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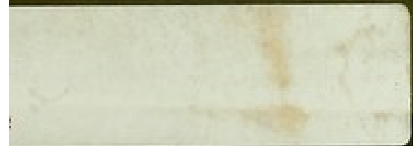
YELLOW FEVER COMMISSION

(WEST AFRICA).

FIRST REPORT.



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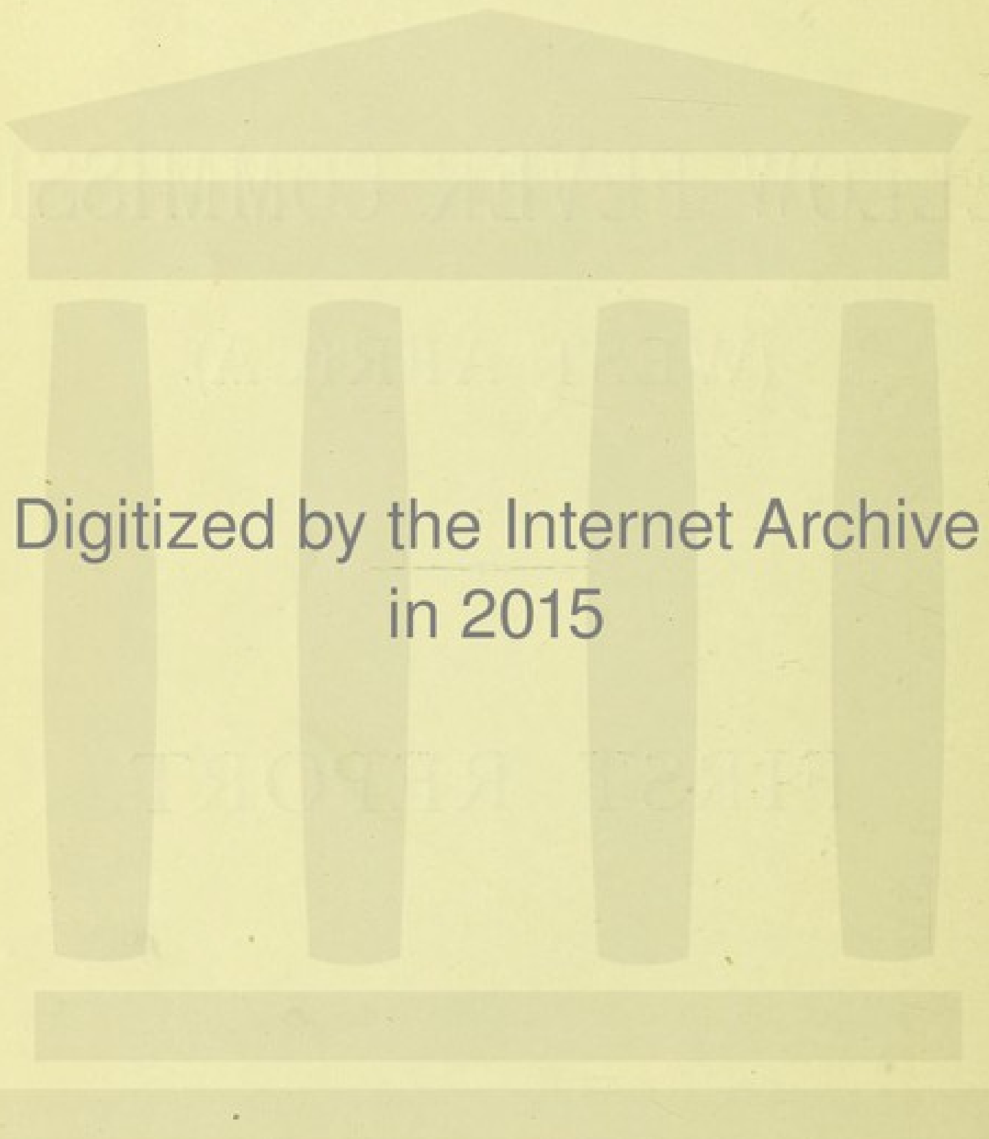

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FIRST REPORT

OF

THE YELLOW FEVER COMMISSION

(WEST AFRICA).

On January 27th, 1913, the undersigned, with Professor W. J. Simpson, C.M.G., M.D., had the honour to be appointed by the Secretary of State for the Colonies a Commission "to study the nature and relative frequency of the fevers occurring among Europeans, natives and others in West Africa, especially with regard to Yellow Fever and its minor manifestations."

2. In May, 1913, Professor Simpson was appointed by the Government to proceed to East Africa to advise as to the health conditions prevailing at Mombasa and in East Africa, and since that date the Commission have not had the advantage of his assistance.

3. The Commission is empowered to present reports, such reports to be submitted to the Advisory Medical and Sanitary Committee for Tropical Africa for transmission to the Secretary of State.

4. The Commission being of opinion that it is advisable that a report on certain matters connected with their work, so far as it has progressed, should be furnished, beg to present this their First Report.

5. The members of the Advisory Committee who subsequently were appointed as the Commission held two meetings, as a sub-committee, to draw up the necessary scheme and instructions for the work of the Commission, and their report, which was adopted by the Advisory Committee, forms Appendix I. (*a*) of this report.*

6. The Commission have held twenty-one meetings and have had interviews with eight members of the West African Medical Staff and six others whose knowledge appeared likely to be of service to the enquiry.

7. The Commission drew up a form which was sent to the West African Medical Staff and to medical practitioners in the various Colonies informing them of the object of the enquiry, and the problems before the Commission, and inviting their co-operation. (Appendix II.)

