

Henry Hanson, MD
Personal Diary of
Rockefeller Foundation
trip to Africa

1925 / Journey to Africa

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The Trip to West Africa.

Nov.14, 1925.

My journey to West Africa began on the 22nd of September 1925 when I left my home town, S&oux City, Iowa, where my children are living in our own home and where they are being cared for by a very competent and intelligent woman, Mrs. Edith B.Austin. As I left them at the station of the Chicago-Milwaukee & St.Paul Railway, I wondered whether the trip would be worth while and whether or not I was justified in leaving them. To this question there was both a positive and a negative answer. On the positive side there was that of the rather extensive experience I have had with yellow fever and yellow fever campaigns. I had exclusive charge of the Peruvian campaign practically from July 1919 until the work was closed on May 20, 1922. During this period I had the unique experience of working with the greatest/^{living} authority on the subject, for most of the year of 1920, namely Dr.Henry R. Carter, Asst. Surgeon General of the United states Public Health Service. (Dr.Carter died September 14, 1925) From Dr.Carter much was learned both in regard to the importance of the great world wide program of which this was a part, and of the best methods for a control campaign. During the period of the peruvian work there were nearly 20 000 cases of yellow fever. It was a work which required for the entire period nearly twomillion house inspections and about five million container inspections. During this work I had the opportunity to see many cases each day, in fact there were more opportunities to see cases than my time as General Director of the work would permit.

After the Peruvian work I was asked to take charge of the outbreak in Colombia. The Colombian focus also involved a survey in Venezuela which was made after the closing of the Colombian campaign. During the summer of 1924 a new outbreak took place in Salvador(Central America) to which place I was asked to go to determine the fact of the existence or non existence in that country. Four months were spent in Central

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America, mostly in Salvador, but Guatemala and Honduras were also visited.

The closing chapter of my Central and South American work consisted of a four months survey in Venezuela, in which I was assisted by Mr. L.D.Dunn, Entomologist and Sr. Arturo Sainz as assistant to Mr. Dunn in the mosquito survey. Having had such a large part in the work on the western hemisphere it seemed that my experience might be of value in West Africa, and if the West African work should succeed it would be worth while having a share in the "final" campaign to rid the world of a serious scourge. However during all this work I had been in charge and the policies were such as my own judgement and experience dictated.

On the negative side there was the very sad necessity of being separated from my motherless children. Is it justifiable. In addition I would for the first time enter a campaign ~~in~~ subordinate capacity with a man whom I had never met, which naturally brought to mind the question as to compatibility among other things. The possibility of working under a policy which might be quite against my judgement was not an inviting prospect. On this point I was assured by the General Director of the I.H.B., that the work would be on recognized principles and that the Director of the West African Yellow Fever Commission was keen, diplomatic and competent. With these assurances I sailed from New York October 3, 1925, arrived in London October 9th, accompanied by Mr. Bryan R. Dyer as a survey assistant. Mr. Dyer has had a considerable experience in yellow fever work in Mexico and Central America. We remained in England until October 21, when we sailed for Lagos, Nigeria, West Africa, on the S.S. Akabo of the Elder-Dempster S.S. Co., A personal record has been made of this trip up to November 2nd, and the present diary will begin with the trip from that date on.

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The first four days of the trip from Liverpool were rather disagreeable and trying on account of the poor accommodations aboard the S.S.Akabo, added to which we had a rather severe storm. There was a more or less continuous effort to hold oneself in place in the limited seating facilities available. About the fourth day ones back and muscles were sore and aching from the continuous contortions due to the lurching and pitching of the ship.

On November 2 we reached Sierra Leone and took advantage of the stop to go ashore. I found the city of Freetown a cleaner and more attractive looking place than I anticipated. There were a number of good concrete buildings and the streets were clean. It was a marked contrast to the ports in Central and South America. The people were all black with the exception of a few Europeans. Due to the limited time which the ship remained in the harbor we only attempted to see a portion of the town and walked through some of the principal streets. Near the market we saw one of the native "medicine men" a witch known as Jew-jew or geu-geu who was dressed in skins and various contraptions entirely hiding face and head. Photos were taken which if successful will appear in the photographic record.

November 3 we were opposite the coast of Liberia and passed close enough to see the buildings quite plainly in Monrovia.

November 4 we were opposite the ^{Ivory} Coast during the morning but soon passed out of sight of land again. Ivory Coast is French territory.

November 5 we saw Axim in the distance on the port bow, this is a place from which a great deal of mahogany is exported. Later in the day about 1 P.M. we reached Sekondi (Seccondoo) where the boatmen were nude except for a very abbreviated loin cloth. Some photos were taken.

November 6 we arrived at Accra the main port on the Gold Coast. Here the greater part of our passengers went ashore.

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At Accra a large deck load of Kola nuts were taken aboard. These were taken by a group of Mahammadan traders dressed in the variegated colors and flowing robes of the tribe. A photo was taken of these.

November 7th we reached Lagos and were docked about 9 A.M. We were met at the Dock by Dr. Beeuwkes, Mr. Bryant and a Dr. Smith who is associated with Dr. Conal in the research laboratory at Yaba.

Dr. Beeuwkes came aboard after the customs officers and sanitay authorities had finished their inspections. Dr. B. greeted us cordially and explained that we would soon leave for Ibadan where Dyer and I would have our headquarters and that we were to determine whether or not Ibadan could be proven to be an endemic centre of the yellow fever in Nigeria. After outlining in a general way what our work was to be we took up the matter of getting our baggage ashore. We were lodged temporarily in the Bible House which is under the direction of a Canadian, a Mr. Banfield. The quarters were very pleasant and both Mr. & Mrs. Banfield very pleasant and intelligent people. They have one boy seven years old, who is the only white child in Lagos. It seems a rather pathetic existence for a child alone and without playmates. Except for a sallow color he appears well and robust.

The temperature on arrival was not found to be as hot and depressing as we expected from the tales which we had been told aboard ship. It appears that all the English have a great fear of the sun, and they claim that the actinic rays here are such that sunstroke is frequent. They never go out without a helmet, and they would not sit under an awning aboard ship without a helmet or hat if it were not a double awning. They claim that one should never go out in the sun between the hours of 8 A.M. and ~~4:30~~ 4:30 P.M. without a sunhelmet, and many claim that a "spine pad" is necessary. To me the climate so far seems much like the climate of Panama.

November 8, is a day which brings both sweet and sad recollections. It is my Wffe's birth day, which unfortunately now can only be celebrated as a sad sweet memory.

November 9, the first day out to the improvised office at Yaba. Here Dr. Beewukes has a sort of makeshift office in his bedroom as he is temporarily living with a Dr. Smith. The situation in Nigeria, and as I understand also in the other British West Adrican Colonies, in that there are no hotels to which a newcomer can go and have anything like the comforts which even a second rate hotel furnishes.

It appears that the British do not want outsiders to mess in in these colonies. This I can in a way understand. These natives are not easy to handle, and added to this the fact of the misguided sentiment at home in England where a society has been formed for the protection of the colored man which has been responsible for fiving these negroes priviledges for which they are scarcely ready. Well of this I am not yet in a position to either judge or comment.

On the first morning in the office we had considerable discussion about the clinical and pathological sides of yellow fever. Not much was said about the epidemiology of the disease.

November 10, was much like the previous day, some general discussions of yellow fever. The Director seems to have quite fixed ideas regarding the entire situation and asks no one's advice about carrying on the work.

November 11, Armistice Day, a legal holiday. The mroning was spent in the mess house, and the afternoon we went to the beach and walked out to a native village ~~skangxika~~ where we saw the people living in a very primitive condition. Some photos were taken.

November 12, In morning went to the office in Yaba and in the afternoon to the Native Hospital to see a case which had been reported as suspicious of yellow fever. Dr. Parkinson whom I met aboard ship (the Akabo) is in charge of this place. The case proved to be a pneumonia.

November 13 marked the arrival of the new Governor for Nigeria. We (Dr. Beeuwkes, Mr. Bryant and I) went to the reception. This is quite an event and the entire place was decorated with banners and flags. A salute of 19 guns were fired as he arrived at the Government House. Welcoming speeches were read both by whites and blacks. Among the assembled crowd there were individulas with rather gaudy robes who I judge were native chiefs.

The Governor's name is Sir. Greame Thomson, and is said to be a very notable man. He made a good impression.

In the afternoon Dr. Beewukes and Dr. Mahaffy left for Warri where Dr. Mahaffy is to carry on some investigations as to the endemicity of yellow fever.

November 14. Much the same. The only new thing was the arrival of the guinea pigs which gave Dr. Muller a bit of work. I moved into the house at Ikoyi. Here I took on my personal servant, Jumbo.

As this was Sunday the day was devoted to letter writing and pratly bringing my diary up to date.

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November 15, Sunday.

November 16, The day was occupied in examining records of the Yellow Fever Commission which was headed by Gen. Noble.

November 17, also was occupied in going over the files and records of the different outbreaks of yellow fever in various parts of the West Coast of Africa.

November 18. In the morning went to Native Hospital to see a case of Guinea Worm. Although this infection is not serious if is quite common. The worm belongs to the group of filaria, and burrows under the surface of the skin, usually travelling down to the feet where it settles and may form a blister or sometimes an abscess. It is extracted by the natives by catching it by the head end and attaching it to a match stick on which it is wound a turn or two each day until entirely extracted. Its length varies from 50 to 80cm.

Later in the morning we called on Dr. Alexander who is the new Director of Health for Nigeria. After the call at the Health Office Mr. Dyer and I went to the European Hospital where we received our inoculations with the vaccine against plague. There are quite a number of cases of bubonic plague in Lagos.

November 19, we went to Yaba early to be there for the visit of the Governor.

A part of the day was spent in helping with the assembling of the office furniture.

November 20, Had a good night and felt much better than the day before. Practically all day was spent in helping the assembly of the office furniture. The condition here is very trying and one must do something to keep one's mental balance. The program here appears rather acephalic, and to make things worse nothing is ready for any progressive work. There is no office. The laboratory is not yet in working order and as far as I can determine the British Laboratory men are not at all keen about having us come into their places to work. It appears to be a case of marking time until we can get our own office and laboratory equipment ready to enable us to gather the data and to look up the necessary needed information in regard to the mosquitoes and other conditions on this coast. All the men here feel the demoralising influence of this enforced idleness. To me there appears to be an attitude of aloofness among the British, possibly this is because each has his own individual problem to deal with and has no time to pay much attention to the newcomer. This is the strangest situation I have found myself in, and I am not reacting well to it. I have previously had all the initiative and to have my hands tied as at present is something which is giving me a very difficult situation to deal with. I disagree with most of the program as I have seen it up to date. None of the men are consulted about their individual specialties, and the Director attempts to direct all the details of each man's work.

The attitude assumed in getting everything possible done by the local authorities free of charge is a thing which is placing us in a situation where we can not ask for certain modifications simply because we are obtaining them gratis. The plumbing and electric wiring has been secured free of charge as a result of which we can not ask to have certain necessary additions and modifications.

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In the morning went out to Yaba as usual and on arriving called at the Research Laboratories. While there the Connals told us that they were leaving and that they would close the house on the 4th of December. It seems that they were a little concerned as to whether or not Muller would have his quarters ready so that he could move out of their place.

Went to the offices and found that there was nothing I could do to hasten the progress of the work, hence returned to the Smith house, which had served as a temporary office, to read some more of the reports of the British Yellow Fever Commission. 1910 appears to be a date when the British gave the first serious recognition to the existence of yellow fever in their West African Colonies.

In the afternoon I remained at the mess house with the intention to read and write, but on account of the heat and the sun entering my room did not accomplish much.

In the evening when Dr. Muller and Gassanoff arrived we found that Dr. Smith had notified them that he was leaving and that Gassanoff who had occupied his quarters would have to move out. I do not blame Smith for this as Gassanoff is neither American nor British, and naturally it is inconvenient for Smith to have a stranger of this kind in his house.

