

Feb 26/1930.
27.

Arrive overland in Pactard at McAlpin Hotel 4 PM
Day at 61 Bdwy. Lunch in official lunch room @ W.A.S.
Dinner at my expense at John Hall Club & Miss Reed & Mrs
Parsons. Meet Mrs. Balfour and Mrs Farrell for first time.
Bojarski will sail Sat for Greece - malaria programme
night train to Baltimore.

28.

Day at 615 N. Wolfe Sts Conference & ^{Wed. H.} Frost over of 5
Hord and Raysey present. F. suggests might be worth
while to extend program immediately to cover all the
infectible territory, create que system & out waiting for
slow laboratory methods to give information of doubtful
value. Lunch at Zoology Club. Spend night at
D.M. Root's - Corts are there to dinner and Kelly come in later
- Hills to go to Paris! Visit to Freeman and discuss S. Paulo
situation. ^{Allen}

MARCH 1 1930

Visit to Miss Theis, Gordon Davis, Lowell Reed, Miss Durham,
Paris Menendes, Torres Bahia. Go Princeton in PM and
am met by Stoll's who take me to dinner at Dr. Goen's home
where I meet Smillie's brother again and also Dr & Mrs. Little for the
first time.

- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Stoll gives details of his new work on immunology of sheep to
Helminths. Dr. Charles is now working @ Stoll. Meet Mrs. Charles.
Go 61 Bdwy.
Go institute and office.
Go office and institute. Dinner @ Leonard's on L.I.
Dr. Lambert also presents
Go institute and office.
Take car to W. World. Sailed at 6:30 PM. Cabin mate as far
as Barbados, & Bermuda, G.A. Selden, Eric Pa Boiler
maker.
Sea sick.
ditto
AM at Bermuda

Fellow Passengers on W World @ Rio - Dawson, Squires
Guenther Higgins Kimmontz Miss Stech
Nanz Non-Harrison Shoemakers Bonds
Moore Sandberg Careys Wetzel
Miss Cradley Mrs. Keffliger Pullin Stephan

17.

Win Deck Tennis singles & Shuffle Board Doubles @ Squires.
St. Patrick's Day at Sea
Green in AM
Orange in PM - in evening. Cury family's tribute
of orange & green
- orange & onion (spring)

1930. March 20th. Arrive Rio 8:30 PM and am met by Drs. Servulo Lima and Waldemar de Sá Antunes in addition to Drs. Connor, Tomaz Alves: Alfredo and Juan. See Paranhos on the ship.

Ernesto

March 21. Friday. Conference with CF. Very optimistic-suggests that survey be made of the Sao Francisco valley. Suggestion immediately agreed to by MEC who says that he can relieve Biao from Aracaju for the purpose. CF has had a good letter from Marchoux telling him how remarkable it is that Rio was cleaned of yellow fever in less than two years the second time the task was undertaken whereas it took five under the famous Oswaldo Cruz! I tell CF that the season's results in the DF did not surprise me as I knew something of the work that was being done during the past year but that I was frankly surprised to learn that there had been no known cases of yellow fever in the State of Rio. CF reports that he has a total of 800 men in the State of Rio and is also furnishing the material for the work. (CF insists that now is the time to undertake the job of eliminating yellow fever from all Brazil because he has the unique opportunity because the government is aroused on the problem at the present time and is ready to back any measures proposed.) With MEC see two suspect convalescent cases at HSS. One cholangitis-one bronchopneumonia; both icteric-both have bradycardia; pneumonia case has pulse of 40!

MEC comes out with direct question as to why of my return to Brazil; "What did you expect to do coming back to Brazil now?" My reply in as even voice as possible under the circumstances was that at the time of my arrival in New York, MEC's request for six months leave of absence beginning in April 1930 was in FFR's hands; that although FFR and I discussed the difficulties of divided authority in Brazil, there seemed to be no urgency regarding the situation since I would return to Brazil in any case only shortly before the first of April; that the news of MEC's withdrawal of his request for leave had reached me only on the eve of my departure from NY for Rio and during the absence of FFR in Europe. I therefore returned to Brazil to reassume the position vacated in Nov. MEC then explained that the RF had granted his request but had informed him that he had overstayed his leave and actually owed the Foundation time; this time will be repaid by sometime in June of this year: MEC therefore suggests that I go North as soon as possible and return to Rio after a somewhat rapid inspection of the yellow fever service so that he will be able to get away for NY before everyone goes on summer vacation from the New York office. MEC again reiterates that he found control of his service difficult because of dual authority vested in MEC and FLS.

MEC says that EP closed out diet kitchen at Arthur Bernardes Hosp. as a way out of her offer to put in air extractors at her own expense which offer had been accepted by Dr. E. Mattos. MEC believes that usefulness of EP in Brazil is past but that RF should not think of withdrawing from nursing service. Instead should carefully select successor to EP.

March 22. MEC offers ARAGÃO 12 monkeys for further work at OCI/ It seems that government money for the purchase of monkeys has run out. (MEC's readiness to accede to this suggestion as well as to CF's suggestion regarding the São Francisco made me stop and reflect!)

March 23. Drive with Dawsons and Kinmonts to Tijuca. Dinner c MEC at International.

March 24. M. Call on Fialho, Placido Barbosa, Lessa, Rangel and Magalhães.

March 25. Sail on Itanagé for Pará. (MEC's decision that I should leave immediately robbed me of the pleasure of showing something of leprosy in Brazil to one of the granddaughters of Queen Victoria. However, I turned the task over to Dr. Arminio Fraga who tells me that that lady is somewhat elderly and not too attractive. HCMitchell and family on Itanagé- also Mr. Wilcox of EBand S Co.

March 26. At sea.

*See
Telegram
April 17th
1930*

March 28. Wilson, Davis, Frobisher, Cardoso, Cunningham on docks. Spend AM at office; write FFR as follows:

Bahia Brazil
March 27th 1930.

Dear Dr. Russell:

I arrived in Rio on March 20th and took the first boat for the North arriving here this morning. One of the first questions asked by Dr. Connor after my arrival in Rio was whether any change had been made in the division of authority in this field to which I replied that the matter had been discussed between us in December but that as far as I knew no change had been made. Dr. Connor then asked what I expected to do in Brazil at this time; I replied that at the present time the Foundation's programme in Brazil is largely limited to yellow fever control work and that at the time the question was discussed in New York, Dr. Connor's request for six month's leave of absence to begin in April was in your hands; his later withdrawal of this request came to my knowledge only on the eve of my departure from New York for Rio and at a time when you were in Europe; therefore, I assume that I had come back to Brazil to make myself as useful as possible in the yellow fever campaign. After due consideration of the situation, Dr. Connor recommended that I come north on the first boat and visit all the stations during the next two months, enabling him to leave for New York in June. I accepted this recommendation and am making this tour of inspection, leaving the direction of the work entirely in Dr. Connor's hands until my return to Rio about June 1st.

Very Sincerely Yours, Fred L. Soper.

Fix up letter to New York regarding depreciation of Pontiac car; ie of Packard car on the basis of Pontiac sedan. Call at both Davis and Wilson homes and dine with Wilsons when boat fails to leave at five PM as scheduled.

See Dr. Magalhães Neto and suggest that our sailing to Rio coincide in late May or early June.

Dr. Barros Barretto sends up word that he will receive me at 2:30 P.M. Wilson Davis Cardoso and I present ourselves at the appointed hour. BB pretends to be deeply absorbed in official papers and routine and curtly nods us to seats as we enter. After some delay he comes to converse with us and after a very chilly hand shake, "De que se-trata?" I contain myself as well as possible and explain that I have just arrived in Brazil after an absence of some months in the United States during which time I was entirely out of touch with the work in Brazil; that my present trip to north Brazil is being made to again familiarize myself with the situation, etc. etc. BB finally comes clean and says that he has been so nasty to me personally because I refused to import scales duty free for his service last year; that he is sure that no one has given better cooperation to the yellow fever service than has recently been had from his service in the state of Bahia 'with no profit to him' but that he is not sure that others have been furnishing help disinterestedly. From this the discussion is turned by BB to his losses on the importation of monkeys; I assure him that the RF is anxious that he shall personally sustain no loss through cooperation with us just as we are anxious that he shall have no profit; In other words the RF believes that the cooperation should be a disinterested one. We part more or less friends, ie to say at least on speaking terms.

Wilson seems to feel that inadequate personnel is available for the work in the vacant lots and the jungle; I assure him that I have no authority to change anything at the present time and that all of his troubles should be referred to MEC. Cunningham is at work on a map of the city; I do not quite understand this detailing of a physician to a mapping of the city but suspect that DEW has not found him suitable for the work in hand. C is supposed to go to the laboratory in the near future. Shannon will arrive tomorrow from Recife. *Ag!*

DEW says that he does not desire a second assignment in vt work; also plainly indicates that he does not believe in the efficacy of capital city control (Bahia is a State of Four Million whereas the capital contains only some 200 000) Suggests he has been almost long enough on maximum salary! Knows that Barnes was voted increase of salary before resignation. (How?)

*RCS had found to genuine in notes on March 23
continued on Storage for Para + missed Shannon

RECIFE/.

March 30. Sunday. Met at dock by Dr. Gouveia and ERR/ Doyle and Waldemar da Rocha come from Parahya and are seen at the office. ERR has a man by the name of Furtado working with him who speaks some English. ERR and family appear quite happy in RF work at present. Uncle is retiring immediately but ERR is giving this chance the go-by and is considering writing in to FFR withdrawing his potential resignation at the end of his present period of service. ERR in answer to direct question from me says that it suits him personally much better to remain than to return to take up Uncle's practice at the present time. Com- plains that MEC forced him to withdraw salary increases granted by him in accord with authorization given by MEC to DEW and entered in DEW's station journal. Has a good opinion of WAD's intelligence and ability but notes abuse of authority and lack of sociability. MEC requested DEW to recommend WAD for the regular staff but this DEW refused to do.

Suspect cases have been reported from Bom Conselho and Dr. Amaral has been sent to investigate them. From available reports ERR believes that they will be proven positive.

NATAL. —

March 31. Dr. Nello Tavares meets the boat and together we call on the Govern- or. From his reception of us and from his remarks I believe that we should have advised him of my arrival in the city. In any case shall do so on my return from the North. At Dr. Lamatine's suggestion, NT takes me to see the new Aero Club where a hangar with two planes for the training of amateurs is found. Tennis, deck tennis, bathing, dancing, billiard and pingpong facilities are also found. Call on Dr. Christovao Dantas at the newspaper office; CD leaves tomorrow to become part and parcel of the Federal House of Representatives on behalf of the State of Rio Grande do Norte

FORTALEZA. —

(continue on Stange!)

April 1. Dr. Samuel Uchoa comes on board and speaks of the need of a calha gang. I tell him that for the present all such questions must be referred to MEC.

SÃO LUIZ

April 2. Arrive at midnight; Gchefe comes on board c compliments of Dr. Cassio Miranda. Sail at 7AM.

April 3. Deck Golf all day.

Belém PARA —

April 4th. Arrive in Belém at noon. Aspect of the river and the town unchanged since first visit in 1920. Met by Dr. Crawford, Muench and Silva. (Silva is a young medico from Rio; claims to be a cousin of CF). Call on Dr. Aben-Athar on the PR and see the slides of a recent suspect case of yf which died on the 19th of March. These slides look very very suspicious. Call on Dr. Albino Cordeiro, head of State Sanitary Service and arrange to call on the governor, Dr. Eurico Valle next Tuesday. Picture of personnel taken at 5PM. Dinner with Muench's and Mrs. Albuquerque. HM wishes to know about rumour brought by Crawford from Bahia that he is to go to Columbia. I tell him what I know of the situation but that I do not know where the leak of the information occurred.

April 5th. Call on the Pickerels with whom we had our first 'breakfast' in Brazil just a little over ten years ago. Lunch with the Crawfords- the children's names are Elizabeth, James and Porter. Dr. Crawford asks my advice regarding study leave; I suggest that if he desires study leave a year from now that the application for it be made now.

Visit drainage gang of our service and find some forty odd men at work. On Saturday's every available man who is not at other routine work goes on the ditch but during the week only about fifteen men are available.

Dinner at the Palacete Muench with the Crawfords. Evening spent in kindly gossip; Eikum trip up to Manaus discussed with details of boats, Spaniard and moonlight. The Ms frankly liked Miss Eikum.

Called today on Mr. Penny the manager of the Bank of London and South America and made arrangements for changing the bank account to the names of MEC FLS and PJC.

nothing of Meliana nor Ag. II

JAINÉ

Sunday, April 6. HM notes reveal the necessity of keeping Steg data separate from data on other mosquitoes; either this must be done or the service must be turned into an anti mosquito service and be prepared to handle old cesspools, swamp breeding and all other problems that may arise. (Of course this is now the official programme but the men and the organization necessary for such work have not been given.)

M reports that copper gutters have been incriminated as producers of stegs contrary to the laboratory experience of Shannon. Also does not find that Salus clay ie impregnated with silver will prevent the breeding of stegs in bamboos used for experimental work. HM believes that the Bamboo Joint work has been very useful particularly in showing up the fallacy of the BLOCK INDEX proposed by MEC. Also pupal cases have been found in clean bamboos on the 7th day after distribution in the homes. Steg breeding has been found to occur in pools of water on the ground under houses where there are brick or cement foundations reaching into the water.

Lunch and afternoon at the zoo with the Crawfords. Cs and Ms have dinner at the hotel.