8. Cards for the record of cases of fever were also sent to the staff and to practitioners with directions as to procedure in the event of the occurrence of a case suspicious of Yellow Fever. (Appendix III.)

9. The Commission have appointed the persons whose names and qualifications for the work are set out in Appendix IV. as Investigators, and they are now, or have been, engaged in West Africa upon the work of the Commission at the centres mentioned therein.

10. The instructions which were given to the Investigators upon their appointment form Appendix V. of this report. Before leaving for West Africa they were in all cases interviewed by the Commission.

11. Dr. J. M. O'Brien, of the West African Medical Staff, upon his own initiative, has proceeded to Guayaquil, Ecuador, one of the chief endemic centres of Yellow Fever, to spend his leave there in the study of that disease. Dr. O'Brien's action has been approved by the Government of the Gold Coast and by the Commission, to whom he will report upon his return.

* The despatch from the Secretary of State to the Governors of the West African Administrations announcing the appointment of the Commission is printed as Appendix I. (*b*).

12. In the selection of the centres at which the Investigators were to work the Commission were influenced mainly by the distribution of the cases of Yellow Fever in the epidemics of 1910, 1911 and 1912, as if the virus of the disease lies latent between the outbreaks it was thought that evidence of its presence would most probably be discovered in such places.

13. As no cases of Yellow Fever had been reported from Southern Nigeria during those years, and as the Principal Medical Officer reported that no suspicious cases of fever had since occurred, no Investigators were at first sent to that Colony, but the Staff of the Medical Research Institute at Lagos were requested to receive and examine any reports and material and to act as the local centre of investigation.

14. Since then an unexpected epidemic of Yellow Fever has occurred at Lagos, where twenty-two cases have been locally diagnosed as such.

15. The staff of the Medical Research Institute at Lagos, with Investigators of the Commission, have observed many of these cases with great care, and their reports and the pathological material from these cases are now, with other reports and material from elsewhere, being examined by the Commission in London.

16. Cases of Yellow Fever have also been diagnosed since the work of the Commission commenced at the following places: Accra (10), Burutu (5), Forcados (1), Abokabi (1), Quittah (3), Abeokuta (5), Warri (2), Cape Coast (1), of which five in Europeans have proved fatal.

17. Scientific observations which, if confirmed, are of the highest importance have been made at Lagos, but the Commission, having regard to the serious responsibility attaching to any official announcement of the kind, unless supported by the strongest evidence, do not propose at this stage of their investigation to do more than mention the fact. The researches are being continued, and Dr. Harald Seidelin, one of the Investigators at Accra, has been ordered by telegram to proceed at once to Lagos and confer with the staff there. It may be mentioned that in 1909 Dr. Seidelin claimed to have

discovered the organism of Yellow Fever, a protozoon-like body which he named *Paraplasma flavigenum*, but the matter is still *sub judice*.

18. Although, as stated above, the Commission intend to exercise the greatest caution before accepting these and other results which the Investigators may claim to have obtained from their researches, they think it right to mention that it may be necessary to allow the Investigators on their own individual responsibility to announce the results of their work, as otherwise they may be forestalled by other observers (and they are many) belonging possibly to other nationalities, who are working at the problems of Yellow Fever. It is certain that such an occurrence would greatly dishearten them.

19. In 1910, when the attention of the Advisory Medical and Sanitary Committee was first drawn to the occurrence of Yellow Fever on the West Coast of Africa, the opinion was expressed that each appearance of the disease in the coast towns was due to its importation from an infected ship. A careful examination of all possible sources of infection of that nature was then made, but with negative results.

20. As regards the cases which have since occurred, no evidence of such a mode of importation has been forthcoming, and their wide distribution and the inland position of some of the centres of infection would tend to negative such a mode of origin.

21. The possibility of the virus being introduced from the interior has not been lost sight of, and maps of the trade routes and lines of native travel from the interior have been prepared and studied, but no evidence of such a mode of transmission has so far been elicited.

22. It is a matter of common knowledge that the late Sir Rubert Boyce, after his visit to the Coast in 1910 at the request of the Government, returned fully convinced that Yellow Fever is endemic in all the West African Colonies, irrespective of nationality, and that the partial immunity of the natives was acquired by infection in childhood and possibly again in later life. His views were thus stated :

> " Those living in a country where disease is endemic at a very early period in their life get an attack of the disease, which naturally confers a certain degree of immunity ; later they may get subsequent attacks, but each successive attack is less serious ;

when manhood is reached the subject is, in all probability, completely immune." (*British Medical Journal, December 3rd*, 1910).
and again :—

"I maintain with the French, German, Brazilian, Cuban and American Investigators in Yellow Fever, that the only way endemic Yellow Fever is kept up is by means of the native residents of any country; and that the way in which the fever becomes obviously manifest is by the breaking out of the disease in its severer or rarer form in the non-immune new arrival of any nationality, and the greater number of these the greater the chance." (*Memorandum for Advisory Medical and Sanitary Committee for Tropical Africa, 17th November*, 1910.)

23. The Commission are not, as the result of their investigations, in a position to affirm or deny the truth of the theory that the natives form the reservoir from which the virus of the disease is from time to time abstracted and distributed by the stegomyia mosquito. If the outcome of the researches which are now being carried on under their direction should be to provide a certain test of the presence of the disease, one of the many difficult problems which now surround the subject of Yellow Fever will be solved.

