to develop.

22.           It had seemed, some ten years before, to both Russell and Sawyer, that influenza would be a natural successor to yellow fever for the IHD, another virus disease that posed a world-wide problem of first magnitude which had not been solved, and with the fading of yellow fever and the possibility of war-time epidemics, it moved into first place in the IHD Laboratories. The studies of influenza should be continued and extended possibly to include the common cold. (Section omitted at Dr. Hackett's request, see pp.33-34.) Strode was, however, obviously uninterested in influenza, in which both of the IHD field stations had been abandoned, and gave it a short paragraph.

23.           It began to appear that Rose by good judgment and good fortune had in the beginning hit upon the three diseases - hook-worm, yellow fever and malaria - which of them all came nearest to fulfilling his requisites for a sound program for the IHD, and that the developing organization and operations of the IHD had in turn been so molded by them in 30 years that they had

become irreplaceable. Strode was therefore forced almost by exclusion to fall back on malaria, one of the original triad, as the most promising target for a combined field and laboratory attack. Malaria had once before been brought under scientific scrutiny in the Laboratories by Russell in 1934, but while the work in the endemic areas proved continually provocative and productive, on a par with that of yellow fever, the Laboratory, although it greatly enriched our knowledge of the immunology of malaria, failed to suggest any new angle of attack on the disease. Neither Sawyer nor Bauer shared Russell's enthusiasm for malaria; both had had their experience and successes with viruses which now had become the most important and fast moving branch of microbiological investigation. When Coggeshall resigned in 1941 to return to university work, the malaria research project was soon discontinued. The Division remained greatly interested in malaria investigation, maintaining a Station for Malaria Research in Tallahassee, Florida, under one of its own staff

members, Mark F. Boyd, for studies of induced malaria, and supporting malaria research by W.H. Taliaferro at the University of Chicago. During the war, the New York Laboratories collaborated with Professor Louis F. Fieser, of the Department of Chemistry at Harvard University, testing new chemical compounds for their efficacy against malaria parasites in laboratory animals. Strode now suggested a resumption of basic research on malaria. In war and in peace, he said, it was the most important disease in the world, yet there was general recognition of the inadequacy of our knowledge of the internal relations of the parasite with its insect and human hosts. The weapons and the tactics of prevention and control have gradually improved, but "by and large, the same general pattern of attack has been followed by the IHD for the past 29 years, and for that reason alone assessment and reorientation appear indicated...Malaria should in our esteem move to the position of first concern." This time new knowledge should be sought by an organized effort to focus

various skills on the problems of host-parasite relations - the microtechniques of enzyme and biochemistry, cytology and insect physiology applied to malariology. He realized that such basic studies must start in the laboratory, but he was confident that "in due course some of them doubtless will be transferred to the field, others will begin in the field, and eventually we would expect a considerable degree of coordination between laboratory and field." This was a return, not to Frost's idea of the laboratory as a servant of the epidemiologist, but rather to Russell's conception of a balanced reciprocity between the two.

24. I have gone into Strode's discussion of the post-war laboratory program in some detail since it proves that there is no basis for the accusations which have been made that Strode had little if any interest in the laboratory of the IHD and was out in fact to suppress it. His whole idea was to assimilate it once more into the main body of the traditional IHD program which he proposed to reestablish as occasion should permit. However, the

appointment of Strode as Director - a conservative in outlook and a public health administrator without scientific background or laboratory experience - seemed to the pessimists to portend a partial if not total eclipse of the laboratory and a return to the school of Wickliffe Rose.