M. Ap. 7. Meet Mr. Reggie Moss and Mr. Freytheim of the local foreign colony. Mr. Foster Smith of the Tram company is given an opportunity to cooperate and finally comes across with a promise of two passes for the use of the guarda chefe and his assistant and also authorizes the purchase of tickets against a monthly statement. This is not as much as expected but still is something; the change in the method of purchasing tickets will greatly facilitate the keeping of accounts in the office.

With HM visit lowlying district the other side of the railroad tracks where Dr. Silva was checking the work of the guarda; sanitation may be said to be non-existent in this zone; conditions are certainly ideal for the extraneous production of mosquitoes.

BELEM. Pop. 120 000
Houses 23 000
Zones 40

GCs 1000\$
GC Asss 400\$
8 GC's 350\$
Chauffeur 250\$

40 zone guardas
2 vacant houses
1 port zone
1 boats ships lighters canoes
1 calhas
1 experimental bamboos
above 230 to 250 mil per month
30 servants working with guardas 120\$
6 oilers 180\$
12 serv. roof gutters 120\$
3 foremen 150\$
1 secretary 400\$
AssSec 200
Office Serv. 150
Errand boy 120

HM insists on giving steg index separately. Says that guardas are capable of rather accurate classification and that the total index here has no correlation with the steg index. Order for general index only was given by MEC to take effect Jan. 1, 1930/ Roof Gutter is now the principal producing focus in the city; HM recognizes that his check index of roughly 12 % steg does not represent safe condition; Is unwilling to make estimate on the number of men needed to bring this check index down.

T. Ap. 8. Visit Dr. Eurico Valle, the president of the state with Dr. Albino Cordeiro, Dr. Muench, Dr. Crawford and Dr. Silva and try to explain to him the basis of our work. EV states that there are now four health services in the state when there should be but one; he refers to the PR, the State Hygiene Service, the Municipal service and the Comissão Rockefeller. (It is plain from this interview and other happenings in Para that the idea has never been put across that the Yellow Fever Service is now part and parcel of the DNSF/) I

felt afraid to discuss this matter frankly with the President in the presence of Dr. Albino as I could not be sure whether he wished to eliminate Dr. Albino or Dr. Aben- Athat.

Our cortege then visits the prefeito, Dr. ~~Faciôba~~, who seems to be slightly deaf, wears some large diamonds, and promises all sorts of cooperation to the CF. Here again the idea is that the Rockefeller Foundation is doing the work here on its own responsibility; the Prefeito himself has refused to give the service a 1930 official license plate for the service car but comes across graciously when I show him the need of the official plate. However, I do not believe that he understands that he is not giving an official plate to a private organization.

Famous all afternoon lunch at the Muenchs today; Drs. AbenAthat and Albino apparently thought that I was the guest of honor and held the field until about five oclock in the afternoon, tea being served in the meantime; as long as I did not leave neither did they! However, we finally got around to the discussion of the principal reason for my trip to the north at the present time, viz., the securing of routine autopsies on large numbers of persons dying with less than ten days illness, especially children. Dr. Albino suggests that he take me first to the Governor to discuss the need of such autopsies; I agree to go tomorrow.

W. Ap.9th. Visit governor again and discuss need for autopsies; apparently get need across all right and the instructions are given that we should see the chief of police this afternoon to arrange the details. Dr. Albino and I call on the chief who calls in Dr. Oscar Carvalho, chefe do Instituto Medico Legal. The chief is quite reasonable but OC is frankly opposed at first and insists that this work and responsibility should belong to the State Health Service; Dr. Albino objects and apparently convinces OC; arrange for meeting tomorrow to discuss the practical details of carrying out these examinations of cadavers.

Dinner with Ms at Cs. Bridge!

Th.A.10. Davis arrives on the Itaquicé. Crawford and I go with Dr. Vianna to the water works at Utinga. C takes first ride on 'trolley' Water works lacks filters, lacks chemical treatment; fortunately the watershed is almost without inhabitants. (Eisler reports that his study showed need of ten thousand contos to give adequate water supply to Belem. Pipes for sewerage service have been mostly laid but there is no service.) Water service is without meters and most houses in the city pay the minimum rate of 5\$ or 6\$ per month.

Davis gives case of March 19th as provisionally positive after examination of liver section but admits that he has never seen a liver just exactly like this one. *In his Davis calls malaric but services slide when other cases occur in May & June and admits possibility of yf*

Call on OC with Dr. Silva and arrange for bodies of all those dying without assistencia medica to be brought to the morgue for examination and liver extraction by Dr. Silva; liver sections only to be taken in most cases; CR to furnish bottles and necessary materials. (Late in the afternoon Dr. OC calls on Dr. Silva and brings up the question of gasoline for the dead wagon which is to bring in the bodies from the places of death. I suggest this be taken up with Dr. Muench tomorrow and if necessary referred to MEC for solution.)

Davis, Muenchs and Crawfords to dinner at hotel. Sail of Itaquicé at 10PM.

Ff. Ap.11. Dead day on the Itaquicé.

Sa. Ap.12. Met in São Luis by Dr. Cassio Miranda and José Gonzalez, GC. Spend morning getting a general idea of the city and visiting the drainage work being done by the yellow fever service. Visit five buildings in the business district with the GC finding one focus in a tina in a bathroom of a tailor shop. CM takes me to call on the president of the state, Dr. Sexto Pires; we discuss yf situation quite frankly with him and also bring up the question of autopsies; CM immediately feels that he is on the defensive and assures the president that he hopes to get a series of autopsies to prove whether yf is present or not. I assure the presidente that the shortness of my stay in São Luiz is due to two facts; the direction of our service is in the hands of Dr. Cassio Miranda and the city of São Luiz has one of the best water plants and water services in all Brazil.

Ap.12.Cont.

| | | | |
|----------------|-----|--|--------------------|
| Personnel- GCG | 725 | Houses | 8500 |
| 3GC | 350 | | 4600 with water |
| 17G | 250 | | 3200 with sewerage |
| 2Bomb | 180 | | |
| 6Serv | 180 | All zones close on Friday and Saturday | |
| 1Sec | 100 | is devoted to casas fechadas. | |

About ninety percent of foci in S.Luis are steg.
Dr. Miranda requests kodak for the service.

Visit statue or rather marker on spot where, "Aqui foi enforcado o Bequimão a 2 de Novembro de 1685." Bequimão is today considered one of the forerunners of Brazilian independence.

Ap.13.Su. Dead day on the Itaquicé.

Ap. 14. Arrive Fortaleza early and am met by Dr. S.Uchôa. Fiscalize in PM with GCG Telles. Z14B1.127 1/13
Z15B1.135 2/13

With Dr. Uchôa visit his new children's hospital, called "Hospital, Dr. Demosthenes Carvalho." Visit the large modern machine shops installed by the federal government to do repair work on engines and cars of the railroads here in the north as well as make available for local industries a type of service on large machine repair jobs not previously available in this section.

Dr. Uchôa gives me many details of changes that have been made in the service of the PR since his arrival. He promises to give me later printed reports presenting in detail the changes discussed.

I discuss with SU my recent relationship with ALBB since he was in the office in Rio last year when BB and I had one of our warmest arguments.

Service here uses a printed label giving date of visit and address at which key may be found to be pasted by person making visit on each casa fechada.

Tu. Ap.15. Z23 1/12 Z24 1/17 Z34 3/13

Also found one focus of anophelines in jarra, larvae undoubtedly having been brought to the house with the water.

Visit VD dispensary where from fifty to eighty new cases are registered per day. Visit general dispensary where the main work is hookworm disease and discuss difficulty of diagnosis of yellow fever in children with Drs. Uchôa and Campos, Jr. The father of Dr. Campos is a federal senator and so Dr. Campos was rather put out when he was not given the place of director on the death of Dr. Demosthenes.

Break two cement tanques and one cement ant ring about tree.

Dr.SU convinced that the only remedy of value in the treatment of cases of intoxication with oil of chenopodium is strychnine!!!!

Dr.SU asks me to forget for a few minutes that I am the director of the RF in Brazil and listen to his remarks on the telegram from Dr. MEC asking for information regarding the case of gasoline purchased from the SOB. SU says that this matter could have been handled much better through a polite letter than through a telegraph with no politeness in it which must go into our files and places him in an undignified position in the eyes of our office staff both here and in Rio. Of course I make what excuses and explanations I can; among others suggest that MEC was not born in Brazil "as I was"/. SU says that he has worked with Americans in RF and that he is willing to overlook the telegram but that MEC cannot expect for cooperation from the directors of the PR with this kind of treatment.

AP.16. Ash Wednesday, Quarta-feira das Cinzas. Z35 3/19,lp.
Z36 1/21,lp. Z44 3/20 Z45 4/20,lp.

Total Fiscalizations to date in Fortaleza with Guarda

19/148

12.8%

Ap.17. Quinta Feira do Paixão. Checking behind guards: Z11 4/20 (2 with pupa in deposits left by guarda. Others in cocos.) Z21 1/20

Visit the zone of the matadouro with SU: he suggests that the service be extended to include this rapidly growing zone where some three hundred houses exist.

Ap. 18. Sexta Feira Santa. SU spends the morning at the hotel discussing the situation in Ceará. Insists that our personnel works much harder than does his, does not observe the semana inglesa, and has more work to do during the rainy season than can be comfortably done. Suggests that he be authorized to hire four more guardas for the service. I promise to write MEC by airmail tomorrow regarding his suggestions. *Letter sent by air mail Apr. 18th recommending more employees.*

Political Situation. Dr. José Mattos Peixoto the present governor of the state was previously deputado federal and leader of the bancada; was one of the first to support the candidacy of Julio Prestes and gave for him more votes in the last election than some of the states with a much larger population; is believed to be in line for the Ministry of the Interior (under which comes the National Department of Health) in the new government lineup; if he does not go to Rio as Minister he will remain two years more as president of this state. There is also some talk that the political debts of the new administration to the state machine will be paid by the nomination of Dr. Tomé, now senator, as Minister of Viação; this SU considers less likely than that Tomé will become governor of the state when Peixoto goes to the Ministry of the Interior.

Prophylaxia Rural. Budget has been recently increased from 400 to 500 contos; Lepra and VD now gets 35 contos from Fed. Treasury but as state is spending 105 contos on this service, the state hopes to get an increase from the federal government to this amount.

Population of the state is roughly estimated at 1500000 in some 74 counties. County Health Services. SU has brought to Ceará with him the RF idea of local contributions to local health services. The president of the state has asked the municipios to help the PR wherever the PR is working; the following results have already been obtained:

The counties of Acarau and Tapiboca are each furnishing predio and installation, ~~the~~ the salaries of two employees hired by the PR and all of the salary of the physician except 200\$ per month paid by the PR. The GC is in all cases hired and paid by the PR; SU considers the GC his element of confidence in running health centers in the interior!

In Sobral, the county pays house, medico and two employees as well as an additional special fund of three contos for the purchase of quinine as the district is very malarious.

In Joazeiro, with 30000 pop., the post limits its activities to trachoma, verminoses and syphilis and is entirely supported by the PR; however, SU is getting Padre Cicero to install a 30 bed hospital, the padre being responsible for house and food for the inmates; material, medicines and personnel are to be furnished by the PR.

.....
The yellow fever service in three states is being directed, without additional salary, by the director of the Prophylaxia Rural. These states are Rio Grande do Norte, Ceará and Maranhão. Actually what is happening is that we are using non medical directors of the service but are doing it in such a way that neither the local director of the PR nor the local medical profession can object. (Of course the directors that are worthwhile in the PR have more than enough to occupy their time there and those that are worthless in the PR are also worthless in the yf service.)

April 19. Halleluia Saturday. Behind guarda Z 31 0/20
Z 41 2/20

Discuss once more the local situation with SU. He insists that our men are working too hard and that they are not capable of keeping up the pace required over a long period of time-recommends semana ingles.

| | |
|---------------------|-----------------|
| Personnel Fortaleza | 24 zone guardas |
| | 3 other guardas |
| | 4 guarda chefes |
| | 1 GC geral |
| | serventes |
| | oilers |
| | chauffeur |

Total 52

Received following wire, dated April 17th,
"Two cases yellow fever confirmed during April in Magé Stop Connor"

This is very interesting in the light of last year's experience in Magé; considering the distribution of suspect cases in Magé last year it was believed that possibly most of the explosive material in Magé had been used up at that time; the details of these cases should be secured to learn whether they are local infections or whether they have come in from outside in the meantime; also whether these cases if resident in Magé last year remained during the epidemic or were among those who fled the scene!

April 20. Easter Sunday. Spent the afternoon with Dr. SU ^{annual} later taking tea in his home. Daughter of SU is now 2 1/2 years old and is named Maria Thereza; Meet SU's sister for the first time and Mrs. SU again.

April 21. Tiradentes day- business houses closed-Itaquieó sails at 3PM. Meet the agent of the Coteira Cia. in Fortaleza. ité

Ap.22. Tuesday. Ar Natal 3 PM-met by Dr. Nello Tavares and Capitão Lopes, the military aide to the governor of the state. NT has news of autopsy on suspect case occurring in Mossoró dying on the 17th of Ap. (Francisco Marques) Autopsy however could be done only after 52 hours. Liver forwarded to Bahia care of purser of Itaité. Call on Presidente Lamartine and discuss yf in Brazil; Pará, Pernambuco, Magé, Mossoró and stress the need for autopsies. JL willing to give moral and official support to any programme which may be agreeable to us and to Dr. Santiago Varella, the director of the State Service.