24. In the report of the sub-committee already referred to (Section 5), some of the problems before the Commission are stated ; of these the first is :—

"The nature of the disease which during the years 1910-11 and 1912 has been locally diagnosed as Yellow Fever, and which has been the cause of a heavy case mortality."

Bearing in mind that accuracy of diagnosis is not at present possible, in the opinion of the Commission that disease was extremely probably Yellow Fever.

25. The second is stated thus :—

"Was it probably the same disease which is recorded in literature under the name of Yellow Fever as having occurred from time to time in the West African Colonies ?"

In the opinion of the Commission the answer is "Yes."

26. The Commission are satisfied that of the cases which have been recently diagnosed at Lagos and elsewhere in West Africa as Yellow Fever a certain number were examples of that disease.

27. As already stated the Commission have obtained no evidence that since the epidemics of 1910-11 and 1912 the disease has been introduced into the Colonies from without.

28. The Commission observe from despatches recently received that the question of the necessity for quarantine for Yellow Fever has been raised. They are of opinion that, with the evidence at present before them on this point, it would be premature to recommend any alteration in the Quarantine Regulations now in force.

29. The Commission do not recommend any relaxation of the regulations as regards observation and removal of contacts and disinfection of dwellings which are now in force. They are of opinion that in dealing with Yellow Fever cases the destruction of the stegomyia mosquito, the screening of patients, and the segregation of the non-immunes are the measures upon which reliance should chiefly be placed.

30. In view of some of the evidence which has been given to them, the Commission conclude that the general measures for the reduction of stegomyia in the towns of the West African Colonies are still very defective, and would urge that this question should receive prompt consideration.

31. At the outset of the investigation the Commission recognised that further research on the nature of the virus of Pappataci fever (Sand-fly fever), a disease which, like Dengue, is closely allied in its manifestations to the milder form of Yellow Fever, might possibly throw light upon the nature of the virus of Yellow Fever, and they desire to thank the Trustees of the Beit Memorial Fellowships for Medical Research for undertaking to bear the cost of such a research. The Army Council kindly consented to Captain Marett, of the Royal Army Medical Corps, who has published valuable papers on the subject of Sand-fly fever, being posted to Malta, where the time not required for his official duties will be devoted to this research.

32. Although this is a first report, the Commission desire to place on record their appreciation of the cordial co-operation they have experienced in their work from the Governments of the various Colonies, the members of the West African Medical Staff, and the appointed Investigators.

33. They specially desire now to record their sense of the very valuable services rendered to them by Dr. T. F. G. Mayer, their Medical Secretary, as he is shortly vacating his appointment at the Colonial Office in order to resume his duties as a member of the West African Medical Staff.

JAMES KINGSTON FOWLER,
R. ROSS.
W. B. LEISHMAN.

7th *October*, 1913.

APPENDIX I. (a.)

REPORT OF THE SUB-COMMITTEE APPOINTED BY THE ADVISORY MEDICAL AND SANITARY COMMITTEE FOR TROPICAL AFRICA TO FORMULATE PROPOSALS FOR THE INVESTIGATION OF THE QUESTION OF YELLOW FEVER IN WEST AFRICA.

At the meeting of December 3rd, the Advisory Committee, on learning that Mr. Harcourt had approved the proposal to appoint a Commission to enquire "whether Yellow Fever exists in West Africa, and if so what is its relation to other fevers," decided to appoint the professional members of the Advisory Committee to be a Sub-Committee to draw up the necessary scheme and instructions, and to have powers to interview members of the West African Medical Staff and other persons; their recommendations to be laid before the main Committee for reconsideration.

The Sub-Committee have met twice. Sir Patrick Manson and Dr. Prout are out of England and Dr. Thomson is ill, and Professor Simpson was unavoidably absent on the first occasion; but with these exceptions all the members attended. Mr. Fiddian and Dr. Mayer acted as Secretaries. Mr. J. A. Pickels, M.B. (Senior Sanitary Officer, Southern Nigeria), was present during the latter part of the first meeting.

Commission.—The Sub-Committee recommend that the four professional members who are now available should be appointed to be the Commission for the purpose of the enquiry.

Powers of Commission.—The Commission should have power:—

(1) Subject to the approval of the Secretary of State, to appoint Investigators to proceed to West Africa or elsewhere; to fix the salaries, allowances, and conditions of service of such Investigators, and to determine their engagements.

(2) To hold interviews with members of the West African Medical Staff and other persons likely to be of assistance in the work of the Commission.

(3) To present reports, from time to time, and a final report; such reports to be submitted to the Advisory Medical and Sanitary Committee for Tropical Africa, for transmission to the Secretary of State.

Object of Enquiry.—They recommend that the object of the enquiry should be defined as "to study the nature and the relative frequency of the fevers occurring among Europeans, natives and others in West Africa, especially with regard to Yellow Fever and other non-malarial fevers in that country."

Problems for Investigators.—In the opinion of the Sub-Committee, the following are some of the problems to which the attention of those engaged in the work of the Commission in this country and elsewhere should be specially directed:—

1. The nature of the disease which during the years 1910-11-12 has been locally diagnosed as Yellow Fever, and which has been the cause of a heavy case mortality.

2. Was it probably the same disease which is recorded in literature under the name of Yellow Fever as having occurred from time to time in the West African Colonies?

3. If this disease was not Yellow Fever was it (*a*) some other recognised disease, or (*b*) a disease of unknown nature?

4. What fevers are known to occur at the present day in epidemic form amongst (*a*) Europeans, (*b*) other non-natives, (*c*) natives in West Africa?