The situation here however appears rather strange. Since the arrival of Dyer and myself we have been left quite decidedly alone, i.e., the entire y.f. staff. There has been no effort at social intermingling. We are not making any effort to mingle until there is some evidence that our company is desired by the British. The attitude to me appears to be a sort of resentment of something which has occurred before our arrival, and so far as I can judge at the present time the Y.F.C., is not enthusiastically received. For this I think there are several reasons, one being that the Director has on some occasions contradicted the officials here on figures which they should know due to the fact that they have lived in the country. Another thing is that I believe too much effort has been made to obtain concessions and indirectly financial aid. The present person personnel has been brought before anything is ready for work and we are simply marking time waiting for quarters to be finished.

One great difficulty of the work here is going to be that there are no hotels to which we can go when we wish to start our investigations. One must forcibly be the guest of some official or private party, which is annoying to those in whose houses one must go, and to us in that we can not help feeling that we are intruders and always under obligations.

November 22. Sunday.

The new Ford Sedan has been delivered and during the morning I tried this out. It is a good many years since I drove a Ford but it will be only a matter of getting accustomed to the foot shifts before I will feel confidence in my driving again.

During the afternoon began reading "West Africa" by Capt. H. Osman Newland. Edited by Evans Lewin, M.B.E., Published by Daniel O'Connor, at 90 Great Russell St., W.C.I., London. (1922)

For the British West African Colonies, there is no report or volume covering the whole of the British West African Colonies, and no administrative body save the Colonial Office that is responsible for coordinating the activities of the various colonies, or for imposing a policy of co-operation.

The French African territories have been brought together in two great areas, French West Africa and French Equatorial Africa each under a Governor General and central administrative authority but each with specific colonies and enjoying considerable local independence.

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In the morning of Nov. 23 I drove the new Sedan out to Yaba, and a little later Mr. Dyer and I went to the "Europa Hospital" for our second inoculation of anti-plague vaccine.

In the afternoon I remained at the "mess house" working on my papers. During the afternoon, Sam, Dunn's boy came in complaining that his left eye hurt him. On examination I found the sclera much injected on the outer left and found that there was a Filaria loa working its way about under the sheath. It was curved into an irregular S shape when first seen. It appeared to be about $\frac{1}{3}$ mm in diameter and about $\frac{1}{2}$ in. to $\frac{1}{4}$ in. in length. About 15 min. later when I again looked at the eye the filaria had disappeared, probably migrated out to the outer canthus. This infection is transmitted by a species of mangrove fly, the Chrysops. The Connals have noted the development of a larva in C. dimidiata, and C. silacea (Stitt page 450).

November 24.

The usual routine going over of files, during the morning. In the afternoon I went with Dr. Muller and Mr. Dyer to see a horse with trypanosomiasis. The horse belonged to Mr. Pyle of the cable office. Mr. Pyle accompanied us and demonstrated the disease in the horse, whom they called "sleepy eyes". The horse was standing in a corner with eyes closed as if in sleep. He was very weak and looked as if a beginning paralysis were attacking the posterior extremities. He had had a previous attack for which a dose of tryparsamide and had shown considerable improvement, but was now in a stage of relapse. The disease is transmitted by the tsetse fly, Glossina palpalis and the ~~Glossina~~ Glossina morsitans, the etiological agent in the case of the horses and cattle is Trypanosoma brucei, and is a disease which is highly fatal among both horses and cattle. At the stable seen by us seven horses found infected have all died. This disease is similar to the Derengadera in horses in Panama and South America.

November 25.

The only variation from the growing monotony consisted in a call at Government House to sign the books. Here each new arrival is required to call at the Governor's Mansion and sign a book, giving address and date. The Governor's wife also has a similar book, which one signs and this passes as a social call. A similar book is also found in the Lieutenant Governor's Office which must be signed, but he is not yet here.

November 26.

Thanksgiving Day, in the U.S.A. Here no one thinks of the day and it is not observed or generally known among the British. In the evening we were invited to the Banfield's for dinner. A very good dinner was served and a pleasant evening spent.

During the conversation a very interesting observation was made. Mr. Banfield seriously and almost anxiously related what he had heard about Mr. Firestone's alleged plan to establish an enormous rubber plantation in Liberia, and for this he is reputed to plan to bring over about 30,000, Americans to manage the plantation. It appears that one of the greatest anxieties among the British is on account of that the Americans will so far outnumber the white Europeans on the coast that they fear serious consequences in their Colonies. It was a new thing to me and appears to be a grossly exaggerated rumor.

It does appear that these things tend to increase the feeling of antagonism on the part of the British for the Americans.

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On the 26th one of the electricians complained of being sick, and at first I thought it might be a case of yellow fever. He had a headache, injected eyes and red points about border of tongue. No fever, temperature 98.8°F. I took a blood smear and made a differential count, while examining for malaria or other hematozoaria. This is first examination in Yaba, I.H.B. Laboratory.

November 27.

Spent most of the day trying to get the portable adding machine in repair.

November 28.

Went to Yaba in the morning and while there to Mrs. Connal's Laboratory where I saw some of the crabhole mosquitoes which had been brought in. One which was considered to be a rare specimen, Uranectanea annulata, was studied and identified by Dunn. In Mrs. Connal's list of mosquitoes found in crabholes for this district there occurred also the Aedes aegypti, which here is called the Aedes argenteus. Anopheles are also reported from crab holes in this section.

Dr. Beeuwkes returned from his Warri trip during the morning. In the afternoon we remained at the mess house discussing the work and plans for the Ibadan district survey.

November 29. Sunday.

In morning went out for a round of golf but played the poorest game I have played in a long time.

Wrote letters during morning and in the afternoon went out to the Connal's at home. Met several people, some of prominence in the colony.

November 30.

In morning out to Yaba and also paid a brief visit to Mrs. Connal's laboratory. Later began the study of a series of the commoner mosquitoes of this locality.

Just before noon saw two cases of sickness, on the white foreman of the electrical department and the other one of the black wiremen.

The white man had a temperature of 99.1°F.
(Fullham) Pulse 104.

The colored man Medewonisha temperature 102.5 °F,
Pulse 98,

Blood smears taken from both of these men.

December 30. 1.

Morning spent in the entomological laboratory, identifying and studying some of the African mosquitoes.

The afternoon was spent on differential blood counts, and a brief excursion into the jungle to the north of Yaba. There are a number of trails leading away from the main road and to the native huts in the bush. In a way they are something like the jungle trails in Panama.

December 2,

On the way to Yaba this A.M. was met by Beeuwkes who reported that there was a suspicious case of Y.F. in Lagos. This was a Lower Hadley, Jamaican, octeroon, who when seen was found on floor of bathroom, rather weak but apparently enjoying being quite ill. The wife also a Jamaican, was not averse to have the distinction of having a husband supposed to be mortally ill. It appeared to me as I talked with her that her experience was worth much to her, and she let us understand that she was bearing up bravely.

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December 3, 1925.

Nothing new has been heard from the so-called case of yellow fever this A.M. What the man has is difficult to say, except that it is not yellow fever. He has had a little vomiting and passed some dark tarry stools showing that there is bleeding from some part of the intestinal tract. There was no jaundice of the skin or any manifestations about the mucous membranes of mouth which in anyway suggested yellow fever.

December 4.

This is a bright hot sunshiny morning, the glare is trying and one does not feel like it were possible to accomplish much. During forenoon drove out to a native Village, Aegege, accompanied by Dunn, Dyer and Dunns Lab. helper Alee. At aegege we inspected some containers and looked for mosquito breeding in pineapple plants and "elephant ears". The village in a way resembles the native villages of the Indians in Central an South America, being built of mud and having tatched roofs. The distribution of the houses is somewhat irregular and not according to any well thought out plan. We found a few natives who could speak enough English for them to understand what we wanted.

This has been a frightfully hot day in the buildings out at Yaba, and unless some awnings or some device for keeping sun out is constructed very soon it seems that we will be able to accomplish very little. I was quite exhausted at the end of day.

December 5.

Went to Yaba in morning, but as I was not feeling well accomplished very little. Made a differential blood count and studied some mosquitoes.

This is another of those hot glary days which reminds one of the setting depicted in "White Cargo".

December 6.

Found myself feeling better this morning, even though still a little peculiar. Have not quite been able to diagnose what the upset has been due to, and it has seemed a little different from any other experience.

Drove Dunn out to Yaba this morning, talked for a short time with Beeuwkes aftr which Dyer and I returned to Ikoyi. The day has been quite uneventful, and as usual no one from the British Colony has paid us a call.

The existence here is rather strange, and I seem to picture in my mind what it might be like to be exiled and have no opportunity to come in contact with people of ones own kind. Due to the fact that our work is not actively under way the situation is rather trying. There is much time for reflection and unfortunately for introspection. When there is a mail from England and the U.S.A. there is some diversion as one can always reply to letters received.

December 7.

Passed a very uncomfortable night, felt like I was "burning up" all night and it seemed like day would never arrive. Remained at mess house all day, most of the time in bed, the first time I have been laid up since my typhoid attack in Peru, in 1920. Some of symptoms were light girdle pains, and when coughing severe pains in top of head. This might have been a Phlebotomos fever or a simple flu, I am inclined to doubt the latter.

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December 8.

In morning went out to Yaba, but nothing special doing. Near noon a message was received that an autopsy was being held on a native who had died with symptoms suspicious of yellow fever. Drs. Muller Beeuwkes and I went to attend and see what we could make out of it.

The body was that of a young negro male 17yrs of age.

Name and address:

John Obumse, originally from Onitsha.

Since arriving in Lagos he has resided at 13 Custom St.

He was admitted to the Native Hospital complaining of fever nausea and vomiting. He entered the hospital Saturday Dec. 5th and died in the early morning hours of December 8. During the last 36 hours he was comatose a great deal of the time and did not pass urine freely although the bladder was found to be quite distended on the evening of the day before death.

His pulse had fluctuated sometimes high and at other times as low as 80, immediately preceding death it was up to 140 and over.

Autopsy performed by Dr. Butler, pathologist to Native Hospital. present at autopsy, Dr. Henry Beeuwkes, Dr. Henry R. Muller, and Dr. Henry Hanson.

When we arrived the body had been opened. i. e., the ventral incision was made in its entire length and the sternum had been removed. At first glance we saw the pronounced jaundiced appearance of the costal cartilages and the subcutaneous fatty tissue over the chest. The omentum and a portion of the peritoneum were exposed the remarkable thing of which was the great congestion of these. The congestion was so pronounced that in places it amounted to subserous hemorrhages and made one think of some violent inflammatory process.

The thoracic cavity was the first to be examined, and in this we found the surfaces of the lungs smooth and free except at one small point where there were some pleural adhesions.

The lungs were crepitant anteriorly but showed considerable hypostatic congestion in the dependent dorsal part. There were many large petechial subserous hemorrhagic areas varying in size from $\frac{1}{2}$ cm to about 2 cm in diameter. These when cut were found to consist of blackish brown substance probably best described as a clot of blood. None of these were of the nature of infarcts.

Before continuing, it should be stated that, the body superficially viewed showed no areas of marked lividity, this if present was probably obscured by the very dark skin. The eyes were decidedly yellow and from nose a frothy substance was exuding. There were sordes about lips and some evidence of bleeding from gums. Smears were made from the frothy nasal exudate, and stained for plague. These showed some bipolar organisms but not conclusive. Smears were then taken from the lungs but nothing was found which Dr. Butler considered plague.

The pericardium showed many of the same type of petechial hemorrhages, both in the pleural and visceral surfaces. There was also some yellowish discoloration. Some increase in pericardial fluid which was of a brownish icteric nature.

The heart muscle was fairly firm and slightly glistening. the endocardium icteric as was also the aortic intima and valves.

Autopsy report.

The Liver.

This organ on external surface especially over the thicker right lobe was rather brownish in color with some mottled yellower areas. It was fairly firm and small in size, weight 1000 gms. On manipulating wrinkling of the surface was noticed.