Ap.23. Z2 3/20 Guarda without notes on houses and containers for which the GC assumes responsibility; also has no map of the zone with him; GC without note book. Numbering of houses never undertaken by our service here.

Z1 2/20 Works much better than Z1 g has report form well in hand.

Visit Dr. Santiago Varella and discuss yf and autopsies; I get an entirely different impression of Dr. Varella on this visit than previously; he is interested in his work and is apparently trying to carry out the work of the Health Service to the best of his ability; however, he is only a part time health officer and hence is naturally handicapped. SV assures us that anything that may be agreed upon by us regarding autopsies will be carried out in the Capital where he is in charge and where the government is staying by him in everything but that he has serious doubts of the possibility of securing any routine autopsies in the interior.

Disturbance by malaria on next page

Santiago Vasquez

SV is quite proud of the anti-leprosy campaign carried out in RGdoN; claims there are only some 120 cases known in the state of which more than 80% are isolated. Some lepers have left the state rather than be isolated. One gets the impression that SV is not making a clear distinction between charity and public health measures: malaria cases are given food as well as quinine and the families of isolated lepers are receiving what amounts to a pension from the state. I did not inquire as to the continuance of this pension after the demise of the patient! Right at present SV is preoccupied with the problem of malaria in Natal: some six hundred slides have been examined this month of which not more than 2 or 3 percent are negative! But Lab reports 2 1/2 for PPS *Gambusia* for PPS *malaria*

Ap. 24. Thursday. Leave Natal at 2:20 Am in Ford with Dr. José Ignacio de Carvalho and Snr. Francisco Martins, of Assú, for Mossoró: Coffee at Lages at 7:30am, lunch Assú 1pm Mossoró 6pm. Discuss Mossoró case of last week with attending physician, Dr. Soares. and meet Intendente Vicente Saboya.

Ap. 25. S did not dare to report case of yellow fever because of desire to avoid unnecessary trouble to the health department! YF is unimportant in Mossoró, S having seen no case during the past fifteen years although he understands that another case occurred about ten years ago. In spite of the fact that the case seen by him was undoubtedly yf there were no further cases at the time: surely there is no reason for spending money and getting excited about a disease that kills only one or two people every ten or fifteen years in a population of ten or twelve thousand! Case last week was reported only because of insistence of local guarda de hygiene. FM had severe headache for three days which did not yield to drugs; came to dispensary of S on third day rather sick but afebrile; returned home got rapidly worse and died on the eighth day afterwards. S thinks FM had been vaguely ill for sometime before the onset of the severe headaches but has no data; urine showed much albuminuria before death; body markedly icteric. S observed left sided ocular congestion.

S takes us to home of Moura: get convalescent blood from following:

Edmilson Lima Moura 4 years always this house; onset March 17th, sudden onset three days high fever but some fever throughout course of illness (14 days) vomited only medicine. *Failed to protect Rheum May 18*

Edenor Lima Moura 2 1/2 years always here; onset 14 days after Edmilson and 4 days before FM who lived four doors from here; fever and headache with total course of illness limited to fourteen or fifteen days. *Failed to protect rheum*

Mrs. Moura supplies the information that a 6 or 8 months old son of FM died with marked jaundice after seven days illness in February!!!!

Bled also Luzia Amelia 15 years who took sick on Ap. 19th; sick six days with headache fever and epigastric distress. Lives about two blocks from Moura's.

Water situation of Mossoró is very acute; all rain water is stored for drinking as local water supplies are not good; stegomyia found in all houses examined! In dry season drinking water is hauled ten leagues!

Failed to protect Rheum

Conference with Prefeito; has been greatly interested in cemetery and has constructed a new chapel there which contains also a necroterio! I suggest that the morgue must have been built for a purpose and that we desire to see that purpose carried out. VS says that he is willing to require autopsies in the type of cases that we suggest but that it will be necessary to pay someone to perform them and suggests that we furnish a physician; he suggests that a monthly fee of three or four hundred milreis should be sufficient; believes there will be at least ten ~~autopsies~~ autopsies of the type desired each month; states that the infant mortality is quite high, probably 50%; that M always has a high mortality and that the interior cities many of which receive supplies and goods from M are every now and then attacked by febres de mal character; believes that yf is always present here and that it is from time to time exported to the interior; M is commercial center for zone extending almost to Joazeiro. I agree to take up question of autopsies with MEC and advise results later. Local situation seems very favorable to undertaking routine autopsies to establish whether M is endemic center or not!

Leave at 2 PM. ARRIVE Assú 6 PM. stop @ Francisco Martins.

Apr 26. Arrive Natal 9:20 PM.

*Juvenal Lamartine
Governor of Rio Grande
do Norte*

Sunday Ap. 28. Lunch at home of Dr. Ignacio; to Aero Club with NT to meet JL returning from inauguration of three aviation fields; RG now has 25 landing fields and 3 under construction out of 40 counties.

Receive wire from MEC dated 27 asking that I hurry to Recife to confer with ERR about cases in Bom Conselho.

Ap. 28. 27 1/20 25 0/20 These two zones seem to be almost free of aedes; are most heavily hit by malaria; I have never seen in a city of this size, and told JL so, such extensive malaria outbreak; almost every house visited had one or more people sick and everyone in the zone looks sick; some houses give history of one hundred percent attack rate. Problem is apparently one of river breeding and could, I believe, be handled with very little expense once the authority were granted to give free access of tidal water to the flats which are now protected by dikes and used as hay land. Express this opinion to SV and later to JL; SV talks about building up this valuable land (?) but I doubt if this will ever be done. *Ag 2nd*

JL - JUVENAL LAMARTINE

Discuss autopsies in Natal and accept suggestion for consultation with Mec that the bacteriologist of the SS do the autopsies receiving a gratification from our service of 140\$ per month.

Farewell to JL.

April 29. Long day, 520^{W.M.} to 10 pm, on train from Natal to Recife.

Apr. 30. Call on GB, my godfather *in Honra de Barros*, who is out. Make plans for going to B.Con. tomorrow.

Telegrams sent to Rio on April 28th:

Rockfound Rio...Am sending three bloods from suspect convalescents of Mossoró to Bahia today. Stop. Mossoró has very high infant mortality. Stop. Necroterio now under construction at cemetery. Stop. Prefeito is anxious to have further studies of local situation. Stop. Is willing to make autopsy obligatory in fever cases of less than ten days duration. Stop. Are you willing to pay 300\$ monthly gratification to physician performing autopsies. Stop. Send answer to Recife. Soper. *negative for protect ion*

Rockfound Rio. Shall arrive Recife twenty-ninth. Stop. State President and Director Higiene are willing to require autopsies in fever cases in Natal. Stop. Will yellow fever service pay gratification of one hundred forty milreis per month to employee doing work. Soper.

Answer received dated April 29:

If there is no other way of securing autopsy material am willing to pay physician and employee Stop. Would prefer paying only employee City paying physician stop Connor.

From this ^{letter} I inferred that MeC thought that the physician and the employee were working in the same locality and therefore answered as follows under date of April 30.

Mossoró is three hundred kilometers from Natal stop physician to do autopsies Mossoró stop Employee to do autopsies Natal Stop Send twenty containers for liver fragments to Natal Stop I am advising Tavares your decision stop Shall go to Bom Conselho tomorrow. Soper.

May 1. Spend day on train enroute to Garanhuns.

May 2nd. To Bom Conselho, 1 hr. forty minutes by Ford. Visit Corredor zone of city with Dr. Machado, seeing two mild suspect cases close to the bridge, inspecting houses and conversing with convalescents regarding their own and friends illnesses during the past six weeks. The illness of cats which caused MEC to suggest plague was not confined to the Corredor but was general ^{see Y66} throughout the city whereas the suspect cases of yellow fever occurred only in the Corredor beginning at the upper part and gradually working down toward the bridge which separates the Corredor from the rest of the city. Suggest to AM that the distribution of cases and course of the epidemics are sufficiently interesting to justify the making of a detailed map giving location of houses, and cases as well as other important information. Some culex are still to be found in the infected zone but as far as could be noted the number of adult stegomyia is now very low. This is much different from the report of ERR as to the incidence of stegs just five days ago. It would seem that there is a high mortality in stegs and that the number which may be observed in a zone diminishes very rapidly as soon as the source of supply is cut off. This is in agreement with the experience of the Nurses School last year where the same rapid diminution was noted when producing foci were destroyed. I leave Bom Conselho with the definite impression that the cases reported have been yf; on the other hand I am surprised that we received notice of the outbreak as early as we did if at all taking into consideration the very low mortality involved (five or six deaths in some sixty suspect cases). It should be noted that the only physician in the place, and many towns of this size are without physicians, after causing the local intendente to notify the cases as yellow fever, fled to Recife and has not since been available to give information regarding the later cases. It is probable that we can still count on getting reports of yellow fever in the sertão when invasion occurs there but difficulty will probably be experienced in getting reports from the zone of the litoral lying between Recife and the sertão. That is to say, reports may be expected to come in from the epidemic areas but not from the endemic areas. Cases will be reported in the cities when the infection exists and comes in contact with the non-immune foreign population; cases will be reported in the border zone between the sertão and the litoral, when the infection comes in contact with people who have moved in from the sertão and from the sertão itself in epidemic times. Reasoning from this, the zone to be attacked is not the sertão, but is the immune zone lying along the litoral.

I left Bom Conselho with the feeling that the situation is well under control and that there is no danger of an extension of the infection to other zones of the city.

May 3rd. Spend day on train returning to Recife. Meet Mr. and Mrs. George Taylor and Mr. and Mrs. Anderson. Also young agronomist by name of Bianchini. Arrive Recife too late for dinner at Lloyds.

May 4th. Drive to São Laurenço and take tea with the Bathams. Meet Mr. and Mrs. Miles also.

May 5th. Spend day largely at the office in Recife. Dr. Gouveia de Barros called with Dr. Costa Ribeiro, director of Hygiene for Recife, to return Dr. ERR's and my call of the other day.

In afternoon visited ditching service with ERR. Plan adopted is for service to put through the matter ditches needed and to require the residents of the zone to fill in or drain the mud holes in their back yards; this is important as then more care will be exercised in the future in the digging of such pits for getting mud for the construction of mud huts. Most of land in these sections of Recife is owned in large tracts and the owners of the tracts are willing to force residents to comply to avoid getting fines assessed against the property.

Also visited first day's work of gang engaged in screening vent pipes of cess pools. Work done with copper screen already roughly formed in the office application being made with wire and pitch.

Visit zone of Mansoni production and see pistia gangs at work.

May 6th. Wire from MEC advises WAS will arrive in Rio May 15th; suggests I remain Recife until local situation clears. ERR, AM, and I go to get piece of liver of case reported by guarda; case surely not yellow fever.

May 7th. Classify larvae brought in by the guardas, 67 steps out of total of 192.

See Page 63 A for details of classification methods.

Visited Medical School with Dr. Octavio de Freitas.

May 8th. Muench and Davis in Port. Lunch of medical personnel with Dr. Gouveia de Barros also present.

Muench reports that he knows nothing of any campaign against the yellow fever service in Para report d to have been carried out by the Folha do Norte; says that certain difficulties have been encountered there in securing bodies for autopsies most of which would seem to be due to certain police department employees wanting a graft out of the Rockefeller Funds. Davis wishes to return to Natal next week. Prolonged conference of ERR and ELS and later HM and NCD with us on forms to be used in control work. Dinner at Rickards and confidential information comes out that Crawford has developed three boils since my visit to the city.

The Brasil Medico recently gave notes on a hospital association meeting in Recife in which the idoneidad of the Rockefeller Laboratory at Bahia was called in question "com elementos" by a Dr. Mariano in Recife. I called Dr. Gouveia's attention to this note and he assured me that the man making the charge had no scientific standing in the community but that nevertheless he would take it upon himself to call the man to account. This he did and the man has said that it was all a mistake and has written a letter to that effect and has promised to make due correction at the next meeting of this association so that correction may be made in the Brasil Medico.

May 9th. Day mostly at office. Attention called to article of Sebastiao Barroso in Brazil Medico of March 29th.

Notes on Visit to Medical School on May 7th.

| | | | |
|---------------------|----------------|-------|--------|
| Funds | State annually | 50 | contos |
| | Federal " | 100 | " |
| | Students Fees | 320 | " |
| Investment in plant | | 2 075 | " |
| Capital on Hand | | 1 000 | " |
| Students on hand | Medics | 297 | |
| | Dentics | 22 | |
| | Pharmics | 3 | |

Professors receive forty milreis per lesson or four hundred milreis per month for 9 months in the year.

May 7th, 1930. Spend morning at the office classifying the mosquitoes brought in by the guardas during the weekly collection. Of 192 foci classified, 67 or 34.9 % were egypti. Among others found were various kinds of culex, limatus and taeniorhynchus.

Notes on classification of local mosquitoes in Recife.

Adults:

- Aedes egypti lyre on back which may be rubbed off in old specimens or specimens hatching in bottles in which case may be mistaken for taeniorhynchus.
- Aedes taeniorhynchus (taeniorhynchus) looks much like steg but has no lyre on back. Back of thorax is black.
- Mansoni titillans is a black mosquito, rather sluggish in movement and easily killed. Found only in zones where pista plant grows. Has marked white zone on upper side of proboscis.
- Aedes scapularis resembles other aedes mentioned above but has large white spot on back of thorax.
- Limatus durhami is a very fragile moth like mosquito which seldom attacks humans. Cannot be mistaken for other common local varieties.

.....

