Address / by W. Osler ; together with report of proceedings in connexion with the opening of the Winter session, Tuesday, October 26, 1909 ; His Excellency the Hon. Whitelaw Reid in the chair.

The London School of Tropical Medicine

(UNIVERSITY OF LONDON)

Under the auspices of His Majesty's Government

IN CONNEXION WITH THE

ALBERT DOCKS BRANCH HOSPITAL

OF THE

SEAMEN'S HOSPITAL SOCIETY

(Incorporated by Act of Parliament, 3° Gul., Cap. 9)

REPORT OF PROCEEDINGS

ON THE OCCASION OF

PROFESSOR W. OSLER, F.R.S.

DELIVERING AN ADDRESS ON

THE NATION AND THE TROPICS

IN CONNEXION WITH THE WINTER SESSION
OF THE SCHOOL

HIS EXCELLENCY THE AMERICAN AMBASSADOR

IN THE CHAIR

TUESDAY, OCTOBER 26th, 1909

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Professor Simpson. Maj. Ronald Ross. Professor Osler. The American Ambassador. Lord Sheffield. Mr. E. Blessig. Mr. P. A. Nairne (Chairman of the Seamen's Hospital Society).

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SEAMEN'S HOSPITAL SOCIETY

The London School of Tropical Medicine

ADDRESS

BY

DR. W. OSLER, F.R.S., &c.

REGIUS PROFESSOR OF MEDICINE AT OXFORD

TOGETHER WITH REPORT OF PROCEEDINGS
IN CONNEXION WITH THE OPENING
OF THE WINTER SESSION
TUESDAY, OCTOBER 26, 1909

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THE LONDON SCHOOL OF TROPICAL MEDICINE.

WINTER SESSION, 1909.

The address was delivered in the Theatre of the School at 3.30, on Tuesday the 26th of October, 1909. Prior to this hour many Visitors inspected the Hospital and School, and there were present :—

His Excellency the American Ambassador, in the Chair.

Professor W. Osler, F.R.S., the orator of the day, and the following :—

Col. A. Alcock, C.I.E., F.R.S., I.M.S. ; E. Blessig, Esq. ; Dr. F. F. Caiger; Dr. R. Carter; Sir Havelock Charles, K.C.V.O. ; Dr. Close ; Dr. C. W. Daniels (Director of the School) ; Major J. Entrican, I.M.S ; Surg.-Gen. Evatt, C.B. ; A. Fiddian, Esq. ; Dr. C. F. Harford; Col. Hendley, I.M.S. ; Professor R. Tanner Hewlett ; Dr. Alfred Lingard ; Sir Francis Lovell, C.M.G. (Dean of the School) ; Sir Patrick Manson, K.C.M.G., F.R.S. ; Professor E. A. Minchin ; Perceval A. Nairne, Esq. (Chairman of the Seamen's Hospital Society) ; C. T. Orford, Esq., Inspector-General ; J. Porter, R.N., C.B. ; Major Ronald Ross, C.B., F.R.S. ; Dr. L. W. Sambon ; Dr. F. M. Sandwith ; Lord Sheffield; Professor W. J. Simpson, C.M.G. ; Dr. J.C. Spillane ; and many others.

The AMERICAN AMBASSADOR, who was received with cheers, said :—My Lords, ladies and gentlemen, I have been honoured with a request to take the Chair this afternoon, and to present the distinguished lecturer of the day. I have never felt that there was an occasion when a mere layman was more out of place in the Chair. Certainly I cannot communicate

to you any information concerning tropical medicine, and certainly, also, the lecturer needs no introduction. Perhaps, however, I might say about him that he is a very excellent example of what America can do with a Canadian when it catches him young (laughter). McGill University brought him to some prominence, but he reached the climax of his fame in Johns Hopkins, and then graduated into his well-earned and dignified repose in Oxford. Without further preface, I have great pleasure in introducing to you Professor Osler (cheers).

Professor Osler then addressed the meeting as follows :—

THE NATION AND THE TROPICS

Gentlemen,

The evolution of our present hopeful condition, like that of organic life, looks uniform; but examined more closely this uniformity disappears in a deeper parallel —the sudden intrusion of apparently new forces which have changed the broad surface of humanity quite as profoundly as did, for example, the glacial period the biology of the northern portions of the globe. Three outstanding events have loosened as a spring the pent-up energies of the modern world—the Greek civilization, the geographic renaissance of the sixteenth century, and the scientific awakening of the nineteenth century. Greek thought not only stripped man for the race, but Greek methods gave him correct principles of training and clear ideas of the nature of the race to be run. Collectively we follow to-day occidental, Greek ideals, and what makes Western civilization such a tissue of inconsistencies is the injection, Anno Domini, of an oriental morality which controls the individual, while powerless to sway the nations. The geographic renaissance has given to the progressive peoples of Europe a new pinnacle of outlook. To the lust of conquest succeeded the lust of commerce, to be followed by the burning zeal to

evangelize ; and then a steady, sober plan of settlement which has encircled the earth with new nations. And the third great outburst of energy is the scientific awakening of the nineteenth century, which has not only placed in his hands a heretofore undreamed of capacity for material progress, but has given to man such a control of nature that at a stroke is removed the chief obstacle to a world-wide dominion.

The expansion of modern Europe, the completion of which was one of the great features of the latter part of the nineteenth century, has opened a broader vista than ever before looked on by humanity. The ascent of man began in the tropics, where the conditions of nature made life easy, and at least four of the six great ancient civilizations—the Egyptian, Phoenician, Assyrian, and Babylonian—rose and fell within, or close to the tropics. Once only in modern times has a tropical people, reaching a high grade of civilization, spread far and wide, in the magic outburst with which the Arabians shook the very foundations of Christianity. In the last four centuries the expansion of Europe has changed the map of the world, and in conflict with the old civilizations in North and South America, and by wholesale appropriations in Asia and Africa, the children of Japhet have gone forth with the Bible in one hand and the sword in the other conquering and to conquer, taking the uttermost parts of the earth for their possession. In the course of this period they have partitioned among them one hemisphere, two continents, and a large part of a third. A glance at the map shows that as a result of this expansion many independent nations have sprung up ; but a very large portion of the conquered earth is still in control of Europe, and linked to it by strong political ties. Practically these countries come in two divisions—the self-governing colonies and the dependencies. A majority of the former are in the temperate regions, and have reached a stage of maturity, and one of them has become

the great nation whose representative honours us to-day with his presence.

Scarcely less important, and vastly greater in extent and population, are the dependencies, nearly all of which fall within the tropics, and with their destiny the problem of the twentieth century is bound up. If we take two lines, 30 degrees north latitude and 30 degrees south latitude, the part of the earth between represents the great heat belt of the tropics, within which lie the whole of Africa, Arabia, India, Burma, the Malay States, Polynesia, the Philippines, Mexico, and the Central American Republics, with the West Indies. Mr. H. O. Becket of the Department of Geography, Oxford, has prepared for me four maps (which I have much pleasure in presenting to the School) showing at a glance the tropical possessions of the four Western nations—England, France, Germany, and the United States.

The following table gives the figures in population and in square miles of territory :—

	Tropical Territory in—				Total Tropical.	Home Country.
	America.	Africa.	Asia.	Pacific.		
France	**440,000** 35,000	**17,700,000** 4,032,000	**18,500,000** 310,000	**80,000** 9,000	**36,720,000** 4,386,000	**39,000,000** 207,000
German Empire	*Nil.*	**11,700,000** 931,500	*Nil.*	**400,000** 96,000	**12,100,000** 1,027,500	**60,000,000** 209,000
United Kingdom	**2,000,000** 109,000	**30,500,000** 1,600,000	**296,600,000** 1,900,000	**1,150,000** 1,400,000	**330,250,000** 5,009,000	**44,500,000** 121,000
United States ..	**305,000** 47,500	*Nil.*	*Nil.*	**7,707,000** 134,500	**8,012,000** 182,000	**76,000,000** 2,970,000

Heavy Figures give Population. Lighter Figures give Area (in square miles).