Cut section showed in thicker portion a brownish color with mottled yellow, the latter increasing towards the left thinner lobe where the shiny yellow color prevailed. One interesting feature of the liver section was that the edges were fairly sharp and there was practically no bleeding. The surface was quite smooth, the trabeculae and lobules rather indistinct, glistening and indicating some fatty degeneration. The cut surface however was not the typical glistening fatty somewhat granular lobulated surface which is usually seen in a severe advanced case of yellow fever. Neither did it show the condition of "tumefaction" which is also characteristic of the ~~fatal~~ yellow fever livers of those dying in the 3rd and early in the 4th day, where there is a very considerable bleeding and the picture is that of a pronounced congestive process.

The kidneys were large and swollen. The capsules stripped clean. On section the entire surface showed congestion and cloudy swelling, with yellowish discoloration thruout.

The spleen was large fairly firm and generally that of a chronic malaria. Cut section showed edges fairly sharp and splenic pulp firm.

The pancreas was somewhat swollen, soft glistening and fatty in appearance.

Intestinal tract.

On removal of the oesophagus it was noticed that there was considerable jaundice about the buccal mucous membrane and a congestive appearance extending as far as cardiac end of stomach. In oesophagus no pronounced ecchymoses were found. In the cardiac end of stomach there was an extensive area of oozing hemorrhage occupying the third portion. Also about the pylorus there was similar condition which extended through and throughout the duodenum. The entire stomach and duodenal mucosa was swollen. The contents of the stomach was a black semiviscid fluid substance which was found to extend as far as the lower part of the ilium where it changed to the lighter colored fecal nature. Practically no oozing was found in the jejunum or ilium. The large intestine showed none of the changes described above.

The mesentery and glandular system. The mesenteric glands were all noticeably enlarged but did not show hemorrhages or suppuration.

Conclusions. It is difficult to say what the true cause of death. Were it not for the partial negative appearance of the liver I should say that the cause of death was yellow fever. The black vomit in the stomach with the appearance of the mucosa and the melena in the intestinal tract makes it look more like yellow fever than any other condition known to me. Weil's disease does not satisfy. Acute yellow atrophy possible but scarcely probable. Plague improbable due to absence of plague bacilli.

Clinical history and the fact that he was from a distant part favor yellow fever.

Final conclusions to be drawn after study of the sections by Dr. H. R. Muller.

The Trip to Africa.

December 9.

Went out to Yaba as usual in morning and examined my notes on the autopsy of the day before.

In afternoon routine - later Dyer and I called at the quarters of the Bull Line officials.

December 10.

Most of morning spent at Yaba. This was mail day and some mail was received about noon. Received a letter from Sr. Arturo Sainz, he has returned to Lima.

Had a headache again during afternoon - it seems to be a result of the bright sun light as it cleared up after sundown.

December 11.

To Yaba in the morning. Later went to see Mr. Brown about house in Ibadan but found that the Company had a chance to dispose of it on a long lease which is a thing the Commission is not at present ready to consider.

At Survey Office maps of the Ibadan, Lagos, Warri section were obtained.

Late in afternoon went with Dr. Beeuwkes to see Dr. Parkinson where we obtained further history on the case dying in native hospital (John Obumse from Onitsha)

December 12.

To Yaba in morning then to Lagos on errands in connection with trip to Ibadan.

Had the same type of headache again about noon, a cranial type, which was relieved when away from the bright sunlight.

Late in day received a delayed letter from home (Mrs. Austin).

December 13.

Drove out to Yaba with Mr. Dunn. Found Dr. Muller and Mr. Gassinouff at work staining the tissues from the Obumse case. The liver showed a very extensive necrosis and degeneration, so pronounced in fact that it was very difficult to find fields where one could identify the tissue as liver tissue. About the central veins the lobules and trabeculae appeared obliterated. The tissue has taken the eosin stain very poorly.

The sections which have been stained with scarlet red show considerable fatty degeneration which in places shows rather large droplets of fat.

The kidneys also show a very extensive fatty degeneration, there are extensive infiltrations of fat droplets among the cells of the tubules. The glomeruli while somewhat swollen do not show any deposit of fat droplets.

The H. & E. sections of the kidney revealed casts in the lumen of many of the tubules and also showed that the epithelium of the tubules was considerably swollen almost completely obliterating the lumen in many places. I failed to observe the type and amount of cell infiltration.

The heart muscle showed a moderate amount of fatty change.

Up to this stage in the examination the histology is not incompatible with that of an acute yellow atrophy. Further study is necessary in connection with cell changes and mitotic figures.

About 11:30 A.M. I took Dr. Beeuwkes to the ship Zaria, He left for an investigation of the rumors of yellow fever in Monrovia, Liberia.

The Trip to Africa.

December 14.

This Monday was spent in doing the final packing and getting ready for the trip to Ibadan.

In the evening Mr. & Mrs. Banfield brought two teachers from the Mission School at Abeokuta to call upon us. They were Miss Perry and Miss Anderson, both from Georgia. It seemed a bit strange that these girls from the south should be out here as missionaries, where the population is so entirely negro. We had a pleasant chat.

December 15.

In the morning we did our final errands and placed all our light baggage in the back of the car and then after buying a roast at the cold storage, and a few final errands at Yaba we set out on our trip to Abeokuta about 11 A.M. The first part of the road was a sort of simejungle condition but with a rather large number of small villages along the road. The road was narrow and had quite a number of "pot holes" otherwise on the whole it was a much better road than I had expected to find in Africa. It was very winding and one could not see far ahead which was somewhat dangerous on account of the number of heavy trucks driven by negroes, still it was in no place as thrilling as the mountain roads of Venezuela. We arrived in Abeokuta about 3:30 P.M. and went directly to the Baptist Mission House, where this Mission runs a school. There we found Mrs. Lumley (An English woman) a miss Edans and Miss Young, the latter a South Carolina girl. From the talks with Miss Young it rather appeared that she was there as much in the interest of social settlement studies as in that of a Missionary. She has travelled very extensively in Africa, especially in Nigeria. On her last tour to the U.S.A. she arrived with an attack of black water fever.

December 16.

The visit at Abeokuta was rather pleasant, as it was the first actual social contact we had had with white people on the West Coast, with the exception of a dinner at the Banfields and a Sunday afternoon of tennis at the Connal place. In the afternoon a Mr. Patterson and wife (missionaries) came over and we had a few sets of tennis, the first I had played since leaving Barranquilla, Colombia, S.A.

About 9 A.M. we left Abeokuta for Ibadan and found the road much better than on the preceeding day. We arrived at Ibadan about 12:30 P.M. and proceeded to Government Hill to find the authorities and get our assignment of quarters. We first found a Mr. "Taffy" Jones who was just on the point of leaving for England. Mr. McCloud his relief was there and we had a very pleasant visit with the two men. They are officials of the construction department. From here we were directed to see a Mr. Wolfe and later to see Lt. Cmdr. Sales, who is the District Magistrate. Mr. Sales directed us to the old mess on the gold course grounds where we have our quarters assigned.

Before leaving the Wolfe residence Mrs. Wolfe asked us for dinner. Our reception at Ibadan was very satisfactory indeed, and very decidedly more cordial than that at Lagos. During the evening we had a very pleasant time at the home of the Wolfes. They have spent a great deal of time out in what is known as "bush stations".

In the afternoon our boys arrived with the larger portion of our equipment and we were fairly well fixed up for the night. The British tropical camp cot is larger and more comfortable than our U.S.A. cot.

December 17.

During morning we put in some necessary supplies and "organized" out living quarters. Mr. Sales and Mr. Stewart called to see what they could do to add to our comfort. Dr. O'Kief invited us to his place for drinks and "small chop".

The Trip to Africa.
December 18.

During morning arranging things about quarters. Golf in the afternoon and at night dinner at the house of Mr. L.R.Palfreman, Deputy Director of Forests, besides the host there was Mr. C.L.Cox, Director of Public Works, Mr. J.R.Ainslie, a Senior Conservator of Forests, Dr.C.W. Okeeffe, Sr. Medical Officer, Mr. B.R. Dyer and Myself of the W.A. Y.F.C. An interesting discussion took place between Mr. Ainslie and Dr.O'Keeffe on the Irish question, and the insurrection and Free State troubles.

During the evening very little was said about the yellow fever situation here.
: December 19. : El dia mas triste de mi vida el 19 diciembre 1923.
: ----- :
: : :

At noon called at Dr.O'Keeffe's house. Mr. Palfreman was present and told us various interesting things about customs prevailing among the natives. It seems that the women when they "marry" are bought from the father, usually for a sum of about £ 4.0.0, and for each child the father is to be paid a certain additional sum of money or a cow or something of similar value. A woman who is bought as a slave is bought at a higher price, the reason being that she does not have the same freedom to leave the man in case he does not suit her. Instances were mentioned of where a woman would go the rounds of five or six men (being bought in each case) and finally returning to the first "husband".

December 20.

Sunday. Played a round of golf before breakfast. Had Liet. Stewart as guest for lunch, our first guest in Ibadan. After lunch he told us some of the interesting tales of the native administration of the Ibadan region. It appears that there is a native king to rule over the natives of this district and that such kings are to reign only for a period of three years, when they are to abdicate by taking a dose of poison and passing out of the world. On this occasion a number of the king's "wives" are to accompany the king. In the case of the last king before the present one, he refused to take his medicine and the natives began to take measures for "bumping him off" but he appealed to the British Authorities for protection. The protection was given and he is still alive though not ruling the Ibadan district. He is said to have been sent up to Oyo where he still lives.

The district between Abeokuta and Ibadan appears to have been one where considerable agitation against the British has taken place, and about three years ago the natives had in mind to do away with the white men altogether. Abeokuta is said to be the most disturbed area in Nigeria.

December 21.

Dyer and I played a round of golf before breakfast. Dr.O'Keeffe called early this morning asking us to his house for tea and later to join the tennis and then to go to Mr.Palfreman's house for dinner.

About 9 A.M. we drove to the city to get some supplies, and later through the city and out on the road to Arunaw. The road was quite good. The interesting thing was the number of people travelling on foot bringing produce wood etc, evidently for the Ibadan markets. This evidence of the large number of people constantly on this road is an important factor in the yellow fever problem in this country. It is easy to understand how the fever can be constantly carried from one place to another, There were many women carrying their babies.

The Trip to Africa.
December 22.

A part of the morning was spent gettin out mail. In the afternoon we called on the Wolfes, being a dinner call. Later in the Evening Capt. Boyd and Mr. Carey called at our quarters.

December 23.

Played the usual round of golf before breakfast. After breakfast I was asked to see Mr. Stewart's servant who has a room in the building for servants quarters in the rear of our place. When seen this boy appeared very sick and complained of pain in the abdomen. On palpation the abdominal wall had a boardlike rigidity and was very tender. He seemed to be in great distress and was very much prostrated. He said that he had taken sick during the night, but gave no history of having eaten anything out of the ordinary. His temperature was 38.8°C , and pulse 120, very feeble and thready. He appeared too ill to lie about the quarters without better care than he would get from his concubine, and I advised Mr. Stewart to take him to the hospital which was done. As I had no microscope I did not take a blood smear. He was taken to the hospital in an army truck (Ford).

December 24.

The usual routine round of golf before breakfast, later a little shopping, reading etc.

At noon we were informed that the servant of Mr. Stewart that I had seen the day before had died (about noon) in the hospital. Autopsy showed an acute peritonitis, the intestinal tract full of *Ascaris lumbricoides*, and it is thought that some of these worms had caused a perforation which had opened the portal of infection to the peritoneal cavity. Considerable puss was found about intestines.

The previous day in course of the examination I found small hard shotty glands in the groin and palpable epitrochlears, but no pronounced glandular enlargement in the neck. The glands impressed me like those of a syphilitic rather than that of plague.

This is the first case of illness which I have seen about Ibadan.

Later in the P.M. played tennis with Mr. Cary, against Mrs. Wolfe and Mr. Sayles, winning all sets played.