Larvae-:

- Aedes egypti-spines on middle and posterior tufts of thorax. One row of trident shaped spines on 8th segment. Gills rather long. Photophobic.
- Aedes taeniorhynchus has rudimentary spine on posterior thoracic tuft only. Triangular patch of simple spines on 8th segment. very short anal gills.
- Mansoni titillans- larvae are to be found attached to the roots of the pista a water plant the cells of which contain much air which enables these larvae to avoid the surface entirely.
- Aedes scapularis-has rudimentary spine on posterior thoracic tuft only. Double row of simple spines on 8th segment. Long slender anal gills.
- Limatus durhami- longer and narrower than steg. Brownish yellow. Movement very sluggish. No spines on throacic tufts. No pecten. Very few simple spines on 8th segment. (Alive is more apt to be mistaken for culex than for egypti.)

May 10. Saturday. Visits casas fechadas turma with Rickard. Attempt being made to render unoccupied houses mosquito proof for thirty days.

Cow pasture pool in the afternoon; dinner party at Rickard's in the evening.

Present Goodmen, Lloyd, Rawson, Hendrickson, Mottram, Tennant, Ingram. Callender, Van den Arnd, Italian Consul.

May 11, Sunday. To Parahyba in sopa- four hour trip as Monsenhor holds up the trip by ordering jantar at Goyanna.

PARAHYBA. May 12. Z14 O-28. Anglo Mexican furnishing oil for Ford. Maritime visits are listed as house visits. Classification of foci not marked on guardas report, merely verbal report of g to go each morning at office. WR finds no fault with 14B but admits that he had expected to ask permission to print other form on back of FA2C in order to get necessary information for 14B. Call on Dr. Guedes Pereira who is still convinced that Jacarau cases were yellow fever and who thinks that yellow fever still exists in the interior of his state although he does not know just where it is.

9/11/1927

May 13th. Visit number of house in central zone with mosquito complaint; find many mosquitoes in several houses but stegs in only one house. It would appear that the sudden appearance of mosquitoes in quantity in this zone is due to the recent rains which either through actual drainage of rain into the cess pools or through raising the level of the ground water have so diluted the contents as to make them suitable breeding places for culex; stegs found had probably come from an incompletely sealed abandoned well. Visit vacant lot gangs and ditch conservation man. Discuss settas and numbering of houases with WR. PM spent working on reports. Return visit of Dr. Guedes at Hotel. Attend theater with WR and Mr. Vance and see A Mulher do Trem. Taubatã. Received wire from ERR

"Davis wires Liver Gaudencio Silva positive yellow fevere. Also had schistosomiasis sto several more cases and 2 deaths Bom Conselho. Stop Rickard."

May 14 "Sopa" to Recife. Purchase suitcase; call on Batham and on Goodman's; Again go over forms with ERR; receive letters regarding visit of WAS; FFR wishes WAS to visit YF service with MEC; MEC to go on leave June 27th; WAS to sail for Europe from Bahia June 24th.

Davis de Barros

May 15. Telegram to GB from business men of Bom Conselho asks for aid saying that the fever is spreading and is beginning to kill people and saying that BC ^{Conselho} had epidemic of more than thousand cases in 1919; GB says this telegrams means that cases have begun to occur in gente boa and that people from surrounding towns have learned of the sanitary condition of Bom Conselho and are not coming there to purchase. I tell GB that we think the service in BC is adequate but that to relieve all doubts on the local situation Dr. AM is going tomorrow with two more guardas to check up on everything.

("Rockfound Recife. Davis reports tissues Gaudencio da Silva positive stop suggest organizing service for all towns on railway system stop think we must regard eastern third of state infected stop stop Connor") (Why oh why must we suddenly decide that the entire eastern third of the state is infected? One moment yellow fever does not exist, the only disease present being plague or psittacosis of cats and then next minute the whole third of the state infected! We have at the present time no more reason for thinking that the whole third of the state is infected than we had after Sanharó and Timabauba in 28, after Bom Sorte and Pedra in 1929 when cases were also being reported for Aguas Bellas, Correntes and Garanhuns. Also why should service be opened in entire eastern third of the state of Pernambuco and nothing done in Alagoas which is equally if not more exposed to infection from BOM CONSELHO. Any program for the control of yf in the interior of Pernambuco cannot neglect the neighboring states of Alagoas, Parahyba, Rio Grande do Norte and probably Ceara.)

Forward baggage with Capitan Shulze of the Itanage to Bahia wiring to DBW to receive same.

Lloyds dine at Rickards.

May 16th. Friday. All day train trip to Maceió. Met by Dr. José de Mendonça de Almeida. ALAGÓAS.

May 17th. Go to office to talk over service with MA before beginning inspections of zones. MEC last visited service here June 1929. Mendonça discusses the Leopoldina cases of last year and leaves me with the impression that they were yf in spite of the positive blood for typhoid finally reported for a case from that place. Tells me that suspect cases in Viçosa were reported to the Governor by the prefeito in letter of about April 19th; that he went with another doctor of the health service to Viçosa on April 21st, seeing more than twenty sick and taking slides for malaria examinations all of which proved to be negative; bloods for typhoid cultures were all negative. I suggest that we return to Viçosa today as his account of cases seen sounds remarkably suspicious of yf. First call on Dr. L.M. at his dairy, then lunch and leave at 11:20 AM via Ford arriving at V at 3 PM. Spend afternoon seeing sick, convalescents, and getting histories of fatal cases. I believe there is no doubt that yf has existed in V since Feb. 17th at least. Two opposite zones of the city seem to have been the most heavily hit by the epidemic, the center of the town showing nothing so far as is known up to the present. (Steg index taken on MAs previous visit was '80 per cent for all zones including center.) Bloods taken for protection tests. Arrive in Maceió without jantar at 10 PM.

Viçosa

"Eight cases febre mau character with black vomit and anuria reported in Quipapá two deaths stop Brito leaves Saturday to investigate stop Rickard."

May 18th. SUNDAY. Wired MEC, "Spent Saturday at Viçosa with Dr. Mendonça stop No reasonable doubt yellow fever epidemic there stop suggest you authorize service Viçosa and other points stop Blood taken for tests. Soper."

History of some cases of Viçosa:

José Ferreira da Costa - 22- always resident in this county. Onset April 18th; sudden onset headache fever vomiting. Later scanty dark colored urine. Noted eyes were yellow in convalescence but thinks they are now all right. (AS matter of fact eyes are still markedly jaundiced) His sister, Maria Candida de Jesus, 24, took sick in the same house on April 13th with similar symptoms; on the third day, M began to have bloody and dark colored stools and vomited black becoming very weak on the succeeding days, finally becoming jaundiced and dying on April 23rd.

Elias Leite da Silva. 28. Onset May 9th with high fever, dhills headache and body pains. Vomiting reported during the entire course of the illness at first yellow but on fifth day black. Died on May 14th.

Jose Antonio dos Santos 15 Born in Municipio of Uniao but in Vicosa for one year. Onset April 13th fever, headache, body pains, nausea. On day of death had numerous bloody stools. Died off April 18th.

Other histories were taken by MA which are not recorded here.

" MEC wired that Serum from Luzia Amelia stop Edinor Lima Moura stop Edmilson Lima Moura all of Mossoró failed to protect stop."

May 19th. Z55 0 steg- 2 culex-lanopheles in 25 houses. Guarda worked well. Visited the previous palace of the government which has long under ground gallery which previously produced culex in quantity. Has been corrected by installation of syphos at very low cost. Visited places in Jaragua where the drains are giving clouds of mosquitoes. Oil will not act and neither will the prefeito.

Take up question of numbering city with MA; prefeito insists that R F is wealthy enough to furnish metal plates for houses to be numbered. I advise MA to go ahead and number the houses according to our system without consulting prefeito and await results.

Call on Sampaio the local manager of the SOB.

Dr. MA has orders to close service in Penedo at end of June. I suggest not doing so unless those orders are renewed.

May 19 continued. Called on Dr. Meneschal and secured the following information of historical interest:

ARAPIRACA. Dr. Meneschal saw typical case here in 1929 before our service was reopened in Maceió; notified this case and other suspects to MEC who did not investigate the matter further.

LEOPOLDINA. Before May 1, date of opening of our service in Maceió, rumors were heard of cases of yf in Leopoldina close to Palmares. MA and other doctor were sent to investigate and saw more than ten cases with fever headache body pains and certain hemorrhagic phenomena. Slides all negative for malaria. People of Leopoldina insisted that people attacked either died in the first seven days or got well. Deaths in Leopoldina were, Jan 1929 6, Feb 9 Mar 9, Apr 14, May 16 up to 25th of month. Both MA and LM are convinced that these cases were yf although a positive blood culture was reported for a case there occurring toward the end of the epidemic.

PALMEIRA DOS INDIOS On June 11th 1929 telegram was received stating that Eurydice Martins had today's symptoms febre amarella com grande perda albuminuria. Two local physicians who at first disagreed on diagnosis decided in favor of yellow fever after watching the course of the illness.

Eurydice Martins onset suddenly June 4th at 11 AM, fever, headache, back pains. Vomiting at first bilious material later (3rd day) black. Black stools; scanty urine heavy with albumin. Jaundice. Afebrile on tenth day.

MA found histories of four or five cases in Palmeira and others outside which had symptoms of yf with death on third or fourth day. Death rate tripled in May over previous months; Our service organized on Aug 1 and discontinued Dec. 31.

Dr. Meneschal also reports that there have been rumors reaching him of yf in Anadia, and I suggest to MA that we go there this afternoon although it is already 2:45 PM. Finally leave for Anadia via Ford at 3:30 arriving at 6:30 PM and returning at midnight after seeing cases of fever in Anadia and in Tapera. History and distribution of most of cases does not sound like yf; cases seen did not look like yf. However, one case in Tapera gave the following history,

Onset May 11th at 2 AM, fever and body pains and headache. On the fourth day began to vomit, vomiting blood twice and black once. Stools black. On the fifth day, he appeared to be paralyzed in the left arm and right leg, dying on this day.

One other similar history was reported at an outlying inaccessible point.

The result of our trip was that we were convinced that most of the cases of fever occurring in the neighborhood are not yellow fever although the existence of the infection of this neighborhood cannot be ruled out in the light of the two histories mentioned.

May 20. MEC wired "Authorize control measures for Vigosa and other points you may believe necessary.

May 21. Wasted day waiting for plane expected hourly.

22. Worked all day while waiting for plane.

23. Worked in office all day.

24th Spent day on Lake in front of Maceio and flew to Bahia ~~on~~ Rio de Janeiro.

Met at dock by Sawyer, Connor, Wilson, Frobisher, Shannon, Cunningham.

25th MEC and WAS sail for Recife on Araraquara. Wilson, Cunningham and I play hillside pingpong by the sea in the afternoon.

26th Dr. Magalhaes Neto calls on me at the office and we discuss once more yellow fever; ~~ME~~ gives some interesting information regarding the rate of travel of the disease in the interior. YF apparently rarely spreads like wildfire but is a relatively slow moving disease. Dr. Wilson and I call on Dr. Barros Barreto and are well received. Discuss forms with DBW making a few minor changes in headings; W would like to have percentage of total foci encountered in each type of deposit but there seems to be no way of getting this information on one sheet of paper.

*Wired Rockefeller Recife deterioration solved stop
Suggest soft pedal soles.*

*written before
seeing WAS in Bahia*

Maceió, Alagoas.
May 18th, 1930.

Dear Dr. Russell:

I have received your letter of April 21st regarding Dr. Sawyer's present visit to Brazil and Dr. Connor's leave beginning in June. As Dr. Sawyer is not returning to New York, I am submitting the following notes regarding yellow fever in North Brazil for your consideration; as through previous work and travel I am more familiar with the situation in the state of Pernambuco than elsewhere, I shall limit the discussion largely to that state. I shall of course discuss the situation thoroughly with Dr. Sawyer, but as a change of policy is being suggested, I shall forward a copy of this letter to you by air mail.

In 1918, Dr. Gouveia de Barros, now Director of the Health Services in the State of Pernambuco, then Congressman, introduced a measure in the Brazilian Congress providing for a national campaign under the auspices of the National Health Department against yellow fever throughout north Brazil, the purpose being to eradicate the disease from the country. This measure, which was probably a direct result of General Gorgas' visit to Brazil, passed and federal commissions were organized and sent to all the northern states from Espirito Santo to Amazonas. The funds and personnel available for this service were more than ample; when Dr. Lyster and I visited Recife in March 1920, we found that nine doctors were working in Pernambuco with a very large staff of guards and serventes. Dr. Lyster's verdict after an examination of the records of the service and after visiting a number of houses in different parts of the city was to the effect that the stegomyia index was probably well below the critical index for the production of secondary cases. I am not so familiar with the results of the work in Bahia know that visible yellow fever disappeared from the capitals north of Bahia. Once the work of these commissions was discontinued however cases began again to

~~fever from North Brazil~~

2. FLS to FFR May 18 1930.

~~You are familiar with the outbreaks of 1922 and 1923 and the history of~~

~~the Foundation's intervention beginning toward the end of the latter year. The~~
~~occur in the capital cities; in Rio Grande do Norte, for example, cases were~~
~~first Foundation attempt; if I may so designate the period of Dr. White's ad-~~
~~registered in Natal within three months of the closing of the Federal Service.~~
~~Administration, promised well from the beginning and the end was believed to be~~

The points that I wish to emphasize regarding this national effort are
~~in sight~~
that

1. The effort was conceived as a result of the visit of General Gorgas and was organized with the expectation of eliminating the disease from the country through control of the capital cities and such other places as might be reported to have the disease.