The tropical world has been appropriated, and this country has a burden of tropical population six times greater than the other three combined. A few comparatively small districts remain either independent, or as yet unexplored, as Abyssinia and parts of Polynesia.

The Double Burden of the White Man.

It is no light burden for the white man to administer this vast trust. It is, indeed, a heavy task, but the responsibility of Empire has been the making of the race. In dealing with subject nations there are only two problems of the first rank—order and health. The first of these may be said to be a speciality of the Anglo-Saxon. Scarlet sins may be laid at his door—there are many pages in the story of his world-exodus which we would fain blot out; too often he has gone forth in the spirit of the Old Testament crying "The sword of the Lord and of Gideon." But heap in one pan of the balance all the grievous tragedies of America and of Australasia, the wholesale destruction of native races, all the bloodshed of India, and the calamities of South Africa, and in the other pan put just the one little word "order," which has everywhere followed the flag, and it alone makes the other kick the beam. Everywhere this has been the special and most successful feature of British rule. We are entering upon a phase in which the natural results of this stable government upon the subject races are shown. Just as at home the fate of the rich is indissolubly bound up with that of the poor, so in the dependencies the fate of the strong and the weak cannot be dissevered; and whether he will bear or whether he will forbear, the brother's keeper doctrine of the strong, helpful brother must be preached to the white man. The responsibility is upon the nation to maintain certain standards which our civilization recognizes as indispensable on the supposition that our Western ideas are right; but we have to meet the fact that the ways of the natives are not our ways, nor their thoughts our thoughts; and yet we place them in such a position that sooner or later they become joint heritors with us of certain civil and social traditions and aspirations. It is in India and the Philippines that the political problem looms large, but no matter how large or how formidable it

must not be allowed to interfere with the great primary function of the Anglo-Saxon as a policeman. There may be a doubt as to the grafting of our manners, and still greater doubt as to the possibility of inculcating our morals; a doubt also as to the wisdom of trying everywhere to force upon them our religion; but you will, I think, agree that the second great function of the nation is to give to the inhabitants of the dependencies, European or natives, good health—a freedom from plague, pestilence, and famine. And this brings me to the main subject of my address, the control of the tropics by sanitation.

The New Crusade.

When the historian gets far enough away from the nineteenth century to see it as a whole, perhaps one feature above all others will attract his attention, since amid all the movements of that wonderful period it has been most directly beneficent to the race. Political, social, religious, intellectual revolutions will demand his comments, but if I am not greatly mistaken the movement upon which he will dwell longest will be the introduction of modern sanitation. It is not possible to ascribe the credit of this to any one man or group of men in any country. The movement arose with the recognition of the true nature of the large division of what we call the infectious diseases, which are responsible for more than one-half of the deaths in the community. This country may claim the merit of having first carried into practical effect sanitary laws, which have resulted in a steadily diminishing mortality from this class. The cholera epidemic in the "fifties" did a great deal to arouse public opinion, and that remarkable group of men, comprising Southwood Smith, Chadwick, Budd, Murchison, Simon, Acland, Buchanan, Russell, and B. W. Richardson, and among laymen Charles Kingsley, put practical sanitation on a scientific basis. They had grasped the conception that the battle had

to be fought against a living contagion, which found in poverty, filth, and wretched homes the conditions for its existence ; and an immense impetus was given when in rapid succession, in the last third of the century, the germs of a large number of the most serious of epidemic diseases were discovered. The sum total has been the abolition of many infections, such as typhus fever ; an extraordinary reduction in others, as in typhoid ; the almost complete abolition of post-operative sepsis through Lister's work ; and the perfecting of a sanitary organization which gives confidence to the public and prevents commercial panics. Think of the shudder that would have passed over this country thirty years ago at the announcement of an outbreak of cholera in Rotterdam, yet in August last the presence of ten cases in that city was simply commented upon, but none felt the slightest anxiety. Altogether we may say that the home defences are in a fairly satisfactory condition, but there remain the complete victory over typhoid fever, the progressive reduction in the mortality from tuberculosis, and the limitation of the still very fatal diseases of childhood, and we have not arranged yet even a truce with that subtle and very progressive foe, cancer.

This flowery and flattering picture is true of the little island which forms the centre, and it is true, fortunately to a great extent of the Confederated States, but when we take a glance at the empire at large, at the huge area which we see represented on the map, we find a totally different state of affairs. Out of the total population 60,000,000 perhaps live under good and constantly improving sanitary conditions, but of the vast dependencies with their teeming millions there is a very different story to be told. With an awakening of an interest in the Tropics men have learned to recognize the primary importance of good health and the possibility of mitigating conditions which favour the persistence of wide spread and destructive epidemics. Of tropical

diseases of the first importance may be mentioned malaria, plague, cholera, yellow fever, dysentery, beriberi, and relapsing fever, and certain parasitic disorders as ankylostomiasis. They vary in their prevalence in different localities, but together they make the Tropics' great enemies. It is interesting to note that of all but one we know the germs, the conditions of their growth, and in nearly all the mode of propagation. Quietly but surely this great work has been accomplished by a group of patient investigators, many of whom have sacrificed health and life in their endeavours. Let us pause a moment to pay a tribute of gratitude to those saviours of humanity who have made the new mission possible—to Pasteur, to Koch, to Laveran, to Reed and his fellows, to Ross, Manson, and Bruce. And let us not forget that they built upon foundations laid by thousands of silent workers whose names we have forgotten. A great literature exists in the contributions published during the past century by the members of the medical department of the old East India Company service and of the army in both the East and West Indies. I should like to awaken in your memories the names of Lind, Annesley, Moorehead, Pringle, Ballingall, MacGregor, Hillary, Waring, Cheevers, Parkes, Malcolmson, and Fayrer. Many did work of the very first quality with very little recognition at home or abroad. I sometimes think of the pathetic letters received from that splendid investigator Vandyke Carter of Bombay, the first in India to confirm the modern studies upon malaria in the early days when we were both working at the subject, how he spoke of his isolation, the difficulties under which he struggled, the impossibility of arousing the apathy of the officials, and the scepticism as to the utility of science.

No one has expressed more deeply this sentiment of lonely isolation in the Tropics than Ronald Ross in his poem *In Exile* :—

Long, long the barren years;
Long, long, O God, hast Thou
Appointed for our tears
This term of exile.

Few have been able to sing with him the paean of victory when he discovered the mode of dissemination of malaria through the mosquito—

Seeking His secret deeds
With tears and toiling breath,
I find thy cunning seeds
O million-murdering death.

And the pathway of victory is strewn with the bodies of men who have cheerfully laid down their lives in the search for the secrets of these deadly diseases—true martyrs of science, such as were Myers, my friend and former assistant, Lazear (both of whom died from yellow fever), Dutton, and young Manson. Of them may fitly be sung in words from the noblest of all American poems, that in which Lowell pays a tribute to the young Harvard men who fell in the war of secession :—

Many in sad faith sought for her,
Many with crossed hands sighed for her;
But these, our brothers, fought for her,
At life's dear peril wrought for her,
So loved her that they died for her.