December 25.

Christmas Day. Had as callers Mr. Stewart and several men from the barracks, Army Officers, among them a Lt. Williams who was a travelling companion on the S.S. Akabo.

At night to Mr. Sayles house for dinner.

December 26.

The Sayles dinner party extended itself until 3 A.M. of this date. It appears that some of the women who come out to this country take advantage of the fact that they are quite in the minority and much sought after. Some of the remarks made were inclined to be shocking and would scarcely pass a board of censors.

Mr. Wolfe appears a very well balanced man mentally, and to take a real interest in his work. He also has shown more true interest in our work than any other official met up to date, and it appears that we shall get just the kind of cooperation which is needed for making a satisfactory study of the epidemiological and endomological conditions in Ibadan. The work will be started about Monday or Tuesday.

December 27.

Sunday and nothing special to do. We palyed the usual round of golf before breakfast and later did some letter writing and made a pretense of writing up some notes. In the afternoon we drove out a ways on the Oyo road, and met some curious processions of natives. A few men were mounted with the high p^ommelled saddle and the high back. These wore variegated robes but one wore a rather striking red almost scarlet robe. A large number of women were following these men, the women were carrying all sorts of pots and what might be classed as household utensils.

December 28.

At noon drove up to the Wolfes place to inquire about the policeman who he had promised would accompany us on the rounds looking for cases of sickness, fevers. Mr. Wolfe had started this man but not enough cases were discovered so far.

Mr. & Mrs. Wolfe and Mr. Sayles (Station Magistrate) took tea with us in the afternoon.

December 29.

Called on Mr. Dew, the District Officer, in his office and I must say that his manner left much room for improvement. It is rather a shock to deal with some of these officials after having spent so many years in the Latin countries where everyone is extremely polite, and to find that at times these act in such a way as to make you doubt that they know what gentlemanly manners mean. Still after a little explanation the D.O. seemed to loosen up a bit and take some interest in what ~~xxxxxxxxxxxx~~ we hoped to be permitted to do.

It also seems that the office in Lagos had quite failed to send the proper information up to the local officials.

December 30.

Spent the morning in drawing up a letter of explanation and a statement of the object of the Commission in this section of Africa. In this I pointed out that we first wanted an opportunity to see what the fever cases among the natives were like, and then to also study the type of mosquitoes breeding in the native houses.

December 31.

The last day of the year and we (Dyer and I) are in Ibadan, Nigeria, West Africa, and still waiting and hoping for a chance to actually get to work on the "Yellow Fever Survey". At times it seems as if the British were doing everything in their power to prevent us from doing any work whatever, and it looks like they do not want us here. The Younger officials have been very courteous but the older officials are decidedly reserved, and do not show any clear indication of wanting to be helpful.

At 4:30 P.M. we called upon the District Officer, and also intended to make the official call at the house of the Resident, but found him at Mr. Dew's place, where he had a match of tennis on with Mr. Dew.

As far as work is concerned the year closes most unsatisfactorily and the prospects for going ahead are not very brilliant.

Thus endeth the year 1925.

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January 30.

Most of the day spent in going over notes and literature on yellow fever.

Visited the Hospital during the morning but there was nothing new. Later accompanied Dr. O'Keefe to see a trader who had reported sick the night before, but at the time we saw him he present no symptoms of interest so far as yellow fever is concerned. His temperature was 98.8°F, pulse 64, and no subjective symptoms other than from an intestinal upset.

We had planned to go to Oyo this day, but due to the Resident's telegram to the District Officer, and this new case of illness, the Oyo trip has been postponed until after our conference with the "King of Ibadan" and the inauguration of our work there.

January 31.

The last day of the month. About the only thing which can be claimed for accomplishment for the month is that the Resident has finally decided to authorize us to proceed with the inspections in Ibadan.

During the month a number of Europeans and natives have been examined for general symptoms, always bearing in mind anything resembling yellow fever. Blood smears have been taken from all and differential leucocyte counts made while examining the smears for malaria. In only one smear did I find a definite parasite of malaria, a crescent in the smear from a European who came in from Oshogbo.

Two dogs were reported to have "Tsetse" as the disease of trypanosomiasis is commonly known here. One of these, the dog of the Resident, died before I had an opportunity to see it, the other that of Mr. Stewart, of the Q.M., Dept of the Army. Smears from this dog were found to contain many Trypanosomes, some of these were taken to Lagos or to Yaba.

The Ibadan-Oyo region is a very densely populated one, and there is continuous traffic bot afoot, by motor vehicle and by train. Villages are numerous and not far apart, many of these located on the main roads leading to Ibadan.

Accommodations for travel are limited and consist of "Rest-Houses" established by the Government, and are usually occupied by officials travelling for the Government. It is even doubtful how long we shall be able to retain our quarters in the "Old Barracks Mess".

The native does not report for medical treatment except for ulcers etc. It will probably be difficult to establish enough contact to form any accurate conception of the amount of yellow fever, (if it exists) in the country. Still there appears no other way to establish the hypothesis of endemicity. Apparently it will be a slow long drawn out "game of patience", at first with very little to show as progress.

At present working with and thru the Missionaries appears to offer the greatest hope of achieving something, but even that will undoubtedly be slow. Attempts will be made along various lines during the coming month.

Mr. Dew and Mr. Wolfe have shown an interest and readiness to cooperate in the work. Goodmen. Mr. Sayle also has been helpful. Dr. O'Keefe competent and honest.

Nigeria, West Africa.

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February 27.

Dr. Muller returned to Yaba this A.M.

Investigation of quarters, it appears that the Resident is ready to begin to conversion of this place into a "proper" Club House, and we will have to find some other place. Both of the houses which were thought available here can not be obtained within a month or two, and doubtful at any time.

Afternoon very hot, - had a shower about 4:30 P.M.

To Gordon's for dinner, when we returned about 11:30 P.M., we found the watchman so soundly asleep that the noise of the auto failed to waken him, but the "white foot under a black bottom" quite effectively ended his slumbers for a while.

February 28.

Sunday, and a very hot day. "Palm Oil Chop" at Mr. Lewins.

With the end of the month there is however a satisfaction in actually having commenced the mosquito survey together with some effort to locate cases of fever. So far nothing has been seen which is in any way suspicious of yellow fever. This part of the work will be very slow, the people are distrustful and think that we plan to isolate the sick and destroy their property "as it was done in the plague investigations in Lagos". Still I believe that something can be done later.

Mr. Dyer inspected 753 houses and found breeding in the containers in 345 giving a house index of 45.81 for the total area inspected by him. Of 1784 containers inspected breeding occurred in 457, giving a container index for the same area of 25.5. These inspections were in King's Market, Bale's, and Opolabran areas.

I inspected 397 houses in the Kings Market area and out to the left along the Ijeboude road, in vicinity of the Bale's Compound, and to the east and left of the Bale's Court area, finding breeding in 212 houses, or a house index of 53.4%. In this series of houses I inspected 896 containers, finding breeding in 282, or a container index of 31.4%. In addition after the second day a count was kept of the empty potential breeders, these were mostly earthenware containers known as Ikokos, of these in this incomplete check 603 potential breeders were counted.

The combined inspections for Ibadan give the following results:

Total houses inspected 1150, houses with breeding 557,
House index for this preliminary survey 48.4%

Total containers on which a percentage has been calculated, 2680, with breeding 739, container index 27.5%.

Some of the above inspections were made before the first showers of the season, and actually represents the dry season breeding. The majority of the containers with breeding were those within the houses which would not be affected by either a dry or rainy season.

Taking Ibadan as a centre it will be interesting to note the radius of high breeding.

A number of samples of larvae were collected and bred out of these about 85% proved to be Aedes aegypti, Linn. Samples have been sent to Dunn for confirmation.

Nigeria, West Africa.

1926.

The month of March in brief resuma.

The Native Towns of Ilaro, Ado, Aiyetoro, Meko, Idawfa and Abeokuta were visited and inspected during the month. In Abeokuta only one days inspection was done in March and the totals will therefore be shown in the April work. It can be stated as a preliminary however that in Abeokuta notwithstanding the fact that there is a fair system of water supply and some "stand-pipes" the mosquito breeding index is about 35% of houses.

In Ilaro, which is about 25 miles west and 28 miles south of Abeokuta we inspected 235 houses and found breeding in 110 giving a house index of 46.38%,

558 containers inspected showed larvae in 149 giving a container index of 26.7%. Samples of larvae were taken from several containers and bred out showing the majority to be Aedes aegypti. This latter observation was also confirmed by the Entomologist at Yaba, L.H. Dunn.

In Ado which is about 25 miles south of Ilaro, we inspected 121 houses and found breeding in 75 giving a house index of 61.98% 336 containers inspected showed breeding in 136 or 40%.

In Aiyetoro we found the lowest percentage, but the people had knowledge that we were coming as a consequence of which we found that most of the containers either had been emptied or were being emptied as we approached for inspection. In 151 houses inspected we found breeding in 22, giving a house index of 14.5% 179 containers showed breeding in 24 or 13.4%

Meko is a town close to the border of the French Colonies and about 50 miles west and a little north of Abeokuta. It has a total population of about 12000. In 133 houses inspected we found breeding in 71, giving a house index of 53.4%. 273 containers showed larvae in 100 or 36.6%.

Idawfa is a small village within about onehalf hours walk of the French border, is located in a valley surrounded with beautiful abundant tropical vegetation and according to our experience during the morning's inspections, probably one of the hottest places this side of Hades. Only a short inspection was made, 71 houses with breeding in 43 or a 60.5% house index. It has been said that there is considerable traffis via this village and Meko, to and from the French territory, the trade being largely contrabrand. 126 container showed breeding in 34.1%.

Aside from the inspections made in Abeokuta 711 houses were inspected in 5 towns in the western section of Southern Provinces and is thought to be representative of conditions generally in the section inspected. Although the traffic is not great the roads are good and the travel will probably increase.

No trouble was experienced with the natives in the mosquito inspections, but the rarely volunteered information of those sick.

Contact has been maintained with the hospitals for possible suspicious cases, many blood smears were taken and examined.

Nigeria, West Africa,

1926.

April 28. Iseyin & Shaki.

We left Iseyin about 9:25 A.M., having sent the Ford truck on ahead with the first load of our supplies & equipment. The road is quite good, somewhat hilly, running over a rolling country. There is very little motor traffic on this road, Motor Vans not yet being permitted as the road is not considered sufficiently settled. Foot passengers were numerous going in both directions (to and from Shaki and Iseyin). Just before reaching Shaki there is a long hill, about 3 miles, which taxes the pulling capacity of the Fords. This we made with the Sedan without shifting to low gear.

Here we have good quarters, by courtesy of the Baptist Mission. The two mission houses are on the hills north of the city, and from the rocks behind our house a good view is obtained of the surrounding country, which impresses one as a sparsely wooded jungle. This section of the country does not appear to have a very dense population, even though Shaki is a town of about 13 000, and if one includes the adjoining villages it is said by some to be about 25 000. It is the terminus of the of the main road. The elevation does not reach 2000 ft.

April 29.

At 9 AM we drove to Chief's Compound and made our arrangements for the house to house inspections. Mr. Dyer had an Akade who had served a number of years as Soldier, and who spoke English quite well. I had one of the Pastors of the local Mission who had a fairly good knowledge of English. Belle our interpreter does not understand enough English to be satisfactory, and I think we shall be obliged to make a change when we return to Ibadan.

During the morning I inspected 59 family units and made some effort to see those who were sick, not many were seen, and they were mostly Chronics, among them some Guinae worm infections.

Dyer inspected 116 houses, or family units, in all 175 "houses" were visited during the morning yielding house index of 74.2%. The container index was also very high.

About 4:30 PM we went out for a hunt, some "bush fowl" guinae hen and a rabbit. Saw two deer but they escaped.

April 30.