2. This effort, although amply supplied with funds and men, failed in spite of its apparent success in eliminating the disease from the capital cities.

3. Many of the Brazilian workers became convinced of the futility of attempting to eradicate yellow fever from North Brazil, through a control limited to the capital cities.

I doubt if the later American workers in Brazil have ever appreciated the extent and seriousness of this first attempt to eliminate yellow fever from North Brazil!

You are familiar with the outbreaks of 1922 and 1923 and the history of the Foundation's intervention beginning toward the end of the latter year. The first Foundation attempt, if I may so designate the period of Dr. White's administration, promised well from the beginning and the end was believed to be in sight when the São Francisco River and Parahyba epidemics of 1926 spoiled the picture. These epidemics were attributed to the scattering of the otherwise dying embers of the infection by the exceptional movement of non immune troops through the interior of the north occurring in that year. The points I wish to emphasize regarding this first Foundation attempt are that

1. The effort was based on the idea that control of 'key centers' of infection would let the infection burn itself out in the interior and would thus automatically disappear.

They've should not have watched

2. This effort, although amply supplied with funds and men, failed in spite of its apparent success in eliminating the disease from the capital cities.

3. Certain Brazilian workers became more convinced than ever of the futility of attempting to control yellow fever in North Brazil, through a control of the disease limited to the capital cities.

The second Foundation attempt, by which I refer to the period from Nov. 1926 to March 1928, secured apparent control of the situation readily and from April 1927 to March 1928, a period of eleven months, no cases of yellow fever were confirmed in all Brazil. The happy prospect of the early elimination of the disease was spoiled however by an 'isolated' case in the interior of Sergipe in March 1928, an 'isolated' case in the interior of Pernambuco in April and the Rio de Janeiro epidemic which became apparent in May. The points I wish to emphasize regarding this second Foundation attempt are that

1. The effort was based on the idea that control of key centers of infection would let the infection burn itself out in the interior and on the assumption that the previous efforts had failed through inefficiency and inability to maintain such key centers free of infection.

2. This second Foundation effort, although organized on a less expensive basis than the first, was limited in funds and personnel only by the judgement of the director in the field; apparently successful in the attempt to maintain the key centers free of infection, failure was registered in the larger attempt to eliminate the disease from the country.

3. Certain American workers including myself began to have serious doubts as to the feasibility of eradicating yellow fever from Brazil through control measures limited to the capital cities and to those interior points where the disease might be visible.

The third Foundation attempt, by which I refer to the period from June 1928 to the present, has been characterized by an intensification of control

measures in those centers where services were still in operation in March 1928 and a reorganization of services in the other capital cities of the north with the exception of Theresinha and Manaus; temporary services have been organized in a few interior points, generally only after confirmation of the presence of yellow fever in the area. Visible cases of yellow fever continued to occur from March 1928 to July 1929 but from the first of August 1929 until after my return to Brazil in March of this year, no confirmed cases were reported for all north Brazil. However, a positive autopsy was secured late in April in Bom Conselho, Pernambuco, and there is ample reason for believing that Viçosa, Alagoas, has been having an epidemic of the disease since the middle of February. The points I wish to emphasize regarding this third Foundation attempt are that

1. The effort was based on the idea that the control of key centers would let the infection burn itself out in the interior and that previous efforts had failed through a failure to maintain such key centers "non infectible" over a sufficient period of time. The occurrence of local cases in the principal capital cities, Bahia and Recife, in spite of the intensification of the services in these points immediately after the declaration of yellow fever in the Federal Capital, was taken to indicate that they had probably never been made "non infectible"

2. This third Foundation effort, though at first somewhat handicapped through the previous overeconomical reduction of medical personnel, has had ample funds at its disposal; since March 1929 the federal government has been paying fifty percent of the field expenses and has complained at times that the money was not being spent fast enough to give the results desired. This effort has thus far failed to eliminate yellow fever from the country although the capitals have been kept free of visible infection since July 1929. (This statement is made ignorant of the result of examination of liver of child autopsied in Pará in March 1930.)

3. The few workers with whom I have talked since the outbreak in Bom Conselho are all convinced of the futility of the key center programme. I am convinced that the disease is capable of maintaining itself indefinitely in the

interior of the country:

.....

The discussion of the situation is made difficult by the impossibility of clearly defining the word "non infectible"; of course it means when applied to a city or area that such city or area may have introduced into it infective cases of yellow fever without the production of secondary cases. It has been long recognised that the infectibility of a place to yellow fever would depend on the number and distribution of non immune and on the number and distribution of insect vectors of the disease;; it has not been so well recognised that the probability of infection of a community will also vary with the number and distribution of imported infective cases. The introduction of a single infective case of yellow fever into a city with a stegomyia index of 100 and an entirely non immune population would almost certainly produce secondary cases; the introduction of hundreds of infective cases into a city having only one adult female stegomyia and one non immune inhabitant might well fail to produce a secondary case. These are however unusual cases. Suppose a city to have an evenly distributed adult stegomyia index of 10; a single infective case of yellow fever should have ordinarily only one chance in ten of infecting mosquitoes, whereas the introduction of five such cases would make the chances even and the introduction of ten cases would make the infection of mosquitoes almost certain. The actual number of cases occurring will of course vary with the distribution of the non immune population.

Other examples might be given, but I prefer to let Dr. Putnam work out the details for you at her leisure. The point that I wish to make is that the infectibility of a place will vary with the infectivity of those places with which close contact is maintained as well as with the number and distribution of mosquitoes and non immune. This may help explain the apparent breakdown of the defenses of the capitals of north Brazil in 1928 and 1929 after Rio de Janeiro began to manufacture and export yellow fever virus on a large scale; furthermore

it may be more than a coincidence that apparently complete control of these capitals was secured only in July of 1929 at which time yellow fever greatly declined in the federal capital. The sudden occurrence of cases of yellow fever of local origin in a control area does not then necessarily indicate that there has been any letup in the local service; neither need it indicate that the disease has been maintaining itself invisible in the control area over a long period of time; either of these hypotheses may be true but the explanation of such occurrence may well be that the critical index has been lowered by an increased introduction of infective cases from outside the control area. It is then entirely possible that the places worked by the yellow fever service in Brazil since 1923 have had a sufficiently low index most of the time to have caused the complete disappearance of yellow fever long ago had each of them been isolated as was Guayaquil in 1918, free from reinfection from without and with very limited contiguous infectible territory!

After what may be called four serious well financed attempts to eliminate yellow fever from Brazil extending over a period of twelve years, all of which have failed, should we not begin to doubt the premise on which these attempts were based? Is it not probable that endemic regions exist which are as dangerous to the capitals as the capitals were to other points before control measures were instituted? Can we really expect to control yellow fever in the state of Bahia, for example, with its four million inhabitants, by reducing the insect vectors of the disease which have access to only some two hundred thousand of its people? (You will remember correcting my use of the word "enormous" referring to the interior population of north Brazil in our discussion of this problem last December; it is true that the inhabitants per square kilometer are few, but unfortunately for yellow fever control, these are not evenly distributed over the total area of the northern states.)

.....

I believe certain important conclusions can be drawn from a study of the

known distribution of yellow fever in relation to population distribution in Pernambuco during the past ten or twelve years. From such a study, I have divided the state into four zones, as follows,

Zone 1. Recife and suburbs where occasional cases of yellow fever have occurred, especially in 1929, in spite of control measures.

Zone 2. The litoral, or relatively narrow, heavily populated strip, roughly paralleling the coast where occasional 'isolated' cases of yellow fever have occurred; e.g., Cabo, Timbaúba.

Zone 3. Intermediate zone of transition from litoral to sertão, relatively heavily populated and receiving newcomers constantly from both zones. This zone has produced epidemics during the period under discussion as follows,

| | |
|--------------|------|
| Bom Conselho | 1919 |
| Agua Bella | 1919 |
| Sanharó | 1928 |
| Boa Sorte | 1929 |
| Pedra | 1929 |
| Bom Conselho | 1930 |

Zone 4. The sertão or relatively arid sparsely populated zone comprising roughly the western three fifths of the state; not known to have had yellow fever during the period under discussion.

Such a zoning of the state, based on admittedly incomplete data, may nevertheless, help to visualize the problem of control. One of the great difficulties in orienting control campaigns in Brazil has been the impossibility of knowing where the disease existed; the four zones mentioned above are believed to present different degrees of visibility of yellow fever when the infection exists. Yellow fever in Zone 1, contrary to the opinion held by some, should be readily visible; a rather large number of foreign non immunes, a large number of practicing physicians, a service for "verificação de obitos" of the Health Department and an increasing number of youthful non immunes growing up under control conditions are important factors. Yellow fever in

Zone 2 is much less visible than in Zone 1 because of the small number of physicians and foreigners and coexisting widespread malaria which always furnishes a ready diagnosis for fever and death; the absence of epidemics in Zone 2 over a period of years when the infection is known to have been present at times within the zone and most certainly must have been reintroduced repeatedly from Zone 3 and occasionally from Zone 1 indicates that there is a high degree of adult immunity in this zone.

Yellow fever in Zone 3 has been more visible than in other parts of the state because of epidemic conditions due to relatively little immunity in adults of this region, both Boa Sorte and Bom Conselho epidemics giving cases in all age groups; in the absence of malaria, epidemics of yellow fever are generally easily diagnosable; even the matuto, familiar as he is with the recurring outbreaks of plague in this zone, readily differentiates yellow fever and plague. The invisibility of yellow fever in Zone 4, may indicate only that we lack data from this region but in conjunction with the epidemic history of Zone three probably indicates that the infection has not been wide spread in this region.

It is entirely possible that with Zone 1 under control, with Zone 2 largely immunised and Zone 4 probably relatively non infectible, the infection will in time burn itself out in Zone 3; on the other hand it is more probable that Zones 2 and 3 together with similar zones of Alagoas form an endemo epidemic area capable of maintaining the infection indefinitely. To control yellow fever in these zones I believe we must extend services on a permanent basis to the more important centers in the se areas.

As the Pernambuco Alagoas sector is but a small part of the infectible territory of north Brazil, an extension of services to the interior of these two states will not resolve the problem if similar conditions obtain elsewhere. I believe we should reconsider the entire situation and make plans

to extend to suspect areas in the interior as rapidly as possible. If such a programme is undertaken immediately, necessary extensions can probably be completed before the end of the year for the entire territory, thus giving time for one year of such control before the termination of the present contract. In determining suspect areas I would be inclined to be rather thorough than otherwise.

Very sincerely yours,

Fred L. Soper.

Maceio Alagoas

May 23rd.

Dear Dr. Russell:

In further reference to the proposed change of program advocated in my letter of May 18th, I would like to state that this change would have been recommended by me in the absence of confirmed cases of yellow fever this year; in fact, a large part of the letter was drafted in Fortaleza before such confirmations were made. In addition to the arguments presented for increasing the scope of our program, there are certain other reasons of policy which make such a change advisable.

When yellow fever was discovered in Rio two years ago, it soon became the question of greatest public interest of the moment. There were those who wildly accused the Foundation of permitting this national disgrace through its failure to listen to Sebastião Barroso when he warned Dr. White personally and through the press that the disease in north Brazil could not be controlled through a control of the capital cities; Dr. Connor came to Rio and talked of the need for a nation wide campaign from the north to the south and from the Atlantic to the Andes!! to include all the infectible territory of Brazil. Both Dr. Connor and Dr. Fraga agreed that there was need for a revision of the agreement existing between the government and the Foundation; Dr. Connor's idea was that the government should turn over the service throughout the entire country to the Foundation and pay fifty percent of the operating expenses whereas Dr. Fraga's idea was that the Foundation program needed his personal guidance and direction. Dr. Fraga made plans as early as August 1928 to come north and show the Foundation how to do the job and Dr. Connor presented a proposed contract as late as September of the same year which would have taken the entire direction of the yellow fever services throughout Brazil out of Fraga's hands.

Strange as it may seem, it was only the seriousness of the situation in Rio and the difficulty encountered there in extinguishing the disease, that kept Dr. Fraga out of the north in 1928 and early in 1929. The greater the difficulty encountered in Rio and the longer the infection was able to maintain itself there the greater became the prestige of the Foundation through its ability to keep the northern capitals almost free of the disease during the Rio epidemic. So great was this prestige at the time the contract was signed in January of 1929 that Dr. Fraga's position with the general public and probably with the government was strengthened, when it became known that the Foundation had sufficient confidence in him to sign a contract of this kind.

To return to ancient history; on March 27th 1928, Rocha Lima gave a positive diagnosis on the Estancia case. Fraga asked me to insist with Dr. Connor that steps be taken to prevent the spread of the disease. Finally, Dr. Fraga went so far as to tell me that Rio de Janeiro was without control of any kind and that he feared what might happen should the disease be introduced into the federal district. (This was in April, at a time when yellow fever undoubtedly existed in the federal district; I have sometimes wondered whether Dr. Fraga may not have already heard of suspected cases in the city?) In any case, at Dr. Fraga's request I telegraphed Dr. Connor, who came to Rio insisted that the Estancia case could not be yellow fever, and that even if it were yellow fever, there was absolutely no danger of the introduction of the disease. Had it not been more or less constantly present in the north during twenty years without having been successfully introduced into Rio? Although the extension of the service as requested at the time would not have prevented the infection of Rio de Janeiro, our position was somewhat weaker when the infection was discovered some six weeks later.