As a result of twenty-five years' work we have an extraordinary volume of knowledge concerning the causes of most of the tropical diseases and the nature of the measures required for their prevention. And yet when one considers the existing conditions it is safe to say that our task has scarcely begun. When we read in *The Lancet* of October 23 that during the last four months of 1908 400,000 deaths from fever were reported in the Punjab, and that it is estimated that a fourth of the total population of the province suffered from malaria, one realizes the truth of such a statement. And yet the situation is one full of encouragement, particularly in connexion with the

practical prevention of insect-borne diseases. For centuries there has been a popular belief in the transmission of disease through mosquitoes and flies, and in the middle of the nineteenth century that remarkable clinician and anthropologist, Nott of Mobile, suggested the association between the mosquito and yellow fever and malaria. A more scientific presentation of the question was made by the French physician Beauperthuy, an enthusiastic student of the epidemics in the Spanish Main. But the first clear demonstration of a mosquito-borne disease was made by Manson in the case of filariasis. The whole story is told in a fascinating way in Sir Rubert Boyce's just issued work, *The Mosquito or Man: the Conquest of the Tropical World.* The discovery by Laveran in 1880 of the parasite of malaria, the demonstration by Ross in 1897 of the part played by the mosquito in its transmission, have a greater significance for a greater number of persons than any single observations ever made in connexion with disease. Then followed in 1900 the demonstration by the American Army Commissioners, Reed, Carroll, Agramonte, and Lazear of the transmission of yellow fever by the mosquito. Many scientific discoveries have afforded brilliant illustrations of the course to be followed in a modern research ; but one is at a loss to know which to admire most, the extraordinary accuracy and precision of the experiments, or the heroism of the men, officers and rank-and-file, who carried them out, all the time playing with death and some of them paying the penalty. The conditions were favourable to the demonstration on a large scale of the practical value of the discovery. It was a fortunate thing that the head of the American occupation of Cuba was General Leonard Wood, himself a well-trained physician, and deeply interested in problems of sanitation. Backed by the military arm it took Dr. Gorgas and his colleagues nine months to clear Havana, which had been for centuries a stronghold of the disease. With the exception of a slight outbreak after the withdrawal of

the American troops the city has remained free from yellow fever. What is even more important, in the great centres in South America, particularly in Rio, similar measures have been carried out with signal success ; indeed, we may say that the possibility is in sight of the extermination of one of the world's greatest plagues, which has cost millions of lives and has at intervals interrupted the commerce of half a continent.

I mentioned yellow fever first because its history illustrates the importance of effective organization. It has been an added merit to Dr. Ross's great merit that, like the fiery Peter of old, he has preached a ceaseless crusade in favour of organized effort against malaria. Every one knows that the control of the Tropics is bound up with this disease, and it is a problem the practical solution of which will tax to the uttermost the organizing capacity of the Anglo-Saxon. A singularly happy combination of circumstances has demonstrated on a large scale the efficiency of modern sanitary measures in one of the world's greatest death-traps.

The Story of the Panama Canal.

In a general way the story of the Panama Canal is well known, but as I do not think an up-to-date version has ever been presented to the British public I propose to tell you in a few words a marvellous history of sanitary organization. The narrow Isthmus separating the two great oceans and joining the two great continents, has borne for four centuries an evil repute as the white man's grave. Silent upon the peak of Darien stout Cortez with eagle eye gazed at the Pacific. As early as 1520 Saavedra proposed to cut a canal through the Isthmus. There the first city was founded in the new world which still bears the name Panama. Spaniards, English, and French fought along its coasts ; to it the founder of the Bank of England took his ill-fated colony ; Raleigh, Drake,

Morgan the buccaneer, and scores of adventurers seeking gold, found in fever an enemy stronger than the Spaniard. For years the plague-stricken Isthmus was abandoned to the negroes and the half-breeds, until in 1849, stimulated by the gold fever of California, a railway was begun by the American engineers, Totten and Trautwine, and completed in 1855, a railway every tie of which cost the life of a man.

The dream of navigators and practical engineers was taken in hand by Ferdinand de Lesseps in January, 1881. For twenty-three weary years the French company struggled against financial difficulties at home and insuperable sanitary obstacles on the Isthmus. Little did the nineteen Frenchmen who reached Panama in January, 1881, think that the secret of success lay 7,000 miles away with a young countryman of theirs, an army surgeon in Algiers called Laveran, unknown, solitary, unrecognized, who was quietly studying malaria in a military hospital in Algiers, doing work which alone could make possible the completion of their plans.

From the outset the chief obstacle proved to be the fevers. It is a sad record. Within seven months from beginning work the mortality had risen to the rate of 119 per 1,000 for the month. As the number of employees rose, so in a certain measure did the death-rate, which reached the maximum in the month of September, 1885, in the appalling figures of 176·97 deaths per 1,000. This would appear to be about the maximum death-rate of the British Army in the West Indies in the nineteenth century. The average in Jamaica for the twenty years ending 1836 was 101 per 1,000. At several stations it reached as high as 178 per 1,000. But this is nothing to some of the seventeenth-century records, which show that a regiment of 800 lost two-thirds of its strength in a fortnight.[1] The maximum number of employees was in 1887 and 1888 from 15,000 to nearly 18,000. The

[1] Maunsell, Jamaica Branch of the British Medical Association, *Proceedings*, Year 3, No. 12.

maximum mortality in these two years was 72·48 per 1,000. Then for a period of eight or ten years the work lagged, and the total number of men employed annually was for many years under 1,000; a large proportion coloured and the whites chiefly immunes. Only once in these years did the mortality rise above 133 per 1,000, which was in the month of January, 1903, and this seems largely to have been due to an epidemic of small-pox. Yellow fever, malaria, and dysentery were responsible for the large proportion of deaths. From 1890 yellow fever practically disappeared, with the exception of a small epidemic in 1897. During the French occupation 6,283 of the employees died in hospital, thousands died along the course of the canal; many thousands were damaged permanently in health, or died after their return to their homes. In Philadelphia in 1888 I had a telegram from a contractor asking what accommodation could be given in the hospitals for two shiploads of workmen returning from the canal, the great majority of them ill with malaria and dysentery. The mortality had been very high as yellow fever had been raging. One of the ships came to Philadelphia and I do not remember ever to have seen a more appalling sight when these victims of chronic dysentery and malaria were landed; many were anaemic, others worn to the bone, and not a man of them had escaped serious damage. Not 50 per cent. of those who had gone out returned, and a very large proportion of those who landed in New York and Philadelphia died subsequently.

When in 1904 the United States undertook to complete the canal every one felt that the success or failure was largely a matter of sanitary control. The necessary knowledge existed, but under the circumstances could it be made effective? Many were doubtful. Fortunately, there was at the time in the United States army a man who had already served an apprenticeship in Cuba, and to whom more than to any one else was due the disappearance of yellow

fever from that island. I know that to a man the profession in the United States felt that could Dr. Gorgas be given full control of the sanitary affairs of the Panama zone the health problem, which meant the canal problem, would be solved. There was at first a serious difficulty relating to the necessary administrative control by a sanitary officer. In an interview which Dr. Welch and I had with President Roosevelt he keenly felt this difficulty and promised to do his best to have it rectified. It is an open secret that at first, as was perhaps only natural, matters did not go very smoothly, and it took a year or more to get properly organized. Yellow fever recurred on the Isthmus in 1904 and in the early part of 1905. It was really a colossal task in itself to undertake the cleaning of the city of Panama, which had been for centuries a pest-house, and the mortality of which, even after the American occupation, reached one month as high as 71 per 1,000 living. There have been a great many brilliant illustrations of the practical application of science in preserving the health of a community and in saving life, but it is safe to say, considering the circumstances, the past history, and the extraordinary difficulties to be overcome, the work accomplished by the Isthmian Canal Commission is unique. 1905 largely dealt with organization, yellow fever was got rid of, and at the end of the year the total mortality among the whites had fallen to 8 per 1,000, but among the blacks it was still high, 44. For three years with a progressively increasing staff which had risen to above 40,000, of whom more than 12,000 were white, the death-rate progressively fell.