Continued inspections this morning and found that the high breeding continued. I inspected 51 houses, with 41 breeding, Dyer inspected 84 houses and found 65 breeding, hence in 135 houses inspected today the index was 78.4%. The total number of houses inspected in Shaki 318, breeding found in 244, giving a house index of 76.7%, which I think is the highest found to date.

I had expected that as we drew away from the larger centres that the breeding would become lower, but such has not proven to be the case. In addition to the house inspections we have made a series of inspections of rock holes on the rocky hills west of the Mission Houses. Samples of these are being sent to Mr. Dunn. I have bred out mosquitoes from different holes, and in some of them found a mosquito very closely resembling the A. aegypti except that the lyre is missing, there is a brownish band on prothesis, and six distinct white dots on the thorax. The bands on legs appear broader and if one counts the narrow black band as a division on terminal tarsi six white bands can be counted. Some larvae and pupae are submitted in alcohol.

These rock holes are very numerous, and in case of Stegomyia control this is one place where the outside breeding would have to be considered as an important factor. The possibility of introdu-

Nigeria, West Africa.

1926.

April 30. (continued)

cing *A. aegypti* to these holes is not remote as the women go out to some of the larger of these to collect water and also to wash clothes. The first two lots of larvae collected were collected at a distance of about 200 yds from the Mission house, the second lot about 3/4 mile from Mission house and at least 600 yds from and sort of residence whatever.

During the mornings inspections I saw several children sick symptoms somewhat suggestive, and an effort will be made to see them again and if possible to obtain blood for examination.

Elevation of Shaki about 1750ft.

Resume of efforts made in line of survey during month of April:

Inspections were completed in Abeokuta, ~~XXXX~~ and the towns and villages enumerated below with results for each:

ABEOKUTA:

	Houses inspected,	Houses with breeding,	House index.
	378	133	35.18%
	Containers "	Containers "	Container index.
	915	140	16.17%
<u>APOMU:</u>	Houses "	Houses "	House Index
	94	66	80.39%
	Containers "	Containers "	Contain. "
	327	152	46.4 %
<u>OYO.</u>	Houses "	Houses "	House "
	491	325	66.1 %
	Container "	Container "	Contr "
	1213	462	38.1%
<u>ISEYIN</u>	Houses "	Houses "	House "
	303	180	59.4 %
	Container "	Container "	Container "
	848	298	35.1 %
<u>Oke Iho</u>	Houses "	Houses "	House "
	94	65	69.16%
	Container "	Container "	Container "
	215	88	40.9 %
<u>SHAKI.</u>	Houses "	Houses "	House "
	318	244	76.7 %
	Container "	Containers "	Container "
	632	359	56.8 %

Totals for month, Houses 1475, Containers 4150.

The combined milage for the two cars, Sedan and truck is 1380 miles during the month of April.

With the closing of the month the preliminary survey for Western Nigeria is fairly complete west of 4° E. Long, (with the exception of Ijebu-Ode) and as far north as 8°30' N. Lat.

Aedes aegypti throughout all this section is sufficiently prevalent and in high enough percentage in containers in houses to continue the presence of yellow fever indefinitely. The population in the territory covered to date is well over 1000000, people.

One case was seen in Iseyin which is strongly suspected of being yellow fever. Others have been seen in Oke Iho and Shaki which are suggestive.

Both about Oke Iho and Ado (Oyo Province) there is a rocky condition resembling that at Shaki, and if the *Stegomyia* breeding in these should also be vectors of yellow fever the problem will be considerably aggravated.

Nigeria, West Africa.
Resume of month of May.

1926.

A smaller number of inspections were made during the month of May for several reasons: 1st., because during the first few days we took a few days for recreation and went hunting in the woods.

2nd. We had to return to Ibadan for more supplies.

3rd. The strike in England threatened to cut off a part of our available food supplies and we spent a few days investigating what might be had in case we went on a long tour away from "supply depots".

4th. We thought advisable to go to Headquarters for a conference with the Director and at the same time obtain a truck load of additional supplies.

While in Ibadan I put in some time going over some of the old yellow fever reports, and Dyer made a partial reinspection in Ibadan. In this inspection he found that the "Township Area" showed only a very slight increase in breeding, 7.8% now as compared with 6.7% on the first dry season inspection.

I have also put in some time ~~xxxxxxxx~~ examining cases of Guinea worm infection. It appears that in early stage before the worm comes out the eosinophilia is very high, one case 26%.

Moved to Oyo May 27, went to Iwo to interview the King the following day and started inspections on the 29th.

The following inspections have been made, and results obtained Ibadan as a whole:

<u>Total houses</u> 222, houses with breeding 133, index 60.36%	
<u>Twp area alone</u>	
Houses inspected 51, " " " "	4, " 7.8%
<u>Native town alone,</u> 171, " " " "	129, " 75.43%
<u>Ikirie,</u> Houses inspected 84, " " " "	
Containers inspected 224, " " " "	115, " 51.3%
<u>Iwo</u> Houses Inspected 246, houses " " " "	
containers " 419, cont. " " " "	161, " 65.44%
	199, " 47.49%

Total houses inspected in May 463, total containers 1168.

For the native town of Ibadan the above figures show an increase of nearly 25% over the previous dry season figures, but when one bears in mind that the dry season showed 50%, there is not a great deal of sanitary significance in this 25% increase.

Considerable travelling has been done by both cars during the month. The mileage for the Sedan is a little over 780 miles, and that for the Ford truck is about 820, making the total mileage for both cars a little over 1600 miles. The Firestone tires which came with the cars are not giving satisfaction, as they are showing signs of giving out, all have rubber cracking along the rim.

The natives either are becoming more accessible or we are more expert in our methods of approaching them. In Iwo I found no difficulty in seeing and examining the sick. While inspecting there was very little manifest tendency to runaway. There are a number of febrile conditions there which should be studied more leisurely than is possible on just a few days visitation and inspection. Here the missionaries appear to be a real help and have access to the sick. Oyo and Ibadan could be used as headquarters.

Nigeria, West Africa,
June 29.

1926.

Nothing of official nature to record for today. My attack of malaria seems to be yielding to the quinine. No return of fever.
June 30.

Feeling almost normal this morning. Day spent in writing up notes and letters. Took dinner with the Carson family this evening.

RESUME OF WORK FOR THE MONTH OF JUNE.

Inspections during the month were made at the following places; Results for each is given.

Ogbomeshe (Population 80,000)

Houses inspected,	Houses with breeding,	House Index.
322	272	84.47%
Containers "	Containers "	Cent'. Index
746	530	72.34%

Ede (Population over 40,000)

Houses inspected,	Houses with breeding,	House index
182	118	64.84%
Containers "	Containers "	Cent'. Index
397	160	40.34%

Osogbo (population 51,000)

Houses Inspected	Houses with breeding,	House index
290	153	52.76%
Containers "	Containers "	Cent'. Index
545	247	47.14%

Ikirun (Population 14,000)

Houses Inspected	Houses with breeding	House Index
143	115	80.44%
Containers "	Containers "	Cent'. Index
290	193	66.55%

Ila (Population 14,000)

Houses inspected	Houses breeding	House index
105	84	80.0%
Containers "	Containers "	Cent'. Index
157	109	69.4%

Ilesha, (Population 18,366)

Houses inspected	Houses with breeding,	House Index
213	29	13.1%
Containers "	Containers "	Cent'. Index
393	37	9.4%

Ife (Population 22,149)

Houses Inspected	Houses with breeding,	House index
187	96	51.33%
Containers "	Containers "	Cent'. Index
277	112	40.4%

Ilorin (Population 83,000)

Houses inspected	Houses with breeding,	House Index
360	140	38.84%
Containers Inspected	Containers "	Cent'. Index
466	162	34.74%

In all inspections were made in eight of the principal points in the northern part of the Southern Provinces. In these towns 1802 Houses were inspected, 1007 of which were found to have mosquito breeding in the water pots. During this inspection 3271 containers were inspected showing mosquito breeding in 1450 of these. Larvae were collected and bred out for identification of species in all towns inspected, and Aedes aegypti were found to be the prevailing species in all places except Ilesha.

Nigeria, West Africa.

1926.

June 30, Resume of month continued.

Again the work of the month has shown, in so far as the prevalence of Aedes aegypti, is concerned that also the northern part of the Southern Provinces is a section which will continue an endemic of yellow fever once the disease is introduced. The population of the towns visited totals over 300,000, and these towns are so located and connected with roads and railways that there is a constant interchange of people. In this same area there are many towns and villages having populations of from 2,000 to 9,000, or 10,000. All the town except Ilorin are in Southern Provinces, the latter is in Northern Provinces but by virtue of its road connection, epidemiologically it belongs within the group of towns included in this months work.

The point remaining is to demonstrate the fever among the natives, and also from my own point of view among the white people. I have had an opportunity to note that some of the malaria cases here have symptoms which the man unfamiliar with yellow fever would in all probability confuse with those of the latter disease. In the case of the Oshogbo case there is both that and the element of kiko alcoholism. I very much regret that I did not have an opportunity to see this case.

The work indicated above has required a considerable amount of travel. The milage for the Ford Ferdoor Sedan is 1084, that for the Ford Half Ton Truck is 784, making a total milage for the two cars for the month of 1968 (one thousand eight hundred sixty eight) miles. This is good milage when one considers that it was done in the height of the rainy season. It is a further demonstration of the ready or great ease with which people can get about in this section of Nigeria.

It will be interesting to compare this with travel conditions in Northern Provinces.

Nigeria, West Africa.

1926.

July 29, (continued.)

Fathers to get additional information regarding Father Bond. Here I found that he had been in Oshogbo only one night, July 12 (twelfth) and that he had not been in good health. He had been in Ibadan the previous week and there had been an outpatient at the European Hospital. He had complained to Newport of stomach trouble and pain in the left side, principally about the splenic area. On account of not feeling equal to the long ride on a motorcycle he took a Lorry from Oshogbo for Akurie.

In questioning Father Freiburger he stated that they had had some fever cases among children, but at this time they could not show me any. He promised to let me or Dr. Hannington know in case any new fever cases among children should be reported.

The Catholic Mission is located in the centre of the town, near Kings market, and is quite close to the surrounding native compounds.
July 30.

This morning I examined cases at the dispensary, about 25 natives reported for treatment. None were fever cases of interest. Almost all who came were for ulcers or other chronic troubles.

I made an examination of McIvers place, where Cameron and Henry were sick. There I found quite a large number of anopheles, some culex but no Stegomyia. The new incumbent, Mr. Munday had a slight fever but not enough to keep him away from his business.

Returned to Ibadan in afternoon to get my truck, and to arrange for observation of any suspicious fever cases among natives.
July 31. Ibadan.

Called at Whartons to get the truck, also at Hospital to keep in touch with any new fever cases, besides a lot of errands or the inevitable housekeeping.

Resume of month.

First days of the month was spent convalescing from XXE. E.A. Malaria, the first in my experience. There was one interesting thing in this attack, and that the rather violent nausea. I have seen nausea in malaria before, but it is not so common in the southern part of the U.S.A., or in cases seen in Panama as it appears to be here. It did occur in some of the cases seen in Colombia.

In Lagos during the week of July 18 to 25 I saw one case which clinically was fairly typical of yellow fever. This case apparently has originated in Lagos itself, and presents the opportunity for finding native cases, probably as good as in any other section of Nigeria at the present time.

Inspections were made in Zungeru ~~xxxxxxx~~, Kaduna and Zaria. The index at Zungeru in my section was 25.9%, but the town is small and the population of the surrounding country is sparse as compared with that in Southern Provinces.

Kaduna has a small Native town in which there is a fairly good mosquito inspection. The breeding is even less than indicated by the 10% index found. In my section there were only a few larvae in the containers found positive, and the breeding was not a great sanitary importance.

Zaria is a much larger place with 40,000 to 50,000 inside the walled city. Outside of this there are what are known as strangers towns. Within walled city the breeding was found by Dyer to be 27% in one section and over 40% in the other. There is much communication with the north and it is an important place in yellow fever epidemiology.

Gold Coast, West Africa.

1926.