5. What is the clinical course, probable pathology, and mode of infection, in such fevers?

6. What is the probable nature of the fevers which have been termed:—

(*a*) bilious remittent fever,
(*b*) malignant bilious remittent fever,
(*c*) inflammatory, endemial, or acclimatising fever,
(*d*) hyperpyrexial fever,
(*e*) three days' fever,
(*f*) seven days' fever,
(*g*) low fever,
(*h*) febricula?

7. How can these fevers be distinguished from—
   (*a*) Yellow Fever,
   (*b*) Malaria,
   (*c*) other known diseases?

8. Do the following diseases occur in West Africa? If so, to what extent; and are they likely to be mistaken for other diseases of a fatal or mild character:—
   (*a*) dengue fever,
   (*b*) pappataci fever,
   (*c*) typhus,
   (*d*) Rocky Mountain fever,
   (*e*) double continued fever,
   (*f*) typhoid,
   (*g*) paratyphoid,
   (*h*) undulant fever,
   (*i*) para-undulant fever and
   (*j*) cerebro-spinal fever.

9. What are the diseases to which may be attributed the large infant mortality rate amongst the natives?

10. Is there any evidence that some or any of these diseases confer immunity to Yellow Fever, either (*a*) temporary or (*b*) lasting?

11. Is there any evidence of—
   (*a*) racial immunity,
   (*b*) hereditary transmission of immunity?

12. What is the nature of the virus of Yellow Fever?

The Sub-Committee wish to make it plain that the foregoing is not a list of questions to which the Investigators will be expected to find answers, but merely an attempt to define and circumscribe the enquiry in detail.

Initial Plan of Work.—They suggest the following scheme of work:—

1. A study of the reports of the cases of "Yellow Fever" which have recently occurred in the West African Colonies, to be carried out by the members of the Commission in this country.

2. Investigators to be sent, as may be decided in the future, to various towns in West Africa to study the fevers on the spot, according to the following general directions :—

(*a*) To study the nature of all cases of fever, European or native, in the hospitals and dispensaries.

(*b*) To extend the enquiry, where practicable, to similar cases occurring among Europeans or natives outside the hospitals.

(*c*) To make a systematic local investigation of the fevers occurring among natives and others in selected places.

3. A letter to be sent by the Principal Medical Officer of each Colony to the officers of the West African Medical Staff, giving the following information :—

(*a*) Of the appointment and composition of the Commission.

(*b*) Of the problems before the Commission—i.e., the points to which attention should be specially directed.

(*c*) As to the duty of all Government Medical Officers to assist in every way the work of the Commission.

(*d*) As to the names and places of work of Investigators (if any) employed by the Commission in the particular Colony, to whom information is to be immediately sent of all cases occurring within their cognisance, of fever in Europeans and natives, which are not clearly due to ordinary malaria, trypanosomiasis, spirochætiasis, undulant fever, tuberculosis, hepatic abscess, and other well-known causes.

4. Forms for the clinical record of a case of fever to accompany the above letter, and instructions that they are to be used in all cases coming under paragraph (3) section (*d*) as above, whether such case has been notified to an Investigator or not. Forms when filled up, to be sent to the Principal Medical Officer.

5. A somewhat similar letter, with forms to be sent by the Principal Medical Officer to the medical officers of mining companies and private practitioners in each Colony, with the expression of a hope that they will give all possible assistance to the work of the Commission. Forms, when filled up, to be sent to the Principal Medical Officer.

6. Instructions to be given to those in charge of Government hospitals and laboratories that all possible assistance and accommodation are to be afforded to the Investigators of the Commission.

7. Instructions to be given to coroners and those in charge of mortuaries that the Investigators are to be allowed to attend autopsies and to take such material for study as they may require.

Initial Instructions to the Investigators in West Africa.—

1. *A. Pathological Investigations.*—To make an exhaustive diagnostic study of as many cases of fever as possible, by all the means, clinical, microscopic, bacteriological, and chemical at their disposal.

2. Such study to commence with cases in hospitals or dispensaries, and to be extended later, as time and opportunities allow, to outside cases.

3. When individual cases have been clearly shown to be due to ordinary malaria, typhoid, trypanosomiasis, spirochætiasis, undulant fever, tuberculosis, hepatic abscess, and other well-known causes, they need not be studied further, unless they show points of special importance to the investigation.

4. The closest possible attention must be paid to all cases of fever not coming under these headings; and the study of these should be continued daily by all possible means until recovery or death. They include all cases of what may be, or what may resemble, the following diseases :—

(*a*) Yellow fever.
(*b*) Pernicious malaria.
(*c*) Blackwater fever.
(*d*) Typhus.
(*e*) Rocky Mountain fever.
(*f*) Dengue.
(*g*) Seven-days' fever.
(*h*) Pappataci fever.
(*i*) Three-days' fever.

(*j*) Hyperpyrexial fever.
(*k*) Low fever.
(*l*) Double continued fever.
(*m*) Paratyphoid fever.
(*n*) Cerebro-spinal meningitis.
(*o*) Any obscure fevers which do not come under the previous headings.

5. The closest possible attention must also be paid to any pathological conditions which may at times simulate any of the above list of fevers, especially Yellow Fever; such as obscure septic lesions, nephritis, tuberculosis, hepatitis, &c.