Of the six important tropical diseases, plague, which reached the Isthmus one year, was quickly held in check. Yellow fever, the most dreaded of them all, has not been present for three years. Beriberi, which in 1906 caused 68 deaths, in 1908 caused only 38. The hook-worm disease, ankylostomiasis, has steadily decreased. From the very outset malaria has been taken as a measure of sanitary efficiency.

Throughout the French occupation it was the chief enemy to be considered, not only because of its fatality, but on account of the prolonged incapacity following infection. In 1906 out of every 1,000 employees there were admitted to the hospital, from malaria 821 ; in 1907, 424 ; and in 1908, 282. The mortality from the disease has fallen from 233 in 1906 to 154 in 1907, and 73 in 1908 ; that is to say, with a force more than a third larger in 1908 there were only a third the number of deaths that occurred in 1906. Dysentery, next to malaria the most serious of the tropical diseases in the zone, caused 69 deaths in 1906; 48 in 1907; and in 1908 with nearly 44,000 only 16 deaths. But it is when the general figures are taken that we see the extraordinary reduction that has taken place. Out of every 1,000 engaged in 1908 only a third of the number died that died in 1906, and half the number that died in 1907.

The death-rate among white males has fallen to 3·84 per 1,000. The rate among the 2,674 American women and children connected with the Commission was only 9·72 per 1,000. But by far the most gratifying reduction is among the blacks, the rate of which had fallen to the surprisingly low figure in 1908 of 12·76 per 1,000 ; in 1906 it was 47 per 1,000. A remarkable result is that in 1908 the combined tropical diseases—malaria, dysentery and beri-beri—killed fewer than the two great killing diseases of the temperate zone, pneumonia and tuberculosis—127 in one group and 137 in the other. The whole story is expressed in two words, *effective organization*, and the special value of this experiment in sanitation is that it has been made, and made successfully, in one of the great plague spots of the world.

In the great centres of trade in South America, similar measures have been carried out with signal success. Dr. Cruz has recently told the sanitary story of the city of Rio de Janeiro. Annually, since imported in 1850, yellow fever has been endemic and the cause of a fearful mortality, ranging as high

sometimes as nearly 5,000. Last year there were only four deaths from the disease, this year the city is practically free. The measures which have led to this extraordinary result have been based directly upon the experimental work of the American Havana Commission, and they are practically those which were carried out by Dr. Gorgas in Cuba.

In Italy, in India, in many parts of Africa, and in the United States the anti-malarial campaigns are being pushed with the same vigour and success, but time will not permit me to dwell upon any of these, or upon the brilliant success which has followed the work of Bruce and his colleagues in clearing Malta of Malta fever, but I must stop to refer briefly to certain dark shadows in the picture of tropical medicine. Within ten years the investigations in Africa have shown the wide prevalence of formidable diseases of animal and man, unknown or previously but imperfectly known. The knowledge of the group of diseases caused by the trypanosomes has added terror to tropical life. The dreaded sleeping sickness which now extends over some million of square miles is one of the serious problems of life in Africa. A vigorous plan of campaign has been instituted, and already in Uganda, as the Governor's report shows, there is a steady diminution, and no whites have been attacked since 1906. The public will find in Boyce's book the whole story of the relation of tropical diseases to flies and insects, and this most timely contribution should help to call attention to the medical problem of the tropics and the supreme interest to the nation of these new maladies. I wish I had time to speak of the organized campaign in various parts of the world against the ravages of the anchylostoma. Here again it has been a thorough scientific study of the life history of the parasite by Looss and by Stiles that has enabled us to frame curative and preventive measures. The work of Ashford and his colleague in Porto Rico illustrates how effective these measures may be. It is gratifying

to note that Mr. John D. Rockefeller has given £200,000 to organize a campaign against the disease in the Southern States. But their is a dark spot in our story.

The Recrudescence of Plague.

Certain epidemic diseases are very much like the fabled 'Hydra,' from which so soon as one head was cut off another sprang up to take its place, or what is just as bad grew again. Even the eternal watchfulness which safety demands is not of any avail against the workings of nature when we do not understand her laws, and when we are face to face with certain mysterious phenomena, the sweep of whose orbit we have not yet measured. Geologists tell us of epochs when there must have been a wholesale destruction of certain types, possibly by disease. More than once within historic days it must have seemed as if the very existence of the race was threatened, so vast and overpowering had been an epidemic invasion. No disease had so skaken the foundations of human society as the plague, which in the second century and again in the thirteenth has shown a capacity for wholesale destruction not shared by any other. In reading Abbé Gasquet's picture of the effects of the great pandemic of the thirteenth century, one gets the impression of the loosening of an irresistible cosmic force which swept like a tornado over the earth, leaving it desolate and almost uninhabited. We have traced the orbits of the planets, and the advent again of Halley's comet shows us how fully we understand the stars in their courses, but these are mechanical things, the laws of which are plain and legible in comparison with the many and as yet insoluble problems of life. One of these relates particularly to the extraordinary reappearance or recrudescence of certain epidemic diseases. Twenty years ago when one spoke of the plague, memories were recalled of the history of Athens in the days of Pericles, of Rome in the days of Marcus Aurelius, of

the great pandemics of the Middle Ages, and then of the dwindling smaller epidemics of the sixteenth, seventeenth, and eighteenth centuries. But to the profession and to the world at large the plague was a closed book. A few knew that it lingered in certain centres, but none dreamed that it would again burst like the comet into our orbit. There was a certain fitness that it should have started on a world mission of destruction at Hong-Kong, the port which boasts the largest and most world-wide tonnage. When one considers the dynamic energy of the plague, its power of resistance, its terrible killing capacity, exceeding all known vital forces, who can doubt that had its advent been in the middle instead of at the end of the last century, civilization might have had to face again the prospect of destruction. With slow deliberation since in 1894 it started in Hong-Kong it has reached fifty-two countries in every district of the world (J. M. Eager).

The outbreak in India, which began in 1896, has shown that under suitable conditions the disease has lost none of its old malignancy. With the exception of a slight decrease in the years 1900 and 1906, there has been a constant annual increase in the number of deaths, the total amounting now to between 6,000,000 and 7,000,000. On the whole, in other countries it has been held in check, and for so pandemic a prevalence during fifteen years the total mortality cannot be said to be excessive. The two serious features relate to the difficulty of enforcing successful measures in India, and the extraordinary tenacity it has displayed in spite of the most vigorous measures for its total suppression. It is not without significance that at Glasgow, where there were small outbreaks in 1900 and 1901, two cases occurred in 1907 which could not be traced directly to shipping. As Lucretius says, in describing the great plague in Athens: 'Appalled and doubtful mused the healing Art'; but we have made a great step in our knowledge of the means of its dissemination, and though

we may well be appalled at the virulence of the disease in India, we have no cause to doubt the efficacy of the machinery which is keeping it in check all over the world. As an offset to the dark picture, India is the very country above all others in which the health of the European has progressively improved. The army statistics show an extraordinary reduction in the death-rate from typhoid fever, dysentery, and from malaria. Lord Kitchener remarked the other day that the improvement of the English troops in India in the past ten years was equivalent to adding 2,000 men to the strength of the army.