25.           It was this feeling that led Johannes H. Bauer, the Director of the IHD Laboratory, to ask Strode to transfer him to another post a few days after the latter became Director of the Division. This was before Strode had exposed his platform to the Scientific Directors in October 1944, but Bauer had come to his gloomy forebodings as soon as it was known that Strode would succeed Sawyer. "Strode is coming in," he said to one of his friends, "and the laboratory is finished." This belief was confirmed when Strode did not accept his recommendations for increases in salaries and hinted that when yellow fever and the war-time interests were dropped, the staff might have to be cut down. It was clear to Bauer that the laboratory would play second

fiddle to a public health program after the war. There were, of course, other reasons for his desire to quit the laboratory. His single interest for almost 20 years had been in research on yellow fever - he was one of the little group in West Africa in 1927 that succeeded for the first time in infecting a laboratory animal with the virus - and he was now forced to recommend that it be discontinued in the IHD Laboratory, which had done little more during recent years than manufacture yellow fever vaccine to satisfy the world demand during the war. He thought typhus fever studies should be abandoned also as a purely war-time project, and he had little experience or interest in malaria or influenza, neither of which, in his opinion, had given evidence of being a suitable core program for the laboratory. He was out of humor with them both and gave them little scientific leadership. Yellow fever had dominated the scene for a very long time, and Bauer was unable to suggest anything to take its place. More than anything, Bauer missed Sawyer, who had organized the

laboratory, had directed it for seven years and continued to take a proprietary interest in it after he became Director of Division; he used to visit it two or three times a week and Bauer was a constant caller at the Home Office. This rapprochement could not be established with Strode and Bauer, feeling that the laboratory had come to the end of an era, thought it a good time to leave. He was glad to be sent to Europe early in 1945 to await the earliest opportunity to reconnoiter the post-war situation of medical and public health teaching and research. Attached to the International Red Cross, he was able to make his way immediately into Central Europe and the Balkans, entering every country but Albania, and he played a very useful role in the survey and rehabilitation of laboratories and institutes. In his place Max Theiler was made acting director of the IHD Laboratories, a temporary arrangement since he was disinclined to assume permanent administrative responsibilities which would interfere with his research activities.

26. Bauer was the forerunner of a considerable number of scientists lost to the IHD in the years immediately following the war - 13 out of the 25 on Sawyer's staff when he retired.\* Two of the younger men asked (though not for Bauer's reasons) to be transferred to the IHD public health staff where they thought they would be happier than in laboratory research; they were given study leave in a school of hygiene to prepare themselves for their new jobs.\*\* One death occurred, on March 7, 1945, to rob the scientific staff of one of its most valued members, the brilliant entomologist, Raymond C. Shannon, who will be remembered for his incidental discovery in 1930, in the course of yellow fever studies in Northeast Brazil, that Anopheles gambiae, the most efficient malaria vector in the world, had been recently introduced into Brazil from West Africa.\*\*\* Nine other scientists

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\* Strobe's initial staff of 70 was composed of 25 members whose training had been in scientific fields, and 45 with a general medical or public health education, of whom 21 were assigned to the epidemiology and control of specific diseases, and 24 to consulting work in public health.

\*\* Osler L. Peterson, M.D.; John M. Weir, M.D.

\*\*\* This mosquito, after causing a great deal of devastation, was eventually eradicated from Brazil by an immense effort costing over two million dollars, thus arresting an invasion which portended incalculable consequences to the Western Hemisphere.

resigned in the first two years after the war to accept positions offered by other institutions. The exodus, by resignation or reassignment, took place principally from the New York Laboratory which lost seven of the eight men of its war-time staff; in a short time only the acting director, Max Theiler, remained of the group built up by Russell and Sawyer at the "home base." The dozen scientists who were left in the field stations, and many an oldtimer as well, regretted the breaking up of a group which had come to be regarded as one of the finest research teams in the world. A few extremists called it a disaster, foreshadowing the end of a brilliant period in the history of the IHD.

27.       The main criticism, directed at Strode by those who did not sympathize with his policies, was that he had allowed the laboratory to disintegrate by default. They thought that more foresight and concern on the part of the officers could have rescued the laboratory program from the doldrums after the war, and that some attempt should have been made to hold the men who planned to leave,

by offering them more attractive financial conditions. It seemed to the malcontents that a dominating interest in public health work on the part of the new administration was thrusting the laboratory to one side and even threatened to suppress it altogether. Strode's visits to the laboratory were rare, and the contrast with Sawyer's close attention made an unfortunate impression on the staff.