6. The greatest care must be given to all cases which lead even to a remote suspicion of Yellow Fever. Minute records must be kept of the fever, the symptoms, and the microscopical, biological, and chemical examinations. The blood should be examined for malaria by thin film, thick film, and wet film, at least thrice a day, and stained specimens should be kept for future study even if no parasites have been found by the observer, and however much quinine has been previously given. Similar studies must be repeated at autopsies, and sufficient material must be retained for subsequent study. Parasite counts may be required.

7. The Investigators may be required to submit all their reports, permanent specimens, and pathological material for study in England.

B. Clinical Investigations.—See 4, 5 under preceding section (Initial plan of work). Specimen card annexed.

C. Epidemiological Investigations.—(To be deferred for consideration at a later period.)

7th January, 1913.

Card Summary of Clinical details of Fever Cases.

(It is suggested that these cards should be issued to all medical men practising in the suspected areas, with an invitation that they should co-operate with the Commission by filling them in, as far as possible, in connection with all cases of fever under their care.)

Name (or initials) of Patient *Race* *Age* *Sex*

Place *Date of attack*

Diagnosis *Result* (Recovery, improvement, death, &c.)

Character of fever

Duration in days *Relapses*

Summarised Temperature Chart

Day of Disease.

—	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
106 ...																														
105 ...																														
104 ...																														
103 ...																														
102 ...																														
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98 ...																														
97 ...																														

Premonitory symptoms (e.g., pain, chill, rigor.)

General appearance (flushing, pallor, conjunctival injection, &c.)
(presence of jaundice and when it first appeared)

Gastric disturbance.—Nausea *Vomiting*

Character of Vomit *Pain*

Stools (frequency, special character of, &c.)

Pulse and Respiration. (Any special feature.)

Nervous System. (Excitement, depression, reflexes, &c.)

Urine.—Quantity *Albumen* *Casts*

Blood *Bile pigments*

Skin.—Rashes *Sweating*

Hæmorrhages

Blood examinations.—Parasites.—Malarial, Filarial, &c. (variety, numbers, frequency of examinations, &c.)

Agglutination *Blood culture*

History of bites by mosquitoes, ticks, &c.

Whether similar cases among family or neighbours

Autopsy (brief summary, if made)

(necessary material to be retained, if possible, for future study if required).

Signature of Medical Officer

Name of town,

district,

Colony,

in which the case occurred.

APPENDIX I. (b.)

THE SECRETARY OF STATE TO THE GOVERNORS OF THE WEST AFRICAN DEPENDENCIES.

DOWNING STREET, 11*th February*, 1913.

SIR,

In my despatch of the 7th February, 1911,* I had the honour to transmit to you copies of the report of the late Sir Rubert Boyce on his visit to West Africa in connection with the outbreak of Yellow Fever in 1910.

2. In the early part of that report Sir R. Boyce discussed the origin of the disease, expressing the opinion that it was endemic in some parts of British West Africa.

3. I informed you in my despatch that this opinion had been discussed in detail by the Advisory Medical and Sanitary Committee, as well as elsewhere, and that pending further investigation the Committee did not desire to express an opinion on the question. I then proceeded to suggest lines on which information might be accumulated with a view to throwing light on the disputed problem.

4. Since that despatch was written a good deal of further evidence has been submitted to the Committee, and they have had the advantage of discussing the matter in detail with medical officers from West Africa, and as the result they have recommended, and I have agreed to, the appointment of a Commission to enquire whether Yellow Fever exists in West Africa, and, if so, what its relation is to other fevers.

---

* No. 4 in [Cd. 5581], March,

5. A Sub-Committee of the Advisory Committee has drawn up proposals for the conduct of this investigation, and their report, of which copies are enclosed, has been adopted by the Committee and has received my approval.

6. I have appointed the following medical men to be members of the Commission :—

Sir James Kingston Fowler, M.D., K.C.V.O., D.Sc., F.R.C.P. (Chairman) ;

Major Sir Ronald Ross, M.D., K.C.B., F.R.C.P., D.P.H., F.R.S. ;

Colonel Sir William Leishman, M.B., R.A.M.C., F.R.S. ;

Professor W. J. R. Simpson, M.D., C.M.G., F.R.C.P., D.P.H.

7. As will be observed from the report it is proposed that the fevers prevalent among the native population shall be the first object of study and that special Investigators should be appointed for the purpose ; and I understand that it is the intention of the Commission that certain specially trained medical men should be sent out from this country and others lent from the West African Medical Staff.

8. The lines on which the investigation will proceed are, I think, sufficiently clear from the report. It remains for me to discuss the question of ways and means.

9. It is naturally at present difficult to furnish more than a roughly approximate estimate of the cost of this investigation, but judging from experience of similar enquiries elsewhere and making allowance for the special expenses entailed by West African conditions, I think that the sum of £5,000 per annum will not be excessive.

10. The Crown Agents have been instructed to open a special account, to be known as the Yellow Fever (West Africa) Commission Account, to be financed in the first instance by advances from Gold Coast funds.

11. I expect to be in a position to inform you on or before August next what provision should be made in the estimates for the ensuing year for the share of the expenses of the Commission which will be properly chargeable to your administration.

12. I hardly think it necessary to dwell at any length upon the importance of the work which is to be assigned to the Commission.

The outbreak in the Gold Coast and Sierra Leone and at a somewhat later date in the Gambia of the disease which has been diagnosed as Yellow Fever and which was productive of so heavy a case mortality among Europeans, is sufficiently disquieting in itself; but regarded from the point of view of its influence on the economic development of West Africa it is a matter of the gravest concern.