Plan of Campaign.

I have indicated briefly to you the pressing necessity to take up the heavy burden of securing health in the tropics. To make our knowledge effective, to make it as effective as Dr. Gorgas has done at the Isthmus of Panama, as Ross has done at Ismailia, is the problem which to-day confronts us. Enough has already been accomplished to indicate a successful plan of campaign. Two things are necessary. First, organized centres from which the work may proceed; a model of this sort is the 'Sleeping Sickness' Bureau under the auspices of the Royal Society. The work which it has done and which is under progress shows the value of central organization. Similar central bodies have already dealt with plague and malaria, but these organizations should be placed on a permanent basis and unified in some way under a central Tropical Institute, the different departments of which would be in touch with its workers all over the world.

How fascinating to stand at the window of the Norddeutscher Lloyd's office in Charing Cross and see the chart of the position of every ship of their great fleet as it plies the seas of commerce, and one turns away with a tribute of admiration to enterprise and organization. Given two not unattainable

features, an Imperial Tropical Institute and strong affiliated schools, the health side of the burden of Empire might be undertaken with a staff of highly trained workers who could be sent hither and thither wherever there was a disease to be investigated or a pest-hole to be cleared up. A map would show one hundred or more expeditions planted in India, Africa, and America, all like the Lloyd's ships, a testimony to organization and enterprise. And this is no vain dream. By far the most useful work in British medicine during the past twenty years has been the result of just these carefully planned expeditions, sent out, partly by the liberality of the citizens of Liverpool, particularly Sir Alfred Jones, and partly as commissions by the Government and by the Royal Society. Not only have they added enormously to our knowledge of tropical diseases, particularly of plague, Malta fever, and sleeping sickness, but they have demonstrated the necessity of working at these diseases in the regions of their prevalence. It is not too much to say that the reports of the Liverpool School and of the Royal Society and the Government commissions are among the most valuable contributions made of late in this country to scientific medicine. More than this, there has in consequence taken place an extraordinary awakening of the profession to the importance of tropical disease, societies for its study have been organized in different countries, an International Society has been formed, special journals founded, at large seaports hospital wards devoted entirely to tropical diseases have been opened, and lastly schools for the study of tropical diseases have been organized. And here I come to one of the great factors in securing proper sanitation in the tropics—suitable provision for the training of workers. The country may feel a just pride in the schools which have been started in the two great seaports of the nation. In the hands of Ronald Ross and Rupert Boyce the Liverpool School, founded ten years ago by Sir Alfred Jones, has had a career of exceptional

vigour. Backed by the citizens, and particularly by those princely souls Sir Alfred Jones and Mr. William Johnston, and with the co-operation of the University of Liverpool, it has drawn students and investigators from all parts of the Empire and from foreign countries. As an indication of its vitality I may mention that the school has already dispatched twenty-one research expeditions to the tropics. And I am told that the entire 'plant' of the school and the cost of the expeditions have been less than £75,000, a very modest sum considering the results. Started just ten years ago by the wise support of Mr. Joseph Chamberlain, who will always be gratefully remembered as the statesman who taught us to think tropically, this school has had the great advantage of the guidance and the prestige of the name of Sir Patrick Manson, the dean of all students of tropical medicine. To him more than to any one man we owe the strong position occupied by the subject to-day in Great Britain. You have been singularly fortunate in securing a staff of teachers well known for their researches in tropical medicine, such as Sandwith, Simpson, Duncan, Cantlie, and Sambon, a director of such unusual experience as Daniels, and such well-recognized authorities as Leiper and Wenyon on helminthology and parasitology. In the heart of the Empire, in its richest and largest city, to which all the world pays tribute, one naturally expects a foundation commensurate with its advantages and responsibilities. With the aid of the Government and a few liberal friends a good start has been made and the school has taken a strong position among the educational institutions of the country. In the short time of its existence, it has trained nearly 1,000 men for work in the colonies and dependencies, it has fostered original research in tropical diseases, and it has been an important centre for the diffusion of scientific knowledge. Need I dwell upon its peculiarly fortunate situation in the very midst of the commerce of the world, where sailors from every region congregate, bringing with them the diseases peculiar to their

homes. The possibilities exist for the greatest of all schools of tropical medicine if London will but rise to the occasion. Liberal and encouraging at the outset, the Government has taken the usual course and has thrown upon the public the chief responsibility for its support. After reading a statement of the finances of the school furnished by the secretary, I am astonished that so much good work has been done with so meagre an endowment. Only the self-sacrificing devotion of the staff has enabled the school to achieve its marked success. I am sorry to have to say that neither the City of London as a corporation, nor its rich guilds, nor its citizens have contributed to the cause as might have been expected. The total expenditure on the school has been less than £40,000, a sum not more than sufficient to endow one department. As we all know, the extraordinary demands upon London are met in a way that makes it the centre for all beneficent enterprises. For church missions alone millions are contributed annually. It is not too much to ask for rich endowments for the missions of science.

I have tried to indicate the position which the new crusade occupies in the work of the nation, a work co-ordinate with, and almost of the same importance as, that of maintaining order. We cannot expect much more from the Government, which throws the onus of endowment upon private hands, but it makes the struggle hard when we come into competition with the Government-supported institutions of other countries. London, which should be the centre of the Empire, not alone commercially but in every relation, cannot be said to have kept pace in science with modern demands, and it has never realized its imperial position for post-graduate study. It is not a good thing for the Empire to find that so many of our young men who come from overseas for work slip away to the continent where they find conditions more favourable and better organized. It is not the sort of impression which one would like to have taken away from the Imperial capital.

This great question of tropical sanitation, in which we have only made a start, is bound to loom in larger and larger importance. Of the nations, England has the heaviest responsibility, as the figures I have quoted show ; but she has the advantage of the first start and of strongly ingrained national ideas on the value of health. It is not too late to seize the opportunity. The United States, Germany, France, Holland, and Japan are in the field. Now is the time for new enterprise and a more complete organization. That the Government is friendly and begins to realize the importance of the work is evident in the appointment of an entomological commission ; but this is a vast and complicated problem which needs an organized effort on the lines I have indicated. An Imperial Institute would represent the general staff of an army of sanitation, the expeditionary forces of which could concentrate at any place and could be used for investigation, education, and supervision. Each unit would represent the staff of one of Dr. Gorgas's seventeen divisions of the Panama Canal Zone, and would take hold of an insanitary district and leave it pest free. Affiliated and ancillary would be the two schools which would serve as training colleges for investigators and sanitary administrators. Take, for example, this school. If I were Minister for tropical dependencies and a friend of a Chancellor of the Exchequer with a big balance, I would first establish six professorships, two of tropical medicine with a hospital of 200 beds, a good clinical laboratory, and a system of graded associates and assistants ; a professor of pathology with a separate institute—and the model of the new one at Leipsic would be thought good enough ; a professor of protozoology ; a professor of helminthology ; a professor of entomology—all of whom would have *carte blanche* for their laboratories, museums, and libraries. I would establish subsidiary schools in the tropics, in West Africa, Uganda, and India, which would serve as centres for the mission work in those countries.

By no means a visionary scheme, and well within the possibility of achievement, it would not demand an endowment of more than a couple of millions. Once get the intelligent business men to take up this as a business scheme in the interests of the whole Empire, and they will not, as they never have in the past, shirk their duty, but in slow and steady streams of a few thousands now and then, in big rushes, let us hope, of a hundred thousand now and again, the necessary amount will be made up.