August 31

It is a little difficult to summarize the work of the month as it has been divided and I have not the statistics with me.

Two cases were definitely observed as possible suspects, one in Oshogbo and the other in Ibadan. The former a child about 8 years of age, daughter of a policeman in Oshogbo. This girl at no time had any albumen which could be detected either by the cold concentrated nitric acid ring test or by heat and acetic acid. She developed no marked icterus. In my opinion not a case of yellow fever. She lived in the same section of Oshogbo as that in which Cameron and Henry lived, a distance of about 400 yards from the McIver Compound.

The other case that of a prisoner in the ~~XXXXXX~~ Native Hospital at Ibadan. Name Johnson, not native of Ibadan.

The following is a record of temperature pulse and respiration during the period of observation. The maximum and minimum temperatures are given for each day together with respiration.

Day of Month,	3	4	5	6
Temperature,	101.6, 104	99, 104	97, 98	101.2, :
Pulse	122, 106	94, 114	104, 94	100 :
Respiration	24, 24	22	22, 20	22 :
Albumen	Neg	Neg	Neg	Neg :
Do	7	8	9	:
	100.4, 103.8	103.6, 101.2	97.6, 99.4	:
	94, 124	122, 112	80, 84	:
	22, 22	24, 22	18, 20	:
Albumen	Neg	Trace	Trace	:
	10	11	12	13
	98, 99.6	98, 99.6	98.2, 97.2	97.4, 98.2
	94, 96	84, 96	86, 80	76, 72
	22, 22	22, 22	20, 20	18, 18
	14	15		
	97.4, 98.2	97.4, 98.2		
	68, 74	76, 74		
	16, 18	20, 18		

The albumen tests were made by native dispenser except on the ninth and tenth. On the afternoon of 10th a fairly heavy precipitate was obtained, but a quantitative was not made. Examination of blood smears failed to reveal parasites of any description. A definite diagnosis was never made. The respirations and other symptoms exclude pneumonia. The pulse rate, absence of jaundice, and moderate amount of albumen do not favor yellow fever. Neither this nor the Oshogbo case could readily be confused with those seen at Asamankese.

Nigeria, West Africa.

1926.

September 28.

Went to European Hospital this morning and found one of Europeans in with fever and catarrhal symptoms. Examination and history excluded any suspicion of yellow fever. A blood smear, and white count were taken. Results as follows: Hb., 80%. Smear negative for malaria.

Differential count: W.B.C., 11,400.

Polymorphonuclear neutrophiles	58%
Lymphocytes and large monos,	35%
Eosinophiles	3%
Transitionals	4%

September 29.

Nothing new in Hospital this morning.

Called on District Officer regarding quarters but found that he had no instructions.

September 30.

Wired the Sr. Resident this A.M., for an appointment to discuss quarters, and received a reply to come to Oyo on Oct 1st. Called at C.M.S. Mission to inquire about fever cases. None at present.

Summary of observations during month.

The first fifteen days were spent on the Gold Coast, eight in Asamankese and the balance of the time about Accra. At Asamankese the following cases were seen;

Yamoa Turkson, adult female with a fever resembling yellow fever, very heavy albuminuria throughout. Some bradycardia No black vomit.

Abina Nitriwa, female child 8yrs, fever, prostration and moderate albuminuria, icterus slight, no black vomit, and no bradycardia probable yellow fever.

Wm. Kwachi (Kaokye) adult male school teacher, fever and prostration, pronounced jaundice eyes and buccal mucous membranes, high albuminuria, some bradycardia, nausea and vomiting but no black vomit. Same type of fever as above.

Adjoa Dukua female about 8yrs, fever headache, high albuminuria, some vomiting but no black vomit, slight jaundice of eyes, active and prostration not noticed. Do.

Kwami Asare adult male about 25 yrs old, fever headache and prostration, high albuminuria, congestion and jaundice of eyes, nausea but no black vomit, aches and pains throughout body anxious. Blood culture. Same type as above.

Akuah Bomoh adult female about 20 years old, fever marked hyperesthesia, pronounced jaundice eyes and buccal mucous membranes. Hematuria, high albuminuria, death and autopsy (incomplete) suggesting yellow fever.

In none of the above were parasites found in blood.

In addition to the above the following were seen in which there was moderate albuminuria, symptoms in general similar, but blood smears showed malarial parasites.

Margaret Pukua, Age 8, Baby Wa (Seykeri), age 1 1/2 yrs, Kwesi Fanti male 1 1/2 yrs., all recovering after administrations of quinine.

Others were Pucha Angoro, adult Fulani, a case of relapsing fever. Rosiana adult female with pulmonary symptoms, and a few suggestive, at first of y.f., besides about 50 cases of yawas a number of chronic ulcers etc.

At Akwatea four cases were seen in all, besides a corpse. Two of these were suggestive of y.f. blood smears proved four to be relapsing fever.

Autopsies on two recorded apart from this diary.

Nigeria, West Africa.

1926.

Summary of September Observations continued.

Six of the cases seen in Asamankese resemble yellow fever, except for the lack of spongy and bleeding gums, the lack of nosebleed, the lack of black vomit, and a rather indefinite discordance between pulse and temperature curves. Also the tenderness over the kidney region is not like that of the American cases seen. In the one autopsy in this series the mucosa of stomach and duodenum was not typical, while the appearance of liver and kidneys were like y.f. This case (Akuah Bomoh) was not treated by us. The rest of the series were treated by us and according to yellow fever therapy. All so treated recovered.

It is unfortunate that more time was not given to the investigation at Akwatea, where four cases were seen in life besides the cadaver of the man who had died before our arrival. Blood smears were taken from the four, one of these died while an autopsy was performed on the man dying the day before. This occupied all the morning. The second case was autopsied immediately after lunch. Both of these on superficial inspection had signs like those of patients dying with yellow fever. Both vomited shortly before death a blackish fluid, which left a black streak across the right cheek. Both showed a degree of jaundice, and the second case had a reddish brownish black fluid in stomach.

These were all cases in a Hausa "camp", wore the Hausa robes which are favorable for carrying vermin. On account of being biased by the similarity, in general, between symptoms of these and some of the Asamankese cases no investigation was made either for lice or ticks. This is the closest similarity I have seen between the symptoms of relapsing and yellow fever.

A very instructive and important observation, was to note the splendid contact which Walcott, with the aid of the District Commissioner, Mr. Page and a Medical Officer, Dr. R. E. Reid, had established with the native, through the fact that they had treated a number of Yaws cases in the community, and in that way proven the superiority of "White Man" medicine over that of the Ju-Ju. Something of the sort should be done in Southern Provinces, Nigeria but it can not very well be through yaws - one rarely sees yaws in the thickly populated Yoruba land.

It is also a curious condition that in this thickly populated community there is no epidemic - at least it has not been known - like that in Asamankese. If it is yellow fever it should not remain limited to the small less than 6000 population village of Asamankese. In the western part of Southern Provinces, Nigeria there are 59 towns, the smallest of which is 5,596 population, and only three of these are less than 6000, four less than 7000, four less than 8000, four less than 9000, two less than 10,000, and ten with populations between ten and fifteen thousand, and there nine with populations over 22,000, all within ready communication.

The house index in these places averages over 45%. Stegomyia have been proven present in all.

Further effort should be made to find the solution of this apparent mystery.

Nigeria, West Africa.

1926.

October 30.

Spent the morning writing letters of instruction regarding care of my family.

This afternoon received wire from the Executive at Ife that the Rest House in Ilesha was occupied but quarters could be obtained at Rest House in Ife.

Dr. Pearse is very much dissatisfied with a reply he has received from Beeuwkes regarding the visit which he had hoped to make to Kano. His chief reason is that I am needed in the Ibadan area where I have "ordered to work". Que barbaridad.

October 31. Sunday.

The end of another month - one which has been trying and unsatisfactory. The results have been negative. Again one is inclined to think that there is something wrong in the yellow fever epidemiology in West Africa. It does not follow the American sequence of events. To work this problem out to a satisfactory solution more time is required and a great deal of simple observation appears to be necessary. Apparently for a proper understanding of the Nigerian situation it is necessary to know enough of the Yoruba language so that one can follow what an interpreter says, and also to learn more of Yoruba customs, beliefs and psychology. One will accomplish very little until there is enough confidence to allow one to talk freely with the people in their homes.

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November 1.

Had planned to go to Ilesha and Oshogbo today, but the Rest House accommodations are not available, and will arrange to go to Ife about Wednesday.

Made out expense accounts. The portion which is chargeable to yellow fever is £ 67.5.2, this seems quite a bit, but it has been necessary in fixing up our quarters. This again emphasizes one of the difficulties in working in this country where there are no hotels or restaurants. One must be self-reliant in every sense of the word. These quarters however are only temporary, and not to be relied on if it is decided to carry on anything like a permanent work.

November 2.

Was called to the Dispensary at Government Hill this morning to see a case; the Dispenser in Dr. Nelson's Clinic. He had some fever 100.2°F, a sore throat and hard swollen glands in neck. This is said to be only of about one days duration. The submaxillary gland on left is very hard, in fact there appears to be a general infiltration in the periglandular tissues.

Blood smear shows some leucocytosis, and one E.A. crescent. He was sent to the Hospital for further observation.

November 3. Ife.

Left Ibadan about 11 A.M. and reached Ife about 1:15 P.M. The road is rather rough, largely due to an extensive amount of repairing and widening of the old road bed. The general scheme seems to be the same as that on the Abeokuta-Lagos road.

On arriving we found half of the Rest House occupied, we have one room and the veranda. I have my cot on veranda which is about as safe as if I were inside.

The Executive arranged help and gave Pearse permission to do as much trapping as he liked. Dyer will recheck the mosquito breeding, and I will drive to Ilesha and examine fever cases in the Wesleyan Hospital Clinic.

Nigeria, West Africa.

1926.

November 28. Sunday.

Went to Hospital this AM and found that Adeshine is still running a temperature of 100, pulse fairly high for y.F. 80, this AM. Urine shows a fair cloud with heat and acetic acid. eyes quite yellow.

November 29.

Called at Hospital and found that Adeshinas temperature was still about 100, pules 80, and in general there is no change except that toungue appears to be clearing a little.

After the Hospital visit I drove to Oyo, where I secured two very nice monkeys; this a pair of about the same age, It was interesting to note the apparent affection displayed. The male would hold the female embracing her about neck and share his food with her. After having lunch with Broadhurst of P.Z. I returned to Ibadan.

November 30.

On calling at the Hospital I found Laduni convalescent, his fever a probable malaria.

Adeshina is still running a little temperature, 99, with pulse of 80 lying down. Diagnosis in this case possibly W.A.Y.F.

Summary for month of November:

By way of summary there does not appear to be much of a startling nature. In this northern section of Southern Provinces we have the incident of the case in Ilesha, and th statement of Dr. Lonie that there had been others of a similar nature. Up to the close of the month I have not been able to make any further investigations in the Ilesha region.

The results of the examination of the infants in Lonie's clinic indicates that there may be a paralellism between the immunization process for malaria and yellow fever among the Yorubas. It is quite uncommon to find malarial parasites in adult natives, and it seems that they overcome their malaria infection in early childhood. The indications that malaria infection among native infants is very high. Undoubtedly the yellow fever immunizing process occurs at about the same age, and the native adults who develop this fever are the accidental instances where infection has been missed until adult life.

The cases seen in Lagos offer food for thought. Clancy to me did not suggest yellow fever. McMilan in several respects did, but the picture was incomplete. Enstee was very much like the fulminating cases seen in South America, except that I do not recall a case of the same degree of severity where the gums did not bleed freely on light pressure, and nosebleed also occurred. Soleral jaundice was very early in this case. The gross morbid and the histological findings are necessary in intelligently discuss this case.

Adeshina in the Native ward of the Ibadan Hopsital is a possibb West African yellow fever. In support of this there is largely negative evidence as to the possibility of any other well know type of fever which this might be, and the presence of some symptoms which point more to yellow fever than to anything else.