13. The vital statistics of the European officials employed in West Africa, as recorded in this Department, are a sufficient indication of the fact that a steady attention to local sanitation and to personal hygiene, coupled with increased knowledge of tropical therapy, are bringing about a progressive decline in sickness and mortality among European residents. This result, which has been achieved in spite of the outbreak in question, must, in process of time impress the public mind with the fact that the evil reputation of West Africa from a health point of view is no longer deserved.

14. But the repeated occurrence of death from so well known and dreaded a cause as Yellow Fever is bound to have the opposite effect, as was indeed sufficiently manifest in 1910 at the time of the outbreak and subsequently. It is hardly necessary for me, I think, to indicate the ways in which the bad reputation of West Africa from a health point of view operates to restrict its progress and commercial prosperity.

15. I am aware that since the outbreak in Bathurst in 1911 admitted cases of Yellow Fever in British West Africa have been sporadic and confined to the Gold Coast. I cannot however attach much importance to this fact, and if Sir R. Boyce's view is correct it would be wrong to do so. I may point out, moreover, that during the last quarter of 1912 there has been a serious outbreak in Senegal.

16. There is moreover a broader aspect of the case which specially appeals to me. The West African Medical Staff was brought into existence primarily for the purpose of looking after the health of European officers, and members of the Staff are also allowed to engage in private practice, which must, in the nature of things, be mainly among Europeans. I should be slow, indeed, to depreciate the value of the services rendered by the Staff to the European community, and I am aware that a great deal of useful work is also done among the

natives ; but it has been borne in upon me from a perusal of the correspondence connected with the present question that it has not been found possible hitherto for any considerable degree of time and attention to be devoted to the scientific study of the fevers of various characters that are prevalent among the indigenous community.

17. It is difficult to blame anyone for this state of things ; the obstacles due to lack of opportunity for following up and studying individual cases, to the calls of work among Europeans, sanitary duties, and so on, may justifiably be pleaded in, at any rate, many cases. This makes it all the more desirable in my judgment that a systematic attempt should be made to carry out an investigation of the less known fevers affecting natives ; and the fact that this can be done as part of a scheme for enquiring into the cause of outbreaks primarily affecting Europeans is, in my opinion, a fortunate coincidence.

18. This investigation will require to be carried out on the spot by specially trained and specially qualified men set apart for the purpose ; but it cannot be too strongly emphasised that no considerable degree of success can be expected to reward their efforts unless the cordial and active co-operation of the medical men already practising in West Africa is secured. I do not mean merely the Government Medical Officers, who, of course, constitute the great majority of the local practitioners ; I hope that it will be found possible to enlist the assistance of all medical men employed in connection with the mines or missionary societies, of the Royal Army Medical Corps, and of qualified native practitioners.

19. For this purpose the cards of which the form is indicated in the enclosed report are being printed for distribution to all medical men in West Africa. I trust that you and your Principal Medical Officer will take such steps as may be possible to ensure the supply by this means of ample clinical records for examination by the Investigators.

20. I shall address you further at a later date with regard to questions of detail and organisation.

I have, &c.,

L. HARCOURT.

APPENDIX II.

CIRCULAR NOTICE TO THE WEST AFRICAN MEDICAL STAFF AND OTHER MEDICAL PRACTITIONERS.

YELLOW FEVER COMMISSION (WEST AFRICA), 1913.

The Secretary of State has appointed a Commission, under the above title. (The names of the Commissioners have already been given).

Object of the Enquiry.

The object of the enquiry is to study the nature and the relative frequency of the fevers occurring amongst the Europeans, natives and others in West Africa, especially with regard to Yellow Fever and its minor manifestations.

DIRECTIONS.

1. It is hoped that all members of the West African Medical Staff, and also the medical practitioners in the various Colonies, will assist in the work of the Commission by filling up the cards for the record of cases of fever in Europeans or natives.

2. The points to which in each case special attention should be given are sufficiently indicated by the headings upon the cards.

3. When individual cases have been clearly shown to be due to ordinary malaria, trypanosomiasis, spirochætiasis, tuberculosis, hepatic abscess, and other well-known causes, they need not be recorded unless they show points of special importance to the investigation.

4. The closest possible attention should be paid to all cases of fever not coming under these headings, and particularly to the signs and symptoms attending the onset of the attack.

NOTE.—It must be borne in mind that obscure septic lesions, nephritis, tuberculosis and hepatitis are conditions which may simulate one or other of the fevers mentioned.

5. The greatest care should be given to all cases which lead even to a remote suspicion of Yellow Fever, and every available method of blood examination, whether by thin film, thick film, or wet film, should be used in order to determine that the case is not one of malaria.

If no parasites are found, stained specimens may nevertheless prove useful for future study, even if quinine has been previously given.

6. Pathological material from cases of interest should also be preserved.

7. In the event of the occurrence of a case suspicious of Yellow Fever or of a group of cases of fever presenting similar characteristics, every effort should be made to communicate the fact to any Investigator appointed by the Commission who may be within reach in order that he may, if possible, either see the cases or suggest points for special investigation.

8. The completed cards, together with clearly labelled blood films and pathological material from individual cases, should be sent to the following officers in the various Colonies :—

GAMBIA : Senior Medical Officer.

SIERRA LEONE : Senior Medical Officer.

GOLD COAST : (Ashanti, Northern Territories, and Western Province of Colony) Senior Medical Officer at Sekondi ; (Central and Eastern Provinces) Senior Medical Officer at Accra.