Is it likely that the white man can ever thrive in the tropics except as a sort of exotic, as he is at present in the West and East Indies? As the nations of the north and south increase and multiply, doubling every century, will he find an outlet by settlement in the tropics, or will he simply use them as Rome did Egypt, as a granary? it cannot be said that so far the European has been a success as a settler in the tropics, since no white colony has ever prospered below 30 degrees of northern latitude, but has he ever had a chance? In contact with brown and black races, which have become inured to heat, tolerant of parasites, and more or less immune to the worst of the tropical diseases, he has so far never had an opportunity to show of what he might be capable when placed in really sanitary surroundings. The 8,000 whites now at the Isthmus work eight hours a day in the burning sun, and they with their wives and children thrive and enjoy a health quite as good as dwellers in any town in the United States. Heretofore man has never met nature on equal terms; now science has taught him how to be master, but the knowledge is so new and so recently made effective that we have not the data from which to make a clear judgment. How far the introduction of tropical diseases has accounted for the decadence of Greece has been discussed by W. H. S. Jones and Ronald Ross, who seem to have made out a good case, but given a white race living in the tropics for two generations, and free from malaria and parasitic

anaemia, would it show the hardy vigour at present the characteristic of the Anglo-Saxon? Time alone will tell. Personally I doubt it. Man is a lazy animal, and the best thing that ever happened in his history was when Adam's wife ate the apple and they both were turned out of a tropical Eden to earn their bread by the sweat of their brows. As Sir Charles Dilke has remarked, the banana is the curse of the tropics, and when have ever 'the blossom-fed Lotophagi' done anything for the race? The most successful attempt has been in the English West Indies, but commercial conditions have been adverse, and to-day the negro may be said to possess the islands where the white man lives it is true, but hardly thrives. No, it has been found in the past, and it will be found in the future, that the men of mettle, the men who have made the world their Odyssey, have been reared in Ithaca's rugged Isle 'of hardy youths a nurse of name.' It is good for man to have the 'rebuff that turns earth's smoothness rough', and this is not what he gets amid the fascination and fertility of the tropics, which, as Homer says, breeds—

> A race
> Of proud-lived loiterers that never sow
> Nor put a plant in earth, nor use a plow
> But trust in God for all things.

When Isaiah was discussing the burden of Babylon, the burden of Tyre, and the burden of Egypt, I wonder what he would have said could his prophetic eye have glanced at the map on which is depicted the burden of the British Empire. Surely no nation in history has ever had such a load of responsibility. But fit as it has been in the past it will ever be fit so long as *salus populi* remains *suprema lex*. It only behoves us to see that we are well equipped for the second great task—the task of the future, to give to the teeming millions of our dependencies that greatest of all blessings in life, good health.

The American Ambassador: On the *agenda* I find that after the fascinating address to which we have just listened there are to be 'comments and observations on the address by the Chairman'. I should be a much rasher man, than I suppose myself to be if I ventured on any comments on the address beyond the expression of my admiration. I am far too ignorant of the subject to say anything about the School. I warned you at the beginning that, as a layman, you had a person quite unacquainted with the subject. This I am now able to say, that the lecturer has impressed me with the madness of nations which have great tropical dependencies and do not cultivate tropical medicine. It seems to me that a nation which has such dependencies and neglects the study of tropical medicine is blind to its own interests, and, if there is much communication between the dependencies and the parent Government, that it is blind also to its own safety. There is no tropical sea where the British flag does not float, and no tropical land into which the British people have not penetrated. If you have any interest in those you send out there, it surely behoves you to see to it that you should understand the life to which you are sending them. Every year you send of your best, the flower of your splendid young, British manhood, out to those widely scattered dependencies, and what are you sending these young men to? The very life-giving rays of the sun may be deadly to them. The air they breathe, the water they drink, may carry poison; there serpents bite, mosquitoes may sting, and the tsetse fly may also be deadly to them. What are you going to do for them? Are you going to do anything to help them? Professor Osler has told us very clearly of the dangers to which they are exposed. He has seen, and I have seen, the flag which carried American authority for good or evil to the gem of the Antilles, one of the most beautiful and richest islands in the world, in danger of being driven out by the yellow flag of the pest-house. He has

told you of the conditions which prevail on the Isthmus of Panama. To-day, however, there are 40,000 soldiers there in a huge army of industry attacking a task more colossal than has ever been attempted in that kind in the history of the world. This task is possible only as a result of the studies in tropical medicine and the work of the American scientific men who have grappled with the subject. Great Britain is attempting a much larger thing, over the range of its tropical dependencies, in the work of this School. I shall not go into details, but I am convinced that there is an opportunity at least to spend a great deal more on it than you are doing (hear, hear). I have been through the School, and have been told for instance the large number of students who have to use the microscopes. Even with such an indispensable instrument in your work as the microscope there has to be a sort of 'Box and Cox' arrangement ; each microscope has to serve for more than one person, if you are going to give them all an opportunity of study. I have been shown the limited extent of your laboratories and of the museum, and the necessity for the extension of the premises, as well as other matters which point to the urgent demand for more money. That, however, is not a question for me to urge upon you, but it is a question for the British public. It seems to me that the work which has been done here constitutes the highest possible incentive to those who are responsible for the maintenance of health in your tropical dependencies (cheers). With these alleged 'comments and observations' (laughter) I propose to bring you to a subject which will be more grateful. That is to call upon Professor Simpson to put in practical form the feeling which you have concerning Professor Osler's address (cheers).

Professor Simpson : I am sure I shall be expressing the feelings of those here when I say that we

have felt great pleasure in listening to Professor Osler's eloquent, illuminating, and informing address. I am sure also that the proposal I have to make, of according him a very hearty vote of thanks, will meet with your unanimous approval in every way (cheers). We, who have had the privilege of listening to this address, fully appreciate the delightful manner in which Professor Osler has presented important facts. Those facts are in every way marvellous. He has told of the Panama Canal and the work which has been done there, and what an effective organization has accomplished. He asks that similar effective organization should be spread over the British Empire. We are proud of Professor Osler as professor of medicine at Oxford University. His learning, as you have heard to-day, his scientific work, and his personality, rank him among the famous professors of a famous University. We, on the staff of this London School of Tropical Medicine, are deeply grateful to him for coming here to-day and giving us this address. It is encouraging to us, and to the students, past and present, and I am sure it is encouraging to Sir Patrick Manson, who is our principal, that on the memorable occasion of the tenth anniversary of this school we should be in the fortunate position of having Professor Osler giving an address and His Excellency the American Ambassador presiding at our meeting (cheers). I am not going to refer to any matters that have been mentioned in the address, but it is particularly auspicious that we should have His Excellency presiding here to-day. The American nation is, as you have been told and as we all know, doing an immense amount of splendid work in practical sanitary organization and sanitation. The London School of Tropical Medicine is doing imperial work, and as Imperialists in the best sense of the term we are very glad to see Professor Osler, a Canadian, who has distinguished himself in his native land, and afterwards in the United States, has now come,

rightly, to his position as one of the leaders of the profession in the old country (cheers). We are glad, particularly, that he has come to support our cause, and he has done it in eloquent terms (hear, hear). One observation which struck me, and on which he laid great stress, is the recommendation that there should be an Imperial Tropical Institute (cheers). I think that is a grand idea (cheers), and I hope that those two millions sterling, which Professor Osler thinks desirable, will come in as quickly as possible. I do not always agree with what Professor Osler says. I mean in regard to certain views of his, which, according to the newspapers, are that a man ought to retire at the age of 40 (laughter). In his own case we are glad to see that Professor Osler is the embodiment of a living protest against that idea, and I think there is great hope now for even those who are over 60 (laughter). I have very great pleasure indeed in proposing this hearty vote of thanks to Professor Osler for his splendid address (cheers).