Nigeria, West Africa.

1926.

December 30,

Nothing of special interest has happened this day. Ordogoro, our small boy who showed up with fever aches and pains in the limbs yesterday, is a case of malaria. Blood smear shows a number of irregularly formed rings. What accounts for this irregularity I do not know. The chromatin is definite and characteristic except for the fact that it is smaller than usual.

From 12 noon until 4 PM the weather has been extremely hot.

December 31.

The last day of another year, and as far as I can see there is nothing to be gained in my planning to spend another ~~xxxx~~ in this country. The life out here for me is abnormal. This year has been unsatisfactory from first to last, and there is scarcely a satisfactory week in it.

The attitude of the British wherever we have travelled has been all that we could ask. We have always been treated with courtesy and respect, and we have made apparently lasting friendships. The Officials thruout Southern Provinces, as well as in Northern Provinces have extended to Dyer and myself facilities for travel and lodging, and have shown by their attitude that they recognized us as competent to handle our work.

Our main effort has been expended in Yorubaland, which is the most difficult country to work in which has come to my experience. The language is an insuperable difficulty if one attempts to work out a problem like this survey in a short period of time. Without some knowlegde of this language exact information is not obtainable. The native does not have sufficient confidence in a native interpretor to reveal the important facts regarding the life and customs of the country necessary for the investigator to compile data on morbidity and mortality. On the other hand the Native (unable to converse directly with the investigator) mistrusts the motive of the investigation and is reticent about revealing important facts, or about allowing an examination of the sick.

To master this language requires more than one or two years time. There are very few among the Europeans who have served ten or more years in the country, who can speak the language sufficiently well to carry on a conversation in Yoruba.

The climate is the most enervating which I have experienced. It is deceptive in that when one first arrives one has the feeling that this phase has been exaggerated. One goes along for some months before the break in ones physique becomes apparent. Ones mental powers appear to retrograde steadily, until it is only by using great effort that one concentrates sufficiently do the mental work which elsewhere has appeared normal and refreshing. It is foolish to attempt constructive mental work here for more than a year at a time, without having a complete change in climate and surroundings. While here one must continue to drug ones system with quinine, and it is a question whether this does not in time do some injury.

Summary for December.

There is nothing new in this. No new cases of clear cut yellow fever have been seen in the Ibadan district. There is a possibility that a native, Adeshina may have been a case, but he was not of the type of the American yellow fever.

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January 24.

Continuing inspections in Lagos. It is becoming quite evident that very little is to be gained from the questions regarding the health of the community during the preceding month. All answers are always to the effect that there has been no illness in the family or the immediate neighborhood.

The mosquito index is low. Weather is hot.

No difficulty has been experienced with the people.

January 25.

Inspections continued. During morning found a house in which there had just been a death from bubonic plague, and still the answers to questions regarding the health of the community were to the effect that the health of the neighborhood was good.

Found one important breeding place for A. aegypti.

Feeling miserable with my cold and cough.

Mr. Swartz of the U.S. Dept. of Agriculture, and Capt. Roberts of the Bull Line called at the Yaba Compound.

January 26.

Rain thunder and lightning during the night.

Left Yaba at 9:45 A.M., Had lunch with Misses Young and Edans. Reached Ibadan at 3:40 P.M.

January 27.

Had a heavy rain in Ibadan this morning, in fact it rained most of the latter half of the night.

January 28.

Nothing of importance has transpired in Ibadan today.

January 29.

Made a partial summary of the Lagos inspections and find the house index about 2.6%, too low to spread yellow fever.

January 30.

In response to a notice from the C.M.S. Girls School I went there to see a case with yellow eyes. The girl looked quite like the convalescent natives seen at Asamankese. This girl comes from Abeokuta and is said to have been sick about a week. No history of other cases.

Left for Yaba at 9:50 A.M. Had lunch at Abeokuta, with Miss Young and Miss Perry. Reached Yaba at 4:20 P.M.

Called at Connals.

January 31.

Took Dyer to Lagos to do some errands before his departure. After lunch drove Dyer to Apapa where the S.S. Toureg is tied up. The boat does not appear as clean as the E.D. Boats, but I have travelled on worse.

Dyer and I have been together 15 months and have avoided and serious disagreement. This is not so easy when people have to live together as intimately as we did.

As a summary for this month there is not much to say. I have been mainly watching and waiting for case or cases which might be yellow fever, but have seen none which have been even as the doubtful cases at Asamankese.

The leptospira which Bauer is growing from water from most any source is interesting. In its morphology it is quite similar to the L. icteroides. It is also interesting that both L. Icterohemorrhagica and L. icteroides can be planted in dirty (sterile) water and be recovered by Bauer's method. What does this mean?

February 24.

Called at Dr. Connal's Lab. to see sections from the Dr. Oluwole case. The sections were poorly stained and had an appearance as if overheated in the imbedding process. The liver sections suggested a decided liver necrosis, with areas showing somewhat of a midzonal necrosis.

Kidney sections showed a great deal of congestion, red blood cell infiltration, and desquamation of tubular epithelium.

Spleen shows congestion.

No other sections ready at present. Connal's opinion appears to be in favor of yellow fever.

Unable to inspect today, as the Native Inspector who I use as an interpreter had other duties with the Lagos H.O. for today.

February 25.

Had a very warm night, I perspired all night long.

The first Dormitory building is poorly arranged for tropical climate. Windows are high above floor and on hot night one gets very little breeze.

Called at Health Office this A.M., where I talked with Drs. Adams, Craig and *Perry*

Continued inspections, the breeding is very low, but there are conditions which are ideal for rat nesting and the spread of plague.

In afternoon visited the Lagos prison. This is rather interesting. The prisoners are taught trades, such as carpentry, cabinet work, tailoring, mat making, the making of wicker chairs etc. They also weave cloth, for which the yarn is spun within the prison.

Called to see Muller who is still in the European Hospital.

February 26. ~~Sunday~~. Muller operated for appendicitis this morning.

Rained during the night.

February 27. Sunday.February 28.

Continued inspections, found two wells in which Aedes aegypti were breeding. Adults seen and recognized on walls of well.

The accomplishments for the month of February are not very different from some of the previous months. Two suggestive cases have been seen, the girl from Abeokuta and Dr. Oluwole.

The inspections in Lagos have added no new light on the epidemiology of the West African yellow fever. The Stegomyia index continues to low to explain the occasional cases of the fever. There are conditions however which would give rise to a higher incidence of adult mosquitoes in the wet season, these are trees with holes in them irregular gutters, drains which are located in blind alleys, and a large number of pots which at the present time are dry, but in the wet weather no doubt would hold small quantities of water in which breeding would take place.

To finish the area in question there remains about two days work.

Nigeria, West Africa.1927.March 31.

There is only one white person in Awtun or within a radius of many miles - this a Seventh Day Adventist, Englishman by name of Mr. Hyde. He is conducting a school for boys. It is curious in talking with these people to note how convinced they are that the prophecies of the end of the world is soon to be realized, and how positive they are regarding the Sabbath being Saturday. I asked him what he would choose as Sabbath if he found himself at the line where on one side it is Saturday and on the other Sunday.

Mr. Hyde conducts a small dispensary, but there are very few who come for treatment except the old ulcer cases which one sees in nearly all parts of the country. The closest Medical aid for this section is Ilorin 61 miles away. There appears to be a fairly dense population, and a number of large villages were seen along the road.

Commodities appear rather cheap in the section, as evidenced by the use of the "niny" which is a piece of money having the value of a tenth of a penny. One could buy three or four good bananas for one "niny".

The altitude is about 1600 ft, and the climate fairly good. The temperature today varied between 76° and 84°

Summary for March.

The first two days were spent in Yaba and Lagos, finishing the survey of the "Yellow Fever Zone" along Broad Street. The final results of this shows a condition which should not be responsible for the spread of yellow fever, - the mosquito index is low and the questionnaire did not bring out any history of recent illness in the area. Questioning natives relative to the state of health in the neighborhood brings out nothing of value - they deny everything.

Returned to Ibadan on the 3rd, where I remained the greater part of the next two weeks. Have had a number of fever cases under observation, but these have all been malaria.

In Oyo I again took up the study of the malaria incidence in young children with results similar to those reported before. 80 to 90% of such smears are found positive.

From the 24th to the end of the month has been spent at Ogbomosho, Ilorin and Awtun, most of time in examining children for fevers. The malaria incidence continues very high. Several of these young natives have both rings and crescents in the blood. All the positives were found in the thin smears, which indicates a rather heavy infection.

This is again an indication of the time of life when the native is infected with the mosquito borne diseases, and has a special significance here in the densest population of the country and where there is also a very high A. aegypti index, from 50% to 80%.

April 30.

Continued the examination of blood smears and the differential counts.

Printing at night.

Summary for April.

The first few days of the month were spent in the northern section of South Western Nigeria, searching for cases and reports of cases of actual or suspected yellow fever.

In Ado special inquiries were made thinking that there might have been some confusion of yellow fever and relapsing fever. Dr. Cooper who is M.O. for that section states that there were over 600 known cases in the Ado-Ikiti region and that most of these were confirmed by microscopic examination of the blood and the finding of the Spirocheta recurrentis. He also stated that all who were seen in time responded rapidly to the treatment consisting of injections of Neosalvarsan. This appears rather conclusive evidence for the exclusion of yellow fever.

I personally examined over 40 children about the streets of the native town, and took 39 blood smears to be examined for hematozoaria. No sick were seen, during my stay in Ado, which in any way suggested symptoms of yellow fever.

From Ado I went to Ilesha and Oshogbo where other series of children were seen and examined, and blood smears were taken 32 more children in these towns. Neither Dr. McWilliam or Dr. Fowle have seen any cases in these towns which have led them to suspect symptoms of yellow fever.

At Oshogbo I was joined by the Acting Director of the W.A.Y.F.C., who accompanied me to Ogbomosho, Oyo and Ibadan.

On the 20th of the month I definitely closed the Ibadan "Office" after a residence there of 16 months and 25 days. The first few months were taken up in getting acquainted with the system of doing things in West Africa. Up to the middle of January of this year I was assisted by Mr. Brian R. Dyer.

As the work is closed I feel that I have a fair comprehension of matters in general in South West Nigeria, and some idea of a portion of Northern Provinces. I believe it will take any man new to the country considerable time to learn the method of approaching the Yoruba and of getting a contact with the family life. What has been done has paved the way for future investigation, provided these people be approached tactfully.

I also think that more is to be gained by getting away from the larger centres occasionally, and spending some days in the distant outlying towns, where possibly the immunity to yellow fever is not so great and where the fever may more approximate epidemic conditions.

The last part of the month has been spent on the study of blood smears from young natives and I believe there is a lesson to be learned from the results which will be submitted from this study.

Nigeria, West Africa.1927.May 1. Sunday.

In Yaaba . Checking over some of my photos.
Had Orchard of the Survey Department in for dinner.

May 2.

Working up blood smears.

May 3.

Working up blood smears and at night doing a little photographic work.

May 4.

Called on the Wakeman'w and then went to dinner at the home of the Rector of the Church of England. Mrs Lewis sails for England on Friday.

May 5.

Continuing the routine examination and the differential counts on the blood smears taken on my last tour of investigation.

May 6.

Mr. Dunn left on the Apapateday, and the whole force with the exception of Hogan went to see him off. On the same ship there were the Sadlers, and Miss Caver. Miss Caver is unable to stand the climate of West Africa.

Continued work in the laboratory.

In the evening played tennis with Mrs.Napp v.s. Hogan and Mrs.Sewell.

May 7.

Routine duties about the laboratory and in preparation of my own trip to Europe and the U.S.A.

May 8. Sunday.

Nothing much doing today. In the evening I went to the Connals where I met the Bidens (who were in Ibadan some time ago), and was invited there for dinner next Saturday night.. Mbs. Tom Wilson also invited me to dine there next Friday.

May 9.

Beginning to work up some of the material for the report.
Went to the Wakemanns for dinner.