28. Strode was never very conscious of criticism, and while he was aware of discontent among the scientific staff, he had no idea that he was held personally responsible for it. There had always been a sizable turnover in IHD personnel from year to year amounting to about seven per cent of the average staff of 70, and Strode actually lost a smaller proportion of his men

<u>Term</u>			<u>Total Man-years of Staff</u>	<u>Average Staff</u>	<u>Loss by Resignation</u>	<u>Annual Loss by Resignation</u>	
						<u>No.</u>	<u>Per Cent</u>
Rose (6/27/13 - 3/1/23)	9 yrs.		452	50	55	6.1	12.2
Russell (3/1/23 - 9/1/35)	13 yrs.		1,056	81	89	6.8	8.4
Sawyer (9/1/35 - 9/1/44)	9 yrs.		674	75	26	3.0	4.0
Strode (9/1/44 - 4/30/51)	<u>7 yrs.</u>		<u>426</u>	<u>61</u>	<u>22</u>	<u>3.1</u>	<u>5.1</u>
	38 yrs.		2,608	69	192	5.1	7.4

than either Rose or Russell - five per cent as compared with their 12 per cent and  $8\frac{1}{2}$  per cent respectively. Sawyer lost fewest of all since no laboratory men and only four of the public health staff resigned during the war years, 1942-44, and this was doubtless part of the reason for the cumulative wave of departures when the war ended. The men left for the same reasons which led to resignations under Russell and Sawyer - to accept positions which meant a significant advancement, or to take up some inviting type of work which they preferred to that of the IHD. They almost always sought the advice of Strode or his associates before making their decisions which, in spite of current criticisms and apprehensions, did not often involve either the salary question or Strode's new policies and his supposed indifference or even antagonism to the laboratory. Strode had, in fact, the greatest interest in welding the laboratory solidly to the IHD program and had already in 1945 begun to consider remodeling and enlarging the laboratory space. He had no intention of setting the clock

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back to the time of Rose, whose urgent mandate had been to arouse a laggard world to utilize the knowledge then available - a task which someone compared to prodding an elephant to climb upstairs. The Trustees had closed that era in 1928. Strode was in complete agreement with Russell's dictum that "research work and applied knowledge must advance hand-in-hand, since either alone may be sterile;" he wanted to put the laboratory in gear once more with the field work on the diseases selected for attack. And if his own contact with the laboratory personnel was slight, he had on his staff at the Head Office two administrative officers, to whom he carefully listened, and who knew the laboratory well. One was Andrew J. Warren, who for several years was an invaluable link between administration and laboratory, working there at times and getting to know the men and their problems at first hand. The other was Hugh H. Smith, who had been a valued member of the laboratory staff for two years (1935-36) during the most productive period of yellow fever research, and had subsequently spent four

more years on yellow fever projects in South America. Interest in the laboratory situation was never higher among the officers of the IHD, or its future given more serious consideration than during these early post-war years, and Strode cannot justly be accused of looking on it with disfavor and of making no attempt to sustain its waning activities and morale.

29. On the other hand, the laboratory discontent had some basis in fact for which the administration must be held responsible. The salaries were undoubtedly too low in view of the wartime and post-war inflation, as indeed many thought they had always been in the IHD. Rose, a conservative in the matter of salaries, patterned them in the beginning on those of the government services. The missionary spirit plus a turn for adventure were counted on (and not in vain) to attract a desirable type of young doctor and engineer into foreign service, which at that time meant tropical experience under rather primitive conditions. Russell and Sawyer