The present contract was signed and approved by the Brazilian authorities because they felt that the 1928 outbreak had proven once again that yellow fever

could not be controlled by controlling the capital cities alone. (As far as I know the Brazilians never seriously doubted the efficiency of the Foundation service in those places where work had been carried out. When we insisted in carrying on the work on the same plan as previously adopted, we were frankly admitting to the world that we discredited the results obtained locally by our services from 1923 to 1928.) The government did not feel that the Foundation could be expected to bear the expense of an interior campaign in addition to control measures in the capitals and hence agreed to pay fifty percent of the total expenses rather than organize a separate service for the interior. As evidence of good faith and in the expectation of an enlarged program, the government opened a credit of five thousand contos, six hundred thousand dollars, to cover their portion of the 1929 expenses and Dr. Fraga complained more than once during the year that the money was not being spent rapidly enough to bring the interior under control.

The present contract was signed during Dr. Connor's absence from the country; on his return from Europe in February of last year just a few days before the contract was to become operative, Dr. Connor and I had a long conference with Dr. Fraga. At this conference, which I believe occurred on the 22nd, Dr. Fraga asked for a wide extension of the service to which Dr. Connor agreed, saying that he would study the situation and present a programme later. However, the programme adopted has been to control the capital cities and points in the interior when positive indications indicate the presence of yellow fever. This I believe is a somewhat more limited programme than that adopted in the earlier years of the Foundation service.

When I arrived in Rio from New York in March of this year, no cases of yellow fever had been confirmed for the entire country, with the possible exception of cases in the Minas in the month of January, since September of last year. Dr. Connor and I called on Dr. Fraga, who was quite pleased with the situation in the south but wished to discuss an enlarged programme for the North. I avoided the issue, saying that I was leaving in a few days to make a two month strip in the north after which I would be better able to discuss the situation with him. To take his mind off the north, I told him that I was quite pleased with the results in the south and knowing the way the work was being carried on in the federal district since last year that I was not surprised to learn that no further cases had been registered there but that it was almost miraculous to me that no cases had occurred in the State of Rio. Dr. Connor has since reported cases in the south but in the meantime we have had to declare cases in Pernambuco.

Dr. Fraga considers that his position is unique; through the recent epidemic in Rio, the government recognizes the gravity of the yellow fever problem for Brazil and is willing to go to any length to secure its eradication. Neither funds nor authority have been lacking for the service in Rio and Fraga feels that the same is and will be true for the service in the north. He feels however that as time goes by without further cases in the south, that such unlimited cooperation of the government may not be available and that now is the approved time for action.

After all the government has a fifty percent interest in the service in the north and a one hundred per cent interest in the service in the south which is of course only a complementary service. I believe we should face the situation squarely and either enter on an extended campaign or frankly and openly refuse to do so and give the government a chance to handle its own problem.

Sincerely yours,

Fred L. Soper.

Probably JBV

May 17

As Drs. Sawyer, Connor and Soper will be at this post next week I hope to hear at least some of the following points discussed. No thought of criticism of the present campaign methods prompts the bringing up of these items at this time.

1. Is the campaign attempting to eradicate or control yellow fever?
 2. Should the anti-larval measures be confined to coastal towns or also to interior areas with a past history of yellow fever? If work is to be carried on in the interior to what extent should this be done?
 3. The present campaign in Bahia is presumably building up a non-immune population, and would it not be better to give up our present control work and allow gradual immunization in childhood to occur IF there is a possibility of the work being suspended while y.f. still exists in the country. If we build up a large non-immune population and control work is stopped the epidemic would be truly devastating and because of the high percentage of non-immunes more difficult to control.
 4. Campaign should be based on elimination of breeding in:
 - a) Water containers in and about the building.
 - b) Abandoned deposits within a certain radius of the buildings.
 - c) Reef gutters.
- Sufficient personnel should be available to control efficiently production in each of these three groups of containers. Investigations should be carried out to determine the relative importance of each.
5. No ideas or hunches of various members of the field staff should be applied in the field unless previously confirmed at a small experimental field station.
 6. The field services should have available the services of an epidemiologist and a statistician.
 7. We should be promptly notified in writing from Rio office of advances made by the laboratory ~~of advances made by the laboratory~~ which are applicable in the field.
 8. A means of checking progress should be established. If no suitable yard stick is available studies should be made to establish one. This would supplement the present predic index record.
 9. Educational work should not be left entirely to the guards.
 10. Before a medical man is detailed to field work he should have a preliminary short course at the laboratory where the entomology, pathology etc. of the disease should be taught.

11. Owing to the long hours of work and mental wear and tear involved in this campaign the medical men and if possible the subordinate personnel should receive two weeks local leave.
 12. As this is a Federal campaign the possibility of building up a local organization with full State backing to later take over the work is difficult. Ideally the campaign should be supported by Federal, State and R. F. funds.
 13. Interior towns where y.f. occurred in for example 1926 should be investigated by the laboratory to see if children under 4 years of age are immune or non-immune.
 14. Malaria and Y.F. Work. -- Malaria in São Salvador is reported as the second cause of death. In 1929 the specific death rate for malaria in an estimated population of 330,000 was 147.6 per 100,000. If malaria work is undertaken here, a thorough preliminary survey should be made and under no condition should the malarial campaign be carried out by a local director who has not had sufficient training in this type of work.
 15. Dr. Cunningham has suggested the idea of a semiannual conference of the yellow fever doctors and in Bahia a biweekly seminar of the combined laboratory and field doctors.
-

WAS to CR

S.S. Cap Norte, approaching Bahia,
May 22, 1930.

Dr. Clementino Fraga,
Director of the National Department
of Public Health,
Rio de Janeiro, Brazil,

WA Sawyer to
Clementino Fraga

Dear Doctor Fraga:

I am taking this first opportunity to thank you for the many courtesies you showed me during my short visit in Rio de Janeiro. I was greatly interested in seeing the service which you created for the purpose of suppressing the yellow fever epidemic, and I was impressed by the completeness of the organization and the enthusiasm of the doctors directly in charge of the work. The fact that no case of yellow fever has been confirmed in the city of Rio de Janeiro since last September is strong evidence that your efforts have been rewarded by the disappearance of the disease from the city, but I am heartily in agreement with your thought that the work directed against the mosquito should be continued without relaxation so that the city will remain non - infectable.

Soon I shall be in northern Brazil with Dr. Connor making inspections of the control work against yellow fever in which the International Health Division of the Rockefeller Foundation

has been participating. With regard to this endemic region I am in complete agreement with the opinion you expressed that the scientific studies accompanying the control work should be continued and extended. With the development of new methods it should be increasingly possible to determine the presence or absence of yellow fever with precision both on the coast and in the interior, and with this knowledge to decide where control work is most needed.

*But had better
intent in viscerotomy*

It gave me great pleasure to hear from you that the government of the United States of Brazil had accepted your thought that the control of yellow fever is a national problem. It is also most encouraging to find that you are so strongly in favor of the permanent methods of control, one of the most important of which is the installation of modern and adequate water supplies in all cities, especially the large ones. When all the houses in these cities are connected with an adequate supply available at all hours, there will be no need for the numerous water receptacles which now breed mosquitoes and require frequent inspection.

The Director of the International Health Division, Dr. F. F. Russell, regretted greatly that he could not come to Brazil this year and confer with you. I shall, of course, make reports to him regarding our conferences and the inspections in the north.

Permit me again to thank you for your kindness and assistance during my visit.

Sincerely yours,

W. A. Sawyer

May 1930

May 26 continued.

Visit laboratory in the afternoon. Find Cabral idle and others working. With Davis absent he says there is very little for him to do. I learn that three autopsies were made in Natal on the 9th, 12th and 14th of May and the tissues forwarded to the laboratory on the 15th. These cases were without medical attention and were never suspected of being yellow fever but came in as part of the program just begun to have routine autopsies on all persons dying in Natal with fever of less than ten days duration who had not been definitely diagnosed something else by an attending physician.

Severino Santos , 3, dying 9th, reported suspicious by Frobisher.
Emilia Remos , 17, " 12th, reported positive.
Jose Felipe Filho 20, " 14th, reported positive.

*Gambria
Malaria*

*Negative
by Frob
+ Diálho*

At the time I was in Natal arranging for these routine autopsies, I had hopes of picking up something in the course of weeks or months if the infection were really present but I never had any idea that two and possibly three of the first three autopsies would disclose yellow fever in Natal where cases have not been registered for many months. (These results may well invalidate much of my letter of May 18th.) *All later called malaria by Davis*

Telegram received: " Inspeccionei hontem povoado Annel constatando gras-sar molestia character epidemico com dous casos fataes mes Abril ponto Historia doenca contada mulher Eduardo Jeronymo morto terceiro dia suspeitissima ponto Visitei seis doentes cujas observações seguirão Rio ponto Colhi sangue para provar protecção e inoculação que remetterei primeiro NYRBA ponto chamou minha atenção grande ~~epidemia~~ coincidindo apparecimento casos humanos pt Informa população daquela localidade que felinos morrem vomitando em poucos dias ponto Consegui fazer autopsia um retirando figado que enviarei nosso lab-oratorio para esclarecimentos histologicos ponto occasiao em que procurava colher sangue convalescentes rua Palhiço visitei doente quinto dia dezeseis annos idade apresentando franca ictericia e intensa albuminuria mesma casa sua irma morreu oitavo dia vomitando preto e enterorrhagia ponto Extrahi sangue sua mae Joaquina Maria mais trinta dias data inicio molestia pt Almeida. "

Telegram sent: Rockfound Maceio Telegram regarding investigations re-ceived stop Autopsia gato deve ser muito importante stop Peco mandar tambem sangue em venulas con e sem citrato para o laboratorio aqui Stop Soper." (I hope he gets the idea that I want blood of cats.)

Rockfound Recife: Almeida reports results of further investigations in small towns above Viçosa stop Epidemic with fatal cases presenting all characteristics of yellow fever associated with epidemic killing cats stop Cat autopsy material being forwarded to laboratory stop. Am requesting also cat blood stop Expect to sail for Rio Friday.

Rockfound Recife: Frobisher reports two of three livers from Rio Grande do Norte ~~positive~~ stop Third considered suspicious stop These livers are from persons dying in ~~Natal~~ without medical attention and less than ten days illness stop Autopsies were performed because of recent agreement for routine autopsies and not because of any suspicion of yellow fever stop Suggest Drs. Sawyer and Connor visit Natal and request that Dr. Connor reorganize service if necessary. I believe guarda chefe inefficient stop Soper.
The Wilsons and Cunningham to dinner.

*Ag
Malaria
Natal*

May 27th. Bahia. Learn from Wilson that there were suspect cases of yf in the Sertao of Pernambuco last year in the zone beyond Villa Bella. These cases were never investigated although they were reported to MEC as suspects.

Davis wires that there is a lot of malaria in Natal and that Tavares does not wish to accept Frobisher's diagnosis of yf on the routine autopsies there. This is quite natural. MF replies to me that one of the three cases is absolutely typical and that another is surely yellow fever; he is willing to admit that there may be room for doubt on the third case but that thinking that they were all three from the same suspect epidemic he made the diagnosis of the three on the first two slides.

Visit with DBW turmas de matto, turma de calhas and turma de latas; visit ditching service, half abandoned factory where extensive repairs are under way to tender drains mosquito proof; suggest the use of syphons to avoid part of the expensive repair of the under floor drains. Visit also the now unworked zone along the railroad which goes to Plataforma and also make a bird's eye inspection of Plataforma. Wilson believes that these zones should be under control as for all practical purposes they are a part of the city.

May 28th. Spent day at the office getting up correspondence and notes.

Learn that Burke's Journal is missing and that the large wall map of yellow fever cases is no longer here. (Given to Beeuwkes by Burke in April 1929)

May 29th. Spend morning at the laboratory; discuss Natal cases with MF and reexamine the three slides from there. Personally I believe there can be no doubt of one of the three cases; one of the other two shows much pigment and the third some. Mr stands by his guns absolutely on one of the three being yf. Pick up lunch with the Frobishers at the Nova Cintra. Dinner with C at the Pensão Edith.

Mr suggests that part of the difference in susceptibility of monkeys to yellow fever may be due to diet. He has noted that the monkeys in NY which had a more limited diet seemed to show much greater susceptibility to the disease; I give him the details of Lamson's work with calcium deficiency and susceptibility to intoxication with CCl₄. This was unknown to him; we agree that it should be worth while to starve his monkeys for a few days and then put them on a reduced diet to see if any difference in resistance can be noted.

"Mailing tissue from Edgar Maria diagnosed suspicious yellow fever Dr. Abenathar. Letter follows. Crawford" *Rubens*

May 30th Spend morning visiting garbage dumps with Wilson; also slide down the cliff behind the Beau Sejour to see breeding pools of taeniorhynchus on the water front. Bamboo problem also investigated.

Sail on Gelria for Rio. Conversi with Dr. Estacio Coimbra and with Mrs. FW Hammer whose husband is the organizer of the Kondor Syndicate: Mrs. Hammer came over in the Zeppelin last week; certificate of crossing the line very well done showing Aeolus playing the usual role of Neptune and Neptune somewhat put out at the loss of prestige.

May 31. Day at sea.

June 1. Sunday. Arrive Rio. Arrange with Mr. Hammer of the Condor to give 50 per cent on flights when planes are going empty and ten per cent when passage would otherwise be lost.

June 2. Visit Dr. Fraga and talk with Lafayette who confirms notice of cases in Campos and in municipio of Magé. LF reports interesting case of an elderly woman living in isolated house of difficult access at St. Aleixo near Magé; this woman had been ailing for some weeks, was a native born Brazilian and was seen by him and other physicians shortly before death. Nothing in the case suggested yellow fever but since he had given the order for all deaths to be investigated he did not care to make an exception in this case. What was his surprise to learn that the case was positive!