Major Ross: I have great pleasure in seconding this vote of thanks to Professor Osler, whom I have known for a long time. I have a lot of grudges against him, but I will not work them off to-day (laughter). I have come here to praise Caesar, not to bury him (laughter). In the first place, I wish to thank him for his eloquent address, which will long serve as a text for our efforts in practical sanitation and the work of our schools, above all regarding the shortage of money from which I think both the Liverpool and London schools and the whole cause are suffering. The next point is his idea of a Tropical Institute. I hope that very shortly that idea will be acted upon, and that we shall be able to extend our work on the lines that he has suggested. Many and many a time have I thought of this. Sanitation must be centralized. It is a branch of administration which

should not be decentralized. Sanitation is a kind of war, and war to be successful must be centralized. You must have your general and your general staff. I am confident that the same rule must apply to public sanitation. How have the Americans succeeded so well? It is by centralization (hear, hear). We remember the outbreak of yellow fever, how promptly that was suppressed, because there was a centralized system of dealing with it. We are too fond of decentralization, and what it often means is muddle. I do not want to criticize anything with regard to the remarks of Professor Osler. I have simply come to praise him. We consider him in this country, and in the medical profession throughout the world, as one of our great leaders. He is not only a great medical man, but a medical philosopher. All of you have read the many essays which he has written, especially his book *Aequanimitas*, which keeps you calm under all circumstances, even when you are not getting fees (laughter). I must remind you that Professor Osler is one of the pioneers of malarial investigation in America (cheers).

Mr. NAIRNE: It falls to me, as Chairman of the Seamen's Hospital Society, and as Chairman of the London School of Tropical Medicine, to ask you to express your most grateful thanks to His Excellency the Ambassador from the United States of America for coming here to preside over us this afternoon. Perhaps we owe an apology to the Ambassador for bringing him to such a remote and inconvenient part of London, but this arises from the School, which was originated by Mr. Joseph Chamberlain, when he was at the Colonial Office, having been placed in this spot close to the Docks and the Hospital, as affording a better opportunity of dealing with tropical disease than could be found anywhere else in the United Kingdom. The School has called to it students from almost all parts of the earth. Professor Blanchard

of Paris, in a very eloquent speech which he made two or three years ago here, acknowledged in very gracious terms the lead which London and the United Kingdom had taken in the study of tropical medicine. The School has had a good many students from America, including Army and Navy officers. We are glad to hear from Professor Osler that at no distant time a School of Tropical Medicine will probably be established in the United States. We have been gratified, within the last few days, by seeing the work which has been done by the Liverpool School and the London School recognized in the constitution of the Advisory Committee on medical and sanitary questions appointed by the Colonial Office. On that Committee are found the names of Sir Rubert Boyce, of the Liverpool School, Sir Patrick Manson and Professor W. J. Simpson, C.M.G., of the London School, and as Chairman of the Committee, Mr. H. J. Read, C.M.G., of the Colonial Office, one of the Committee of the London School and of the Seamen's Hospitals. We anticipate great results from this Committee (hear, hear). I ask you to give an expression of thanks to the Ambassador for coming this afternoon (cheers).

Sir Patrick Manson, seconding, said : I fancy we may take the presence of the Ambassador perhaps not merely as a personal compliment, but a compliment from the great nation which he represents (cheers). If that is so, we highly appreciate the compliment (hear, hear). We, in England, are inclined to regard ourselves as pioneers in tropical medicine, but America makes a good second, and, if it be true, as Professor Osler said, that presently we are going to have a great tropical school in America, I fancy that the diminutive schools in this country will soon cut a very poor figure. In America they do things on a big scale, but here we have to be content to do them on a very small one. Here it is

a very difficult thing to keep an institution going. It requires all the energy and courage of our Secretary, Mr. P. J. Michelli (cheers). I fancy that when Your Excellency reports, as I hope you will, your presence here, to the President, or whatever authority you report to (laughter), you will tell him that the proposed medical school for the study, in the United States, of tropical diseases meets with our hearty sympathy (cheers). America has no doubt benefited by our experience in the past, and when you are initiating the school you will doubtless remember the matter of funds, and take care that that is properly settled before you begin (hear, hear). Another piece of advice I will venture to give you. I would strongly advise you not to have your future tropical school a mere department of some college or teaching body, but that it should be an independent body with its own hospital, staff, and school (hear, hear). If you do that, you will find that the director of the tropical school will be able to lead you in tropical methods, and he will not be dependent on some governing body that not one-half or one-quarter knows the needs of the work (cheers). In America you have at least three or four great cities where the necessary material for a tropical school can be found, notably in New York and in San Francisco, and in the latter place not only all kinds of diseases but all kinds of men. One thing more in conclusion, for I have kept you too long (cries of 'no, no'). When I was recently in America at one of the universities, I was horrified to find that professors of world-wide reputation were paid a pittance which an ordinary journeyman-tailor would refuse. I hope that when you do institute the school your teachers and professors will be well salaried (hear, hear, and laughter). People are inclined to chastise those they love. I love the American nation, and I do not want to chastise them except in love (hear, hear, and laughter). I have much pleasure in seconding the vote of thanks to

Your Excellency for presiding so gracefully and so effectively (cheers).

The proposition having been carried with acclamation, His Excellency the American Ambassador, who was again received with enthusiasm, said: Professor Osler did not return thanks, but I am told that I should (laughter). All I will say is that I am most grateful to you and to Sir Patrick Manson. I rarely get advice from so eminent a physician for so small a fee (cheers and laughter).

The proceedings then terminated.

APPENDIX.

SPEECH OF LORD SHEFFIELD AT THE DINNER OF THE LONDON SCHOOL OF TROPICAL MEDICINE, Oct. 26, 1909.

MR. CHAIRMAN,—Though I rise to reply to the toast of the guests, yet I find that all the speeches hitherto, whatever their nominal purpose, have been in support of the work of the School. I shall, therefore, not consider myself irrelevant if I devote myself principally to the advocacy of the cause of tropical medicine.

It is not necessary to insist on the fact that at the present day medicine like all the other useful arts rests more and more on a firm basis of independent scientific study.

Formerly doctors inferred the nature of illness from symptoms, and in spite of great acuteness of observation were more or less reduced to guess work in determining the fundamental facts with which they had to cope. Nowadays the healing art lays its foundations in seemingly remote scientific studies in the worlds of physics, chemistry, and biology.

I daresay some of you may remember in that entertaining book *Letters of a Self-made Man to his Son* how the writer who is in the pork trade of Chicago says that when he began business any fool who could drive a hog into a pen could make his fortune in Chicago, whereas now the profit had to be made out of the hoofs and the bristles, and therefore the writer had sent his son to Harvard in order that he might have a wider, a more generalized, and a more intellectual training before he specialized into business activity.

So it is with us in dealing with the various activities of modern life, and above all in dealing with that vital and difficult question, the enabling of white men to live and

do their duty under the conditions of tropical and uncivilized life.

We in this country with our vast tropical dependencies have a greater stake and a greater responsibility than any other country. There have been some observations made to-day as to our looking at this from an Imperial point of view. I do not think it necessary to adopt that attitude in dealing with the question. Some people seem to think when they have looked at a map of the world largely coloured red and have made an appeal to the blessed word 'Imperialism' that there is nothing left for the audience but loud and repeated cheers and a disregard amounting to resentment of all criticisms or detailed consideration.