each raised the average salary by about ten per cent<sup>\*</sup> during his term of office, justified perhaps in their moderation by the great depression and World War II. Strode too was grudging about salaries; he had a budget no larger than Sawyer's, which the Trustees' resolution of 1929 gave him good reason to believe would not be increased. A raise in salaries across the board would oblige him to cut down both his staff and his program, an unwelcome prospect to anyone taking over the reins of a going concern. Both Fosdick and Barnard, Trustees who became successively Presidents of the Foundation, expressed surprise at the low salary scale of the IHD, but Strode might well have repeated what St. Augustine said to God: "thou has counseled a better course than thou hast permitted." In the end, Strode did better than either of his predecessors, raising the average salary by about 25 per cent and reducing his staff proportionately from 70 to 52, which he accomplished painlessly by filling less than half the vacancies

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\* From "Note on Expenditures of the IHD, 1913-1949," prepared for the RF Commission on Review of the IHD, p. 8 (table)

caused by resignation, retirement and death. Even so, this tardy salary adjustment failed to keep pace with inflation; the dollar lost almost half of its purchasing power in the decade from 1940 to 1950. The situation was unsatisfactory and the corrective measures inadequate, yet the salary question did not seem to figure as an important factor in most resignations.

30.           The quandary with respect to a new and long-term program in which the IHD got bogged down as it sought to tie in the laboratory with the field was more unsettling. The pressure of the diverse wartime activities suddenly slumped, and this seemed to have caught the administration unprepared with a firm and rounded program to replace the fading activities in yellow fever, influenza, typhus and scarlet fever. The officers became absorbed in lists of diseases and could come up with only one which seemed promising and suitable for the IHD laboratory - malaria; but its weakness was that any eventual liaison with the epidemiology and control of the disease in the field was only vague presumption.

The Scientific Directors did not rise to the occasion. They were always complaining that at their stated meetings they did little but consider an agenda of fully elaborated projects, carefully prepared by the officers, which they had no opportunity to discuss informally among themselves and to which, voting as individuals rather than as a committee, they could only give a green or a red light. Now they were faced with a vital problem which was a challenge to their boldness and imagination, but no constructive solution was presented. The laboratory itself came up with no new ideas. Bauer recommended dropping yellow fever and typhus, but volunteered no constructive suggestions. Possibly the staff was not clear as to the role of the laboratory under the new policy, which was interpreted as placing it at the service of the field program of the IHD in the investigation and control of disease. They awaited directives, therefore, from the officers and Scientific Directors. These, on the other hand, looked upon

the relationship as one of collaboration in a common enterprise, and expected the laboratory to cooperate if not indeed to take the initiative in laying plans for the future. But disturbing as the question of laboratory program was at the time, it was not one to discourage anybody to the point of resignation in advance of any announced solution.

31. If, then, it was not the advent of Strode and the announced resurgence of the IHD as an international operating agency in laboratory as well as field which led to the withdrawal of so many of the research staff within a relatively short time after he became Director, it is worth considering for a moment why these scientists resigned, and why indeed no effort was made to retain them. It will throw light on a rather unusual relationship between the IHD and its staff. The IHD Laboratory was quite unlike a university laboratory whose research activities stemmed from the interests of the faculty members who made up its staff. In the IHD, the lines of investigation were determined by the central

administration to fit its current program, as in an industrial organization or a health department. The active interests and specialized skills of the men on the staff were thus a reflection of the laboratory program and not a determinant of it as in the university. This was a deterrent to men of a certain temperament and training. In the first place, it imposed a limitation on the field of pure research. Research in the IHD Laboratory was normally aimed at definite targets - overcoming difficulties and filling gaps in knowledge encountered in attempts to control diseases under a variety of ecological conditions. Basic research was not barred, but there was not the freedom of the university to attack problems of choice and follow promising leads wherever they might go. Scientists are inquisitive and constantly under the temptation to explore inviting bypaths into the unknown. It was on a Sunday that Shannon, enjoying an entomologist's holiday, wandered from the straight road of yellow fever