Gumbree
M. O. O. O.

St. of Rio

Cox 1930

June 3. See CF about invasion of school rights by the hospital construction which was brought to my attention by Miss Tullen; according to the correspondence all this land belongs to the school. CF suggests that I see Thompson Motta. suggest to CF that we may hire one Dr. Ferreira da Costa to go north; he offers no objection but says that he will have him looked up in his department. Notify CF of all the suspects registered to date in the north.

June 4. Luncheon at Auto Club to Merrill of PanAmerican Union and of AMCABLE/
Supper with Cox family. Drop cards on Morgan, Dawson, Linton and call with Cox on Ellis.

June 5th. Practically hire Ferreira da Costa. To be ready for work within a week. Thompson Motta comes to office and assures me that we will have no difficulty over the ground of the Nurse's School.

" Dr. Abenathar diagnoses liver Lucimar Passos as suspicious stop Liver from Edgarraria a routine autopsy case also diagnosed suspicious hence am sending liver to Davis Crawford."

MEC to FFR JAN 13. "Muenoh reports rumours of an epidemic on one or two of the islands in the Amazon Basin about two days by water travel from Pará. Local authorities regard the epidemic as malaria on the basis of history of these places in past years. I have instructed Muenoh to encourage the local health authorities to investigate and failing this we will investigate."

But on June 1 Crawford reports that an engineer returning from the Ilha Mexiana reports a series of cases there with black vomit dying in two to four days after onset. (May 28th telegram)

When I ask for investigation of these cases receive the following under date of June 4th " Reported deaths in Ilha Mexiana were in Ilha Caviana stop Doctor Albino has had notice that cases were malaria and condition much improved stop no boat for fourteen days yet stop two Crawford."

June 5th Rockfound Pará. " Ilha Caviana should be investigated stop Take every precaution to protect yourself against malaria stop should carry with you mosquito net and quinine stop collect samples for protection tests especially from convalescent children Soper"

Received following wire from Rocha PARAHYBA Tendo Dr. Guedes recebido denuncia caso fatal suspeito febre amarella cidade Pilar distante aproximadamente trinta kilo metros capital averiguel caso naquella localidade pt Doente branca feminina Brasileira dezenove annos adoeceu vinteseis faleceu trinta um com alguns symptomas geraes febre amarella tendo sido retirado material para exame pt. Doente esteve anterior ment Itabayanna itambe pt todo quarteirão onde se deu case foi inspecionado havendo doente algumRocha. (Sent same telegram to Rockfound Recife)

INTERESTING EXTRACTS FROM MEC correspondence.

MEC to FFR Apr 15 1930 " You will be interested to know that the ^{official} calhas (roof gutters) problem has been solved in Bahia partly by an efficient order requiring proper grades and partly by our puncturing water holding gutters when the interested party fails to comply with requirements and partly by offering a premium of \$500 per meter to the squad securing the removal of gutters with the knowledge and consent of the houseowner. By means of this last measure nearly six kilometers of guttering were removed during two months."

MEC to FFR Jan 4 1930. " What I wish most to get across is the thought that the yellow fever infection still appears to me to be not only controlable but eradicable in the Americas but to secure this objective the problem must be attacked in all places at the same time...."

MEC to FFR March 13 1930 " but as the yellow fever infection can and does continue in a place of congregation in atypical form over long periods of time, it might well have been among the guests at the Hotel Nova Cintra."

June 5 continued.

MEC to RFR April 30th ¹⁹³⁰ Dr. Fraga is rather inclined to insist that we extend our services to the principal interior towns regardless of whether the infection has been confirmed in these particular small places. In principle I am opposed to this plan at this time preferring to continue our present policy until there are clearer indications than we now have for modifying our present policy. The proposed commission would be encouraged to study this particular phase of the problem. Dr. Fraga had offered no sound argument for the extension other than there is money available ~~and yellow fever~~ may be endemic in groups of small communities. I think we shall be able to present some definite data within a few weeks regarding the yellow fever infection in the interior of Pernambuco, Alagoas and Rio Grande do Norte."

Acknowledged by RFR as follows "Stating that Dr. Fraga would like to have Foundation extend its work to the interior towns but that you see no reason for a change of policy at the present time."

Found in the files that Dr. Uchoa had reported a suspect case of yf from Maranguape Ceara in May. Roberto Braquelais arrived from France on April 20 one night in Fortaleza then to Maranguape where onset occurred on April 30. Case presented typical signs of yf but recovered. Albuminuria of 4.5 per l. on 6th day. Temp back to normal on 8th day.

FROM ERR - RECIFE to FLS
 " MAY 30.The last few days have been extremely interesting. Due to lack of hotel space Doctor Sawyer stayed at the house thus giving me a good opportunity to get well acquainted. Having received your wire about the soft pedal I have made no effort to make any special sort of a campaign. There was no need ~~however~~, as Dr. Connor is now the strongest champion of all your ideas. He has completely given up the Carter theory and is expounding on your endemic and epidemic zone idea; he is also using as his ~~own~~ many of my phrases used in that section of my journal to which he took such marked exception some few weeks ago and which caused him to write me that letter (the one that worried me.) This morning in a lengthy but interesting conference attended by Doctors Sawyer, Connor, Davis and myself the whole situation was gone over. Connor seems to have convinced Doctor Sawyer that a greatly extended program is necessary and recommended that all the states in our sector be supplied with North American directors, That seemed too expensive and hard to arrange to me; so I put in a word for ^American directors in the more important states as now, full time Brazilian doctors in the rest and two assistant general inspectors to have charge of a northern and southern division of our sector. The job of the assistant general inspectors would be to supply the oft repeated fiscalizations and inspections necessary for the best functioning of B personnel. As yet nothing has been resolved.

"I regret greatly that you cannot be here as the discussions that are taking place seem to be of greatest importance and certainly the man who is going to direct the service should be in on them. I was very happy to hear from Dr. Sawyer that you are to be in full charge. Congratulations!! We shall have to throw a special party to celebrate when you come up again."

*Assessing
Substances* *of my later
experience
Shaulo*

June 6th. Elmendorf to HHH May 5th " YF broke out in Guayana in June 1928 but came to the attention of the authorities only a year later."

State of Rio. Learned from confidential sources that the State of Rio YF control is not yet settled; that when cases were recently confirmed for Campos that CF attempted to send in more men from his service and inaugurate direct control of the situation there but that his men were met in Nichteroy and advised not to proceed as the governor of the state had ordered their arrest if they should attempt to work in Campos. Again CF was forced to bow to the needs of political opportunism!! However there surely must be a payday coming some time!! State of Minas information seems to be entirely lacking in Rio de Janeiro since January cases close to Diamantina.

Interviewed Dr. Guilherme Ferreira da Costa, recent graduate who desires to go to work in the yellow fever service. Shall look him up and probably hire him for Pernambuco.

Dine with Ellis family.

June 7th. Call on Insurance company and secure 25% rebate on fleet insurance of cars in North Brazil. All day at office.

June 8th. Dine with YWCA secretaries after playing golf in AM with Nave and Ellis. Drive to Alto de Boa Vista and over to Paineiras along the new road. All Rio can be seen from this road.

June 9. Dr. HAragão calls; has not yet received dozen monkeys promised him by MEC in March! I s doing nothing on yellow fever at the present time. Arrange for Texas company to sell us garage service for the two cars now in use.

Andrade advises that Lintz and Decio desire that my trip to the service in Nichteroy should be an official one and that the best hour is two thirty in the PM; Ass this would mean that I would see nothing of the service, I have refused to go at this hour but insist on the original schedule of the seven oclock ferry.

June 10th. Go to Nichteroy accompanied by Decio and Lintz at 7 AM. They give all possible details of their service in the least possible time; are quite proud of the medical vigilance service established for the travelling public who must buy tickets from the Leopoldina railway. I rather throw cold water on their enthusiasm for this particular form of spending money in yellow fever control and also on fumigation; however, when they show me seven livers that have arrived since yesterday for pathological examination from different points in the interior I begin to wax quite enthusiastic and cannot find words enough to express my high appreciation of the importance of what they are doing. This service started 25 days ago has already demonstrated one unknown focus of the yellow fever infection in the baixada fluminense! When I learn that the service has only been going 25 days I claim priority of execution for the routine autopsy plan!!!! This may force Decio to get into print right away with his idea which should be of great value to all of us. The method of getting autopsies in the state of Rio is interesting and should be of value to us in the north. The state Health service called together all of the escribes de paz from the interior and gave them practical demonstrations as to how liver fragments can be removed from cadavers with the least trouble; They were then supplied with a few simple instruments, specimen bottles containing formalin solution and sent back to their own home towns with the promise of fifty milreis for each liver section forwarded from persons dying in seven days or less after onset of an acute illness. As it is the escrivão de paz who controls the registration of burials for the cemeteries of his respective district the method is working like a charm. Copies of instructions and report form were given me for future reference.

Visit Andrade's service and find the guardas working in groups which requires that one man have nothing else to do but indicate to the others which houses have been worked by the guardas which are ahead of them; this service de arrastão does not seem practical to me as there is a great deal of wasted time. It does have the advantage however of having the entire personnel always under the eye of the guarda chefe. I believe the requirement however that the guarda chefe should go into each and every house examined by the guardas is not practical as he would need as much time as the guarda to check accurately the work of the guarda. Found only the guarda chefe with a lantern and it an old type non-focussing one.

Davis wires that Natal cases are probably all malaria. Lucimar Passos and Edgar Faria from Pará however are positive!!!!!!! Wire Crawford to postpone trip to Ilha Caviana and that I am sending him Dr. Ferreira Costa.

2 visit + Nichteroy (Police)

Malaria
AG
(PSE) Lintz + Vaccination?

June 10th. continued. Lucimar Passos was discovered by P JC accidentally while out fiscalizing in the Val de Caes zone. Learning that a child had died after seven days illness he was finally able to convince the parents that an autopsy should be done in spite of the fact that the only indications were that the child had died after seven days illness, although known to have malaria, and that the body was slightly febrile. This case then can well be considered as a routine autopsy from the standpoint of the epidemiology of yellow fever in Pará. The other case that of Edgar Faria is one of the routine autopsies being done under the autopsies of the police department.

June 11th. Sail on Northern Prince for Bahia. Cabin mate by name of Warnau, French, temporarily to direct the Bahia Docas company.

June 12. on Board with Dr. Torres and family.

June 13th. Arrive Bahia. Cunningham meets me and together we go to the Flandria where we find Drs. Sawyer, Connor, Wilson, Frobisher, Davis. MEC sails for Rio. Long discussion with WAS.

June 14th. AM calling on BB and Araujo both of whom are absent; purchase passage for WAS, change money and make arrangements for flying trip to Aragaju. Visit Dr. Ferreira Costa on board Santarem and give him letter to Dr. Crawford.

SUNDAY June 15th. Meet Briggs, American Consul in Bahia. Spend AM discussing various problems with WAS; visit British cemetery. Golf in PM; dinner at Davis home with Rockefeller family all present.

June 16th To lab in AM and for lunch; learn that 100 monkeys are to be used in the Magé tests. Frobisher administers 1st shot of OCI typhoid vaccine to me. Davis wishes to continue shipments of 100 monkeys per month and will ship Aragão the 12 monkeys promised by MEC in March. Davis presents proposal for leave March 1st 1931 but states that from now till then he expects to be almost continuously in Bahia. Requests 100 bloods from south Brazil from uninfected zone for control work. Davis requests commercial carbon tetrachloride in place of c.p. ..uses for killing mosquitoes.

Conference with WAS: outline my immediate plan of operations which is to extend control measures to the interior of Alagoas, Pernambuco, Parahyba, Rio Grande and Ceará. Bahia will be developed only after this central triangle or quadrangle is organized unless epidemic conditions force our hand earlier. The Amazon region is probably to be considered a separate field for investigation rather than immediate control. Concurrently with the development of interior stations, field and laboratory studies are to be carried on; such studies should show where our programme has gone too far and where it has not gone far enough. WAS spontaneously suggested that Alagoas and Parahyba should be under the same direction as Pernambuco; I agreed saying that I had already considered such a grouping which would probably also include Rio Grande do Norte because of railroad and auto road communications with Recife; also that I expected to place Sergipe under direction of the American director in Bahia and probably Maranhão and Piauí under the director of Ceará when that service is organized. WAS said that he had already discussed the grouping of these three states with MEC and ERR both of whom had opposed it on the grounds that it was not well to have services overlapping state lines.

DBW tells WAS that calhas are a big problem still in Bahia and that only last week MEC authorized three more turmas for that work; WAS non-committal on letter of MEC stating that calhas problem in Bahia had been solved.

I discuss with DBW some of the plans for organization in the future and suggest to him that he get the local situation in hand as well as possible so that it may be shifted eventually to a sub director (Brazilian) thus making him free to superintend the work in the interior when extensions occur.

June 16th continued. Tell DBW that I expect to replace ~~Doyle~~ with Cunningham in Sergipe, placing Sergipe immediately under DBW's supervision. NCD brings up again the question of reimbursing ALBB for monkey expenses; I have already approved such payment in case proper receipts were presented.

RBraquelais Maranguape Ceara protects.
Four Bloods VICOSA ALAGOAS protect. ←

DBW and I visit Magalhaes and Cia and settle for calhas illegally removed by our galha gang. Original bill for 900\$, cost proved to be 600\$, SF to pay 300\$ which will be eventually deducted in monthly installments from the salaries of the men doing the work.