For my part I do not see that our great self-governing colonies are called upon to assist us or help us in the management and promotion of this work of scientific study. As a rule our great self-governing colonies, if I may still call them so, though they rather resent the description and seek to be known as Dominions, Commonwealths, and what not, lie mainly in the temperate regions and outside the area which is the principal object of our exertions and investigations. It is true that some of Northern Australia lies within the tropical area, and South Africa is also extending its borders so as to include a tropical region. But the bulk of our work lies within those dependencies as to which we at home are largely responsible for administration.

The great commonwealths, rapidly growing under the British flag, are in reality free republics relying upon us for external protection but resolutely determined to have uncontrolled, I might say, uncriticized management of their own affairs.

But as to our tropical dependencies we govern them from the Colonial Office. We find the picked men who go forth from these islands to discharge under the most difficult circumstances the arduous and noble work of creating civilization in lands given over from a prehistoric past to barbarism if not to savagery. We, the British nation, owe it to those whom we send out, and to the populations whose care we have undertaken, to do everything that science guided by

a sense of duty to humanity can do for the progress and welfare of the countries we are considering. And yet I am sorry to say that this noble work of ours, of ascertaining the true scientific basis of tropical medicine and sanitation is in no way aided by the responsible government of the country.

The Colonial Office which must know, or at any rate ought to know, the vital importance of such work as ours has, with the exception of a few special grants for special investigations, never yet obtained any substantial and continuous grant from the treasury to put it on a sound financial basis.

It is not as if our government did not consider these tropical dependencies worth developing. Vast sums have been locked up producing no immediate return, on the supposition that these possessions though not paying their working expenses are capable of development. In East Africa we have at great cost built a railway from Mombasa to the shores of Lake Victoria Nyanza which does not pay its working expenses, and which at one time seemed to be chiefly engaged in supplying human food to the lions who inhabited and still inhabit the country. In Northern Nigeria we paid the Niger company a large sum in order to relieve them of the costly duty of governing the country, while leaving to them the greater part of the profitable resources of the country as to trade and mineral development.

Parliament votes yearly a large sum to meet the deficit in the revenue, and we are now spending considerable sums in making railways in that country. I am not criticizing this expenditure. On the contrary I hope it may in time be productive and repay the capital we have laid out.

But while we spend thus freely, have we duly considered how a much smaller expenditure on such work as that of the tropical school might bring an ample return to the State?

You will agree with me that the men we send out to govern and administer these countries are the pick of the nation. They acquire, while daily risking their lives, a special knowledge and aptitude which is essential if our work is to be properly discharged. But what is the heavy debt of mortality we pay. Every official cut off in his prime

represents a loss of experience and administrative ability hard to replace. But even those who survive are not able to serve us as they might. Many are invalided and cannot return. All are forced to come home at frequent intervals to renew the vitality on which the tropical climate and conditions of life make such serious inroads.

It is now many years since we were taught how great is the saving merely expressed in money of intelligent dealing with sanitary conditions in these tropical countries. Students of sanitary history will remember how Miss Nightingale's exertions brought about through proper and intelligent expenditure such a reduction in the death and invaliding rate of our white army in India as to result in a saving to the nation far beyond the cost of the precautionary measures. You have heard to-day of the marvellous work done by the United States government at the Isthmus of Panama. In England of late years we have done much through the Local Government Board by improved sanitation, better water supply, and other action to diminish the death-rate in the British Isles. Our Local Government inspectors hunt down a case of enteric fever, pursue the contaminated milk cans to the polluted pump or well, peremptorily close a poisonous water supply in a village, and are daily raising the standard of sanitary obligation throughout the country. But in the tropics neglected sanitary precaution, neglect of tracking tropical diseases through science to their ultimate scource—more hidden than the fabled sources of the Nile—these and their fatal consequences as far as our Government is concerned are most inadequately grappled with.

It is left to private efforts, to voluntary benevolence, to discharge a task which should be the duty of the state. I plead earnestly with the nation to act promptly in aid of this great work which shall enable the English race to perform more adequately its duty in these vast regions hitherto left alone and isolated in the forward movement of the world. I am not pleading for the development of these countries because I want openings for British trade, I have no special craving to see the cotton we manufacture grown under the British flag, I have no desire that these colonies should be

induced or encouraged to practise an exclusive or preferential trade with us where their natural interests would seek a wider sphere.

I hold that in taking charge of these vast populations we are trustees for the world, and above all that our first thought should be for the welfare and progress of the races we govern. Any lower idea of our duties would be unworthy of those whom we have sent out, those who have died and those who still live to work for the great idea of progress for all under the guidance of those fitted to lead.

And, Gentlemen, do not let any one say to us that the British treasury is empty, and that it is no use knocking at its door.

Let us consider for a moment how lavishly money is being spent, and ask if a little could not be spared for this important object. We have lately incurred liabilities of more than £9,000,000 a year for old-age pensions. We have a proposal for development grants which are to encourage all kinds of schemes, from afforesting lands up to an elevation of 1,500 feet above the sea, to rounding-off corners of roads to enable motors to travel with impunity without reducing their speed. We are voting large sums in Ireland to extend the holdings of those who have not land enough, to reinstate tenants who have failed and have been evicted, and to start them afresh with State supplied capital.

It seems to me that almost any proposal which has behind it a clique of insistent and persevering electors has a chance of an attentive hearing at the treasury, and ought not we to plead for a little to enable the nation to discharge—not a new duty, not a new speculative enterprise which is not even a duty—but a real existing duty and obligation, one which is imperative if we are to perform the work we have undertaken of governing and civilizing vast tracts of the tropics under British rule and by British agents. I would formulate the modest, almost microscopic demand which I wish to make to-day, and which if granted need not I think be renewed for five years.

I would ask both for ourselves and for the Liverpool School of tropical medicine a yearly grant of about £3,000

and the guarantee of the interest and sinking fund of about £60,000 more to enable the necessary building equipment to be provided. I need not enumerate here the purposes. But I would specially mention a farm worked in common for us and for Liverpool where researches on microbes and the propagation of diseases might be carried on.

These grants would aggregate to about £6,000 a year to each school, an amount which would hardly be detected in a yearly expenditure of nearly £160,000,000.

Gentlemen, I believe that the bulk of those whom I am addressing are past and present students of the school. I am confident I have your sympathy and agreement for the cause I have advocated. I know of no nobler profession than that which you have taken up. The study of disinterested science gives joys which are lasting and satisfying and beyond the possibilities of ordinary men. The great astronomer the mathematician, the chemist pursue truth and search the secrets of nature with a zeal which, either on discovering new truth or if only closing useless avenues of inquiry, brings with it its own reward. But the medical profession links to this intellectual happiness the warmer glow of human fellowship by relief to human suffering and increase of human wellbeing. You are not isolated in your work, you reap your reward in feeling as well as in knowing; but seeing as you do far more completely and clearly than we laymen can do the immense possibilities of the future, and how greatly your work might be furthered, you will I am sure join with me in helping to awaken that public opinion which is the force on which we must rely for stimulating if not for creating public spirit in those who direct our national affairs.

The only permanent income of the London School of Tropical Medicine is as follows:—

Endowment Fund	£1,500
Hon. Edward John Stanley Memorial Fund ...	1,200
	£2,700

giving an annual income of about £120.

The School was opened for study in October, 1899. Since that date 1,006 Students have attended. These may be classified as follows :—

Colonial Medical Service	366
Indian Medical Service	80
Royal Army Medical Corps	13
Royal Navy...	5
Other Governments	49
Missionaries	127
Private Students	364
Veterinary Surgeons	2
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