NORTHERN NIGERIA : } Director, Medical Research Institute,
SOUTHERN NIGERIA : } Yaba, Lagos.

COLONIAL OFFICE,
19th March, 1913.

APPENDIX III.

Case Card, Case Book Form* and Form for Recording the Results of Post-mortem, Bacteriological and Microscopical Examinations.

* The arrangement of the "Case Book Form" is exactly similar to that of the "Case Card," except that it is printed on paper approximating to foolscap size, and more space is allowed for filling in the details.

CASE CARD.

To be left blank.

Name (*or initials*) of Patient________________

Race____________ Tribe____________

Age____________ Sex____________

Place____________ Date of attack____________ Diagnosis____________

Result (*Recovery, improvement, death, &c.*)____________ Character of fever____________

Duration in days____________ Relapses____________

SUMMARISED TEMPERATURE CHART.

	DAY OF DISEASE.																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
106																														
105																														
104																														
103																														
102																														
101																														
100																														
99																														
98																														
97																														

PREMONITORY SYMPTOMS (e.g., *pains, chill, rigor, frontal headache*).

GENERAL APPEARANCE (*flushing, pallor, conjunctival injection, &c.*

Jaundice *and when it first appeared* :—

DIGESTIVE SYSTEM. Tongue ____

Epigastric tenderness ____

Nausea ____

Vomiting—character of Vomit ____

Stools (*frequency, any special character*) ____

PULSE AND RESPIRATION (*any special features, Faget's sign*).

NERVOUS SYSTEM (*Excitement, Depression, Reflexes*).

URINE. Quantity ____ Albumen ____

Blood ____ Casts ____

Bile Pigment ____

SKIN (*Rashes, Sweating, &c.*)

HÆMORRHAGES (*including condition of gums*).

BLOOD EXAMINATIONS.

Malaria parasites (*variety, numbers, frequency of Exams.*)

Other parasites ____

Leucocyte count ____

Agglutination ____

Blood Culture ____

HISTORY OF BITES BY MOSQUITOES, TICKS, &C.

WHETHER SIMILAR CASES AMONG FAMILY OR NEIGHBOURS.

AUTOPSY. Brief summary, if made.
(*Necessary material to be retained, if possible, for future study*).

Signature of M. O. ____

POST MORTEM RECORD.

Skin	*Colour, hypostatic or other conjestion, petechiæ, ecchymoses or purpuric spots, rashes, scars, ulcers, &c.*
General nutrition and development	
Rigor mortis ...	*Any staining or pigmentation of subcutaneous tissues.*
Brain	
Spinal Cord ...	
Membranes .	
Heart	*Weight, condition of muscle and valves.*
Large vessels ...	
Lungs : R. ...	
,, L. ...	
Pleuræ	
Larynx, Trachea, and Bronchi.	

Peritoneum ...	
Stomach ...	*Walls, vessels, mucous membrane, contents.*
Small Intestine...	*Do. do. do.*
Large Intestine...	*Do. do. do.*
Helminths ...	
Liver	*Colour, Weight, consistence, &c.*
Gall Bladder ...	*Contents, &c.*
Pancreas ...	
Spleen	*Weight, colour, consistence, pigmentation.*
Kidneys : R. ...	*Weight, size, capsule, hæmorrhages.*
„ L. ...	
Suprarenal capsules	
Lymphatic system	
Bladder	*Contents.*
Ovaries	*Hæmorrhages.*
Uterus and Fallopian Tubes	

BACTERIOLOGICAL AND MICROSCOPICAL EXAMINATION.

Cultures	*Heart's blood.* *Spleen.* *Gall bladder.* (*Cultivations of the above are desired in all cases where practicable ; also from other sites if suggested by the nature of the case.*)
Microscopical ..	*1. Smear preparations from the following organs, with special reference to the occurrence of bacteria or parasites :—* *(a) Spleen ;* *(b) Liver ;* *(c) Mesenteric glands ;* *(d) Bone marrow ;* *(e) Any other organ or tissue which appears to be abnormal.* *2. Histological examination of sections from the following organs :—* *Liver.* *Spleen.* *Kidney.* *Any other organ or tissue which appears to be abnormal.* *3. Examination of urine (only necessary in the absence of records of examination during life).* *(1.) Albumen.* *(2.) Bile Pigments.*

POST MORTEM DIAGNOSIS AND GENERAL CONCLUSIONS.

APPENDIX IV.

NAMES AND QUALIFICATIONS OF THE INVESTIGATORS APPOINTED BY THE YELLOW FEVER COMMISSION (WEST AFRICA).

AT FREETOWN, SIERRA LEONE:

Major J. C. B. Statham, R.A.M.C., M.R.C.S. (Eng.); L.R.C.P., (Lond.), D.P.H., R.C.P.S. (Eng.); Sanitary Officer, Sierra Leone Command. Major Statham resigned his position as Investigator shortly after his appointment, but continued to do similar work, and to collaborate with Dr. Butler in a private capacity.

G. G. Butler, M.A., M.B., B.C. (Cantab.), M.R.C.S. (Eng.), L.R.C.P. (Lond.); W.A.M.S. (Sierra Leone).

AT SEKONDI, GOLD COAST:—

H. S. Coghill, M.B., Ch.B. (Edin.), D.T.M. & H. (Cantab.); W.A.M.S. (Assistant at the Medical Research Institute, Yaba, Southern Nigeria), late Demonstrator, London School of Tropical Medicine.