May 10.

Continued working on the report.
At Herbert's of the Educational Department for dinner. He is acting Deputy Director of Education.

May 11.

While working up some of the records of the blood examinations I received a letter from Maj.Price at Ijebu Ode reporting an outbreak of febrile jaundice at Owopen. He also sent a phial containing urine; this however was quite old and had turned alkaline. The urine showed a high albumen content with the Tschuyia reagent.

He reports that there has been about 400 cases, the last seven are said to have had black vomit and several have died.

Owopen lies at Longitude 4° 18' East, and 6° 1' north Latitude, and is a place which is not in easy communication with the more densely populated sections of Southern Nigeria. It is a pity that I have not time to go there to investigate before sailing. This is the kind of a thing which I have considered consistent with the yellow fever epidemiology of Nigeria, and if the fever is the same as the American disease, it will be found in such places first, in Southwestern Nigeria.

Nigeria, West Africa.1927.May 11, (Cont'd)

It seems the irony of fate that this should come up at the present time. It will give Beeuwkes another opportunity to make further unfavourable remarks.

I went to the Central Health Office to inquire whether the Office had received any reports, but found that the news which I brought them was the first they new of the alleged outbreak of febrile jaundice in S.W.Nigeria. After talking the thing over with Sawyer, we decided that I should try if possible to get to the place, Owopon, for an investigation, and with this in mind Pierie accompanied me to the office of the Resident of Lagos (The Colony) to arrange for motor launches, which the Resident promptly did. However it was found that on account of the time consumed, and the proximity of the sailing of the Madonna, I might be unable to get back in time to sail, and the Acting Director, Dr. Sawyer, advised me not to go, and decided to make the investigation himself. However I made it clear to Sawyer that I was willing to postpone my sailing in order to make this apparently important investigation.

During the afternoon I supervised the packing of an equipment to make Sawyer self-sustaining on the trip. In matters of tours of investigation in this country it is important to know what to take along, there is practically no way to "live on the country".

May 12.

Got up early to see that Dr. Sawyer had his necessary travelling kit.

If this really is Y.F., there should be considerable risk to Sawyer personally to go about the town investigating. He is non-immune.

There was a dinner at the Staff house tonight.

May 13.

Making some final purchases and working a little on the final report.

Called on "Stumpy" Stewart, and later went to dinner at the Wilsons.

May 14.

Dictated a portion of the report to Hogan, as there are a lot of little details to attend to in connection with my departure on Monday next. There has been a lot of work in making the 61 differential counts and the observation of unusual cytological changes in the series which I have examined. Also one needs a little time to think of the application of various things in connection with the observations of the last 18 months.

Spent the afternoon packing.

Had dinner at the Bidens, the Connals and I were the only guests.

May 15. Sunday.

Doing the final packing.

At Connal's in the afternoon. Mrs. Nunn and I played tennis against Mrs. Wilson and Mr. Tebbit, losing 4 - 6.

Later Mrs. Connal and I played them winning 6 - 3.

Dinner at Staff house.

Dr. Sawyer returned during the afternoon, reporting that he did not find any Y.F.

RETURNING TO THE U.S.A.1927.

May 16. My last day in Nigeria. Sailing on the S.S. Madonna. At last the day has arrived when I am sailing for home. I left Yaba this morning about 8:30 A.M., and drove the Sedan for the last time. It is still running well, and if it is properly handled it should be good for a lot of service yet. MacGuire rode with me and Dr. Sawyer & drove the new Ford Taking Batchelder with him. Later Hogan also came on down.

We were a little disappointed in the appearance of the boat, especially with the amount of promenade deck space.

The came aboard to have a final drink, but the all ashore bell was sounded before the drinks were served, and they had to leave.

They were all pleasant and cheery, as things have been all along whenever I have been in Lagos during 1927.

We sailed from Lagos about 12 noon, and arrived in Cotonou at 4:50 P.M. We are staying here over night. I have arranged with the "Maitre d'Hotel" to have the serum and vaccine sent ashore.

There is a married couple of missionaries aboard, a Mr. and Mrs. Whittier of the Presbyterian Mission at Yecunde, Camerons. They are natives of Minnesota, and have spent some time in both North and South Dakota.

The Captain and the Ship's Doctor speak some English, also so far I have found two passengers who speak some English.

May 17.

We left the Port of Cotonou about 10 AM and arrived at Lome at 3:30 P.M. The reports are that there have been seven deaths from yellow fever among the Europeans, during the last few days, two are said to have occurred today.

While in port I met a Madame Michel, a newly wed, She is a Chilian by birth, and we have had quite a conversation in Spanish. I am pleased to note how easily my Spanish comes even though I have not spoken it for two years.

From the ship Lome looks fairly attractive, there are a fair number of houses of European architecture. Along the coast there is a heavy growth of palms and other trees, and it would be interesting to know to what extent these are breeding mosquitoes. Are these trees a factor in the Y.F. at this place.

So far the food aboard ship is most excellent, and I fear that I shall eat altogether too much during this trip.

May 18.

Arrived in the Port of Accra early this morning. The Gold Coast has a quarantine on against Lagos, which prohibits us from going ashore. The surf however is so rough that I would not care to try a trip ashore.

Feed continues good. The Captain is a fine looking man.

May 19:

In the Port of Secondee today during the morning.

Left for Grand Bassam at 3 P.M.

Sea moderate. Feed not quite so good.

May 20.

In Port of Grand Bassam this morning There is a very rough surf here. The Governor came aboard, and we are to take him to Algiers.

ABOARD THE SS MADONNA.1927.May 21.

Called at the Port of Tabou today, but we are still in quarantine and there is no opportunity to go ashore, besides we are only making a very short stop.

The crew of Cree boys were put ashore here, and from now on the work will be done by the French sailors.

The distances traveled to date are as follows:

Laged to Cotonu	60 miles.
Cotonu to Lome	72 "
Lome to Accra	98 "
Accra to Seccondee	98 "
Seccondee to Grand Bassam	130 "
Grand Bassam to Tabou	225 "

May 22.

Enroute to Freetown, Sierra Leone. The weather has been very comfortable so far, warm but not severely oppressive.

The sea is quite smooth, only occasional white caps.

An Englishman by name of Dickinson who is in business on the Ivory Coast and I played bridge with a M. De Goutely and M. Chabron. Distance from Tabou to Freetown is 512 miles.

May 23.

Arrived in Freetown this morning, and left at 3:30 P.M.

The ship has filled with passengers.

From Freetown we went to Kenakry a distance of 68 miles, and arrived at 9:30 P.M. Here we take on about 600 native troops who are to be transferred to Bizerte in Algeria, near the border to Tunis.

May 24.

While the troops were being loaded during the morning we went ashore. It is a rather interesting place. Fairly good Hotels and Cafes here.

Here I rode about the town in a rikshaw.

We left for Dakar about 3 P.M.

Konakry to Dakar is 445 miles.

May 25.

At sea enroute to Dakar.

May 26.

Arrived at Dakar about 6 A.M. Here the S.S. Madonna took on a cargo of coal, or rather she coaled for the trip to Casa Blanca.

Dakar is quite European in appearance, has many large Hotels, docks and warehouses. There was a very large amount of Ground Nuts in Port waiting shipment. The population appeared to be about half European. The natives here are Senegalese.

The streets are much better laid out than in Lagos or any Nigerian town which I have seen. From general impressions I would call the place about 50 years ahead of Lagos.

May 27.

Enroute from Dakar to Casa Blanca a distance of 1340 miles. Casa Blanca is in Morocco.

On The Way Home.

1927.

May 26.

This is a National Holiday in France, - the custom has also been adopted in the Colonies, and all business houses are closed.

The first impression one gets is the difference in the harbor from that of all other ports after leaving Lagos. Here there are wharves to which the steamers can tie up, while in port and while loading or coaling.

Secondly there are huge piles of ground nuts, both in bags and piled loosely. From this I judge that the rainfall must be very low. Other general appearances in parks which are not watered regularly bear this out.

On entering the city from the wharves one first passes the fairly large warehouses, then a large modern looking Captain of the Ports Office, on the left, and then following the street curving a little to the left then to the right one passes the first news stand where the recent papers from Paris have been received by means of the aereal mail service. Beyond this there is the first of the large Hotels, of which there are several in Dakar.

A large new modern Post Office Building is in the process of construction.

The streets are fairly wide and straight.

The Government Buildings appear luxurious.

May 27.

I thought I had lost my leather case of keys, I hunted in all my pockets, and the room steward looked in all the places he could think of in the room and neither of us could locate them. Then the strange thing when I went to bed at midnight I put my hand in the cupboard and there were the keys.

May 28.

The weather is a little cool this morning, and the sea is a little inclined to be rough. This ship appears to be a good sea boat. There is very little motion felt even though there are white caps all about.

At noon today we were passing Cape Blanc opposite the Rio de Oro.

During the afternoon I have been reading the Last of the Plainsmen, by Zane Grey.

Distance travelled today 283 miles.

May 29. Sunday

This is my second Sunday aboard ship.

My French is improving a little, but slowly.

May 30.

The sea appears to be growing rougher as we go north.

I have been aboard ship two weeks today.

Read a story of the North West Mounted Police, "Man's Size" by Raine.

May 31.

Arrived in Port of Casa Blanca, Morocco, this morning. This is the most impressive looking town I have so far seen on the continent of Africa.

I went ashore immediately after breakfast, accompanying Maj. King who leaves the boat here, to go overland to Tangiers, and then across the Straits of Gibraltar and thru Spain. This would have been an interesting way to go had I known that it could have been done.

On The Way Home.

May 31. (Cont'd)

Maj. Kind stopped at the Excelsior Hotel, which has the appearance of being a modern up to date affair, a good building and well arranged and equipped.

Here the streets are crowded with Moors, Arabs, and Jews, in addition to the Negroes and the Whites. The Negroes are less numerous than farther south. The Jew is quite obnoxious, and is in the garb which is always portrayed in connection with the biblical stories. Here however he does not impress you as being of superior intelligence, nor as being of the race which should lay down the fundamental laws of morals and religion. This Moroccan country is approaching the region of what we have assumed to be the cradle of the Human Race, and as I look at them I must say that I do not find much to increase my faith, literally, in many of the biblical stories, which fundamentalists and others insist on as being inspired.

I walked through the Moorish and Jewish town. Here I saw the Jews baking the unleavened bread, also a disillusionation of any idea one might have had of their cleanliness or sanitary practice.

This bread was being baked in what to me had the appearance of a stable floor, with the straw and shorthay for bedding and floor cover.

The Moors and the Jews, in the "Old Town" are engaged in the making of brass trays, truly wonderful hand work. The hammering and the carving of the figures was very interesting to watch.

There is a wonderful Moorish Market within the old town, where apparently all kinds of fruits and vegetables can be bought.

In various places in the town one sees the date palm.

The next place of interest was the Palace of the Sultan, He has 40 wives at this palace, but none of them can be seen by ordinary mortals. We visited the garden, which is being cared for by a Spaniard. I took a Photo of lane leading to the bedroom of the favorite wife.

After the visit to the palace we were taken to a section near by, the "Moroccan Segregated District". This from the outside looked like a new modern town, clean and neat in appearance. This place is inhabited by 600 prostitutes and their servants. These are said to be for the Moors Arabs, etc., and our Guide stated that the place had a fixed charge of five francs, (20¢) We walked through a considerable portion of it, and it is the most remarkable thing which I have ever seen. Maj. King of the B.W.A. Police, stated that he had never seen anything like it.

The ship sailed shortly after lunch and there was not time for further sightseeing. We drove briefly over a portion of the city, but had to make it rapid.

Casa Blanca is a remarkable place. It is quite new. Most of the large new buildings have been put up within the last 12 years.

The occupation in the vicinity is agriculture and mining.

There was an American, U.S. Destroyer, # 286, in Port. This has been in these waters for about a year.

A break water has been constructed, but it was not found quite sufficient to protect the port and is being continued.