H. M. Hänschell, M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.T.M. (Liverpool); late Senior Demonstrator, London School of Tropical Medicine; W.A.M.S. (Gold Coast).

AT ACCRA, GOLD COAST:—

G. E. H. Le Fanu, M.B., C.M. (Aberdeen), D.T.M. (Liverpool); W.A.M.S. (Gold Coast).

Harald Seidelin, M.D. (Copenhagen); Director, Yellow Fever Bureau, Liverpool; late Professor of Pathology and Bacteriology at the Medical School, and Director of Laboratories of the Hospital at O'Horan, Meriba, Yucatan, Mexico.

A. Hutton, M.B., Ch.B. (Aberdeen), D.T.M. & H. (Cantab.); late Demonstrator at the London School of Tropical Medicine; W.A.M.S. (Southern Nigeria).

AT LAGOS, SOUTHERN NIGERIA :—

*T. M. R. Leonard, L.R.C.S., L.R.C.P. (Edin.), L.F.P.S. (Glas.); W.A.M.S. (Southern Nigeria).

*J. W. S. Macfie, B.A. (Cantab.), M.B., Ch.B. (Edin.), D.T.M. (Liverpool), Acting Director, Medical Research Institute, Yaba, Southern Nigeria: W.A.M.S. (Northern Nigeria).

*E. J. Wyler, M.D., B.S. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), W.A.M.S. (Southern Nigeria).

*J. E. L. Johnston, M.B., B.S. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.T.M. & H. (Cantab.), Acting Assistant, Medical Research Institute, Yaba, Southern Nigeria; W.A.M.S. (Northern Nigeria).

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* No definite appointments as Investigators were made at Lagos, but these officers assisted in the work of investigation on and after the outbreak of the disease in May, and Dr. Seidelin proceeded from Accra to Lagos on the 26th September.

APPENDIX V.

YELLOW FEVER COMMISSION (WEST AFRICA), 1913.

INSTRUCTIONS TO INVESTIGATORS.

The objects of the enquiry and the problems before the Commission have already been sufficiently stated in Appendix I. (a), p. 9.

General Scheme of Work.

1. Investigators to be sent to various towns in West Africa to study the fevers on the spot, according to the following general directions:—

(*a*) To study the nature of all cases of fever, European or native, in the hospitals and dispensaries.

(*b*) To extend the enquiry, where practicable, to similar cases occurring among Europeans or natives outside the hospitals.

(*c*) To make a systematic local investigation of the fevers occurring among natives and others in selected places.

(*d*) To undertake special investigations, the nature of which will be dependent upon indications afforded by the work as it proceeds.

2. Cards to be used in recording the details of cases of fever have been issued to all members of the West African Medical Staff and to all medical practitioners in the various Colonies.

3. Instructions have been given to those in charge of Government hospitals and laboratories that all possible assistance and accommodation are to be afforded to the investigators of the Commission.

4 Instructions have been given to coroners and those in charge of mortuaries that the investigators are to be allowed to attend autopsies, and to take such material for study as they may require.

Clinical and Pathological Investigations.

1. Investigators are desired to make an exhaustive diagnostic study of as many cases of fever as possible, by all the means—clinical microscopic, bacteriological, and chemical—at their disposal.

2. Such study to commence with cases in hospitals or dispensaries, and to be extended later, as time and opportunities allow, to outside cases.

3. When individual cases have been clearly shown to be due to ordinary malaria, typhoid, trypanosomiasis, spirochætiasis, undulant fever, tuberculosis, hepatic abscess, and other well-known causes, they need not be studied further, unless they show points of special importance to the investigation.

4. The closest possible attention must be paid to all cases of fever not coming under these headings; and the study of such cases should be continued daily by all possible means until recovery or death.

NOTE.—It must be borne in mind that obscure septic lesions, nephritis, tuberculosis and hepatitis are conditions which may at times simulate one or other of the fevers mentioned.

5. The greatest care must be given to all cases which lead even to a remote suspicion of Yellow Fever. Minute records must be kept of the fever, the symptoms, and the microscopical, biological, and chemical examinations. The blood should be examined for malaria by thin film, thick film, and wet film, at least thrice a day, and stained specimens should be kept for future study even if no parasites have been found by the observer, and however much quinine has been previously given. Similar studies must be repeated at autopsies, and sufficient material must be retained for subsequent study.

The Investigators will not be at liberty to make any communication to the Press or to publish any reports on their work except through the Commission.

7. The Investigators may be required to submit all their permanent specimens and pathological material for study in England.

Method of dealing with Clinical Records and Case-cards.

1. Cases in which the Investigator is unable to make a definite diagnosis should be classified separately as "doubtful," and especial care taken to obtain as full details as possible.

2. As the records of these doubtful cases accumulate the Investigator should endeavour to separate them into groups, and should try to refer later cases to one of these groups.

3. All the case-cards will be seen by the Investigators to whom they are allotted before being sent to London. As these cards come in they should be studied closely with a view to identify cases as belonging to one or other of the groups into which the doubtful cases have been divided or as possible cases of any of the fevers mentioned in paragraphs 3 and 4 (page 1).

4. When sufficient evidence in connexion with a group of cases of undetermined nature is forthcoming in the view either of the Investigators or the Commission, a special research will be organised.

5. Investigators who may observe any indications of importance, either in the course of their own work or from a study of the case-cards, should communicate them to Investigators working in other Colonies and also to the Commission in London.

Colonial Office,
19th March, 1913.

Printed by Waterlow & Sons Limited, London Wall, London.
1914.

The University Library
Leeds

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