Accompany WAS on visit to Instituto OC and Dr. Araujo.

Ask DBW and Magalhaes Neto for population statistics of interior Bahia. WAS and I agree that Shannon is to be under NCD for field work from now on.

WAS believes that I should keep a station journal from now on submitting same to New York.

FLS Deary

June 17th. Dinner at Frobisher's apartment.

June 18th. Visit new water works construction with ALBB; project looks very inadequate as the amount of water now running through the dam is very small. Future programme covering a period of five years is supposed to give available water for double the present population of the city.

Show WAS change of contract and motion picture statement in YF annual report for last year.

Advise Cunningham that he is to go to Aracaju as soon as the map is finished; he asks WAS for laboratory or epidemiological assignment.

NCD says RCS will go to Maceio June 22.

June 19. DBW takes WAS and FLS to Itapagipe to get the Condor plane leaving at 6 AM. (Fare after 50% reduction 210\$.) Arrive Aracaju 8:15. Met by Dr. Doyle and Dr. Tourinho of the State Health Department. Spend the morning with Doyle seeing some of the difficulties of the local flooded situation.

ARACAJU. 40 000-flat and surrounded by water; ground level (water) high right now being about ten inches in most parts of the city. Streets are very regularly laid out at right angles but unfortunately for the present campaign are at a higher level than are the surrounding lots so that rain water cannot drain away. Backyards and unpaved streets with pools are now breeding some culex and enormous quantities of taeniorhynchus. Even relatively dirty pools in the streets are found breeding. ~~W~~asks for more men for the local service at least during the rainy season; all of the local people insist that the present rainy season has been the heaviest noted over a large number of years.

Personnel

| Present | Desired |
|--------------------|--------------------|
| 11 zone guardas | 13 zone guardas |
| 2 revision " | 2 mother foci |
| 1 casas fechadas | 1 casas fechadas |
| 13 servants | 15 servants |
| 4 fishermen | 4 fishermen |
| 4 roof gutters | 2 roof gutters |
| 1 Caixas d'agua | 1 caixas d'agua |
| 1 office | 1 office |
| 2 ditches and lots | 5 ditches and lots |
| 1 oiler | 2 oilers |
| 1 secretary | 1 secretary |
| 1 chauffeur | 1 chauffeur |
| 1 fish distributor | 1 fish distributor |
| 2 guardas chefes | 3 guardas chefes |

June 19th. continued. WJD's request for increased personnel really means and in creased expense of 960\$ per month; 2 guardas 420\$, 1 guarda chefe 300\$, two servants 240\$/. (On June 20th after becoming more familiar with the local situation and discussing with WAS the relationship of our service to genera 1 mosquito control, the following was authorized, increase service by two guardas and one guarda chefe and one practicante. Seeing large number of dead fish in container, death undoubtedly being due to neglect, I suggest to WJD that he purchase fish by the thousand alive twenty four hours after delivery; raising the price per thousand to get fishers to work rather than putting them on the monthly payroll.

Authorize Doyle to use petty cash funds for personal expenses if necessary as it has been impossible for him to secure money on his letter of credit here; however, expect to have Cunningham advance him money to be returned through the Bank of Brazil. Also request Doyle to show on Form 24 Distribution of Advance MEC wires case confirmed in June in Itaocara, E. do Rio.

WJD states that the local water supply is far from sufficient with pressure only between the hours of 6am and 4:30 pm; approximately one third of the houses are connected; Aracaju has a very good sewage disposal plant which serves only a very small part of the city.

WAS WJD and I spend the afternoon seeing the ground breeding problem; the city is low and flat with many of the streets higher than the lots; this years flood conditions have caused many houses to melt away from below and others have been flooded from stem to stern. Taeniorhynchus breeding has been and is a tremendous problem; culex breeding comes second just now. Visited nine houses finding two steg foci, one in a flower pot and one in a barrel. Backyards gave large colonial clustered foci of T. D has attempted control by fish, by oil and by drainage. Fish have given remarkable results in certain grassy pools which at first glance would appear to favor the larvae; small adjacent pools without fish were found breeding in one home where the more favorable foci were fished and clean of larvae. Visit zone being drained by our service; there can be no doubt that the zone needs draining as the flooded conditions render even regular house visits difficult; WAS and I discuss drainage in relation to our programme and decide that it should be limited as much as possible. Although Davis secured transmission with the emulsion of infected T. he was never able to secure infection through the bite. Problem of local drainage should be one to be settled by local authorities with local budgets.

June 20. FLS 28 1steg, several T. and culex in ponds and pools.
WAS 48 Osteg

Call on Dr. Tourinho at Health Department and make arrangement to visit governor with whom we discuss drainage and (autopsies) All support on both programs promised. Call on Theophilo Dantas, intendente of Aracaju and brother of Manoel Dantas the governor. TD promises to let Doyle know tomorrow what can be done about supplying additional men to work under Doyle's direction on emergency drainage. I do not somehow expect very much. Visit Instituto Arthur Bernardes and meet the chemist, Dr. Braganca, who wishes to know when he can have the fellowship so freely promised him by Dr. Connor. WAS, WJD, FLS, Tourinho and Braganca go to Cabrito to see the waterworks. Installation is very modern with rapid sand filters, lacking only chlorination to give entirely satisfactory supply. B. insists that plenty of water is available for twentyfour hour supply but that the company is forced to cut off the supply at night because of the absence of water meters; faucets and hydrants are neglected and water runs in many homes throughout the full period of pressure, B. insists that company would be glad to maintain twentyfour pressure if hydrometers were installed. Get stuck several times on the return trip of 18 km. but are finally rescued by a band of assassins from the penitentiary where we take coffee before driving on into the city.

June 21. WAS and I arrive in Maceior from Aracaju by the ^{Condor plane.} Porto Alegre in about two hours time at cost of 135\$ per capita. Met by Dr. Almeida; talk with Dr. Meneschal and notify of confirmation of Vicosia cases by protection tests. WAS agrees with me that we should not be responsible for conservation of drainage and Dr. Meneschal also agrees that the responsibility should be his but states

June 21. continued. that during the present year there are no funds available for this service. I then agree that we will maintain twenty men for this service as at present until the end of the current year but that after the first of January that these men will be taken off. Meneschal agrees to have funds for this service next year but says he would like to have our service continue to supervise the work. We agree that this will be possible and probably better all around as thus there will not need to be two antimosquito services in Maceio. WAS and I make rounds of city rapidly to give him some idea of the topography of the place. At 3:30 leave for Vicosa arriving there at 7:30. WAS diagnoses stegs, culex and cimex in his bed. Bald heads do suffer. Almeida reports that he autopsied a small child here about four days ago. (Although in the known infected district the history does not sound very suspicious of yf although another child died recently in the family.) *JULY 2. DAVIS REPORTS NAIR NEGATIVE.*

June 22. SUNDAY. Rather hectic day chasing around in the mud trying to find out how many mosquitoes there are and how many cases of yellow fever there have been in Vicosa. 21 houses in R. Palhico c two steg foci. On house to house questioning find many more suspect cases in R. Palhico and find cases in R. do Cravo and R. da Companhia. The disease has apparently been rather widespread except possibly right in the center of the city where only one case is thought to have occurred. Vicosa had yf epidemic about 1890 and since then at intervals has had suspicious cases. Is now a town of 7000 houses and about 8000 population. On June 6th the prefeito, one Villela wrote to the governor that yf had been confirmed by the laboratory (not true) and that he estimated that he had lost "24 municipes" from the disease this year; however he still talks about the lost 24 fifteen days later and we know there have been deaths in the meantime; when pressed for the data for his statement he brings around a list of deaths by months diagnosed as "fever". Almeida is instructed to get what mortality statistics are available for study and analyze them. It is of course possible that this many deaths have occurred from the disease but the data so far presented are far from convincing. The intendente is emphasizing his losses in an attempt to secure from the governor an order for the prophylaxia rural which is without budget for such an undertaking the establishment of a post in his county.

During the day we picked up the history of one case who went to Agua Branca in the county of Palmeira dos Indios from the focus next to the school; took sick on second day after leaving Vicosa and remained in Agua Branca only four days returning as soon as he was able to walk. This case was probably in Agua Branca during the entire infective stage of a mild attack of yellow fever. Boy working at hotel was only severe case in large family where all were ill.

Take Almeida to task for failure to clean up hotel block. Discuss with him his relationship to the service; he states that he is willing to be transferred to other state if necessary for the welfare of the service.

June 23. Monday. Left Vicosa 6:20 am arriving Maceio 10:20. Long conference with Meneschal; discuss drainage problem again and also the need for routine autopsies; good promises of cooperation secured. (Discusses specificity of liver lesion in yf; states that Prof. Leoncio Pinto, pathologist in Bahia believes this lesion to be due to post mortem changes!!!!, having produced it in both acute alcoholic and creolin poisoning cases by letting originally negative liver stand for several hours before fixation.)

WAS and I visit zones where oilers have been at work and find it hard to believe that certain pools with large foci were oiled only three days ago. Almeida and guarda chefe both insist however that the oiling was done Friday but that the heavy rains carry oil off so rapidly that the larvae are not killed. Find one large backyard focus where the outlet is so arranged that oil would literally be skimmed off the top by the outflow. Authorize another oiler for this district and insist that the situation must be brought under control. The oiler is to be supplied from the men who were on drainage work.

June 24th. Lv Maceio 7:30 am, arrive Recife 730 pm; see Sao Benedicto enroute. SB is rather a small compact town very easily controlled if by chance the disease has not already burned itself out.

Receive letter from MEC enclosing copy of his 1928 letter to FFR in which he suggested expansion to all interior points! Newspapers report two cases in Belem; one of these an Englishman by the name of Chandler. Wire from PJC says Chandler died June 21 clinically yellow fever. Telegram received from Uchoa asking for authority to open services in interior points such as Pompeu, Quixada and Oros.

June 25. PJC wires that Dr. Costa is doing vigilance work in the afternoons and that 21 primary foci were found on Sunday June 22nd, 15 of which were in roof gutters. Visit Gouveia with WAS and ERR. Talk autopsies and my need for a personal office in Recife; office room readily promised. G greatly pleased with the new orientation which calls for extensions to the interior. G has always been one of our most loyal supporters even in the face of severe criticism although he himself has never believed that yellow fever could be eliminated through the control of the capitals alone. G pays a glowing tribute to the results of the service in Recife and is happy to know that we expect to get the interior well under weight before he retires from office in October of this year.

Call on Tate of General Motors and get promise of cars at rock bottom prices.

Final conference with WAS more or less summarizing plans for the future; notes on this conference taken by WAS who will prepare copies for NEW YORK office and for me. In brief the outline is as follows;

MINIMAL PERSONNEL REQUIREMENTS.

AMERICAN

| | |
|-------------------|--------------------|
| General Inspector | (Soper, Recife.) |
| Assistant | (Bailey, Rio .) |
| Bahia | (Wilson, SS.) |
| Pernambuco | (Rickard Recife) |
| Ceara | (Doyle, Fortaleza) |
| Para | (Crawford, Belem) |

BRAZILIAN

| | |
|--|--------------|
| Liaison | (Alves, Rio) |
| Sergipe | |
| Alagoas, Parahyba, R.G.do Norte, Piauhly and Maranhao. | |

(These are the principal key positions where men in charge will be located; in addition a number of Brazilian physicians will be employed to help out in the larger capitals and in the interior.)

Director of Laboratory. (Davis)
 Bacteriologist (medical man)
 Bacteriologist (Frobisher)
 Epidemiologist (field studies)

Assistant epidemiologist.

For administration purposes the north of Brazil probably best divided into sections as follows; 1st. Bahia and Sergipe, 2nd. Alagoas, Pernambuco, Parahyba and Rio Grande do Norte. 3rd. Ceara, Piauhly and Maranhao, 4th. Para and Amazonas.

Present plans call for immediate development of interior program in states of section 2 beginning with the state of Pernambuco and working both ways from the center; this to be accompanied by an almost simultaneous development in Ceara with the bringing of services in Natal and Sao Luiz directly under our control with full time directors. First section to be held as at present unless something pops in which cases development will be undertaken immediately; fourth section to be held as at present and to be subject to investigation as soon as possible.

Program for Pernambuco calls for work in all towns of 2000 or over which should include practically all of the county seat towns in the zone as far west as Aguas Bellas and Rio Branco; work to begin on weekly cycle but to be lengthened and cheapened as fast as field studies warrant; probable that supervision can never be maintained with cycle greater than four weeks. Places smaller than 2000 worked PRN

June 25th. continued. Investigations. The investigational side of the work should be stressed; it is quite probable that two quite separate types of service will be needed, the one directly responsible to the control service for working out problems of local interest and running down local rumours and the other entirely independent of state and sectional boundaries with no direct responsibility to the sectional directors but with freedom to go anywhere and study the problem in the north as a whole.

Proposed studies;

- Distribution of immunity in age groups in typical towns of four zones previously described for Pernambuco.
- Distribution of immunity in Amazon valley.
- Distribution of immunity in small town immediately following epidemic.
- Mapping of immunity distributions throughout north Brazil.

(All of which should keep us all busy for the rest of our natural lives if properly carried out.)

June 26th. WAS sails Arlanza for Cherbourg. G furnishes office and again promises help on securing autopsies in the interior. Decided to try out the matter in the county of Nazareth where there are nine districts with as many local escrivas do paz; if results here are good the system then may be extended to the rest of the state; if results are poor something else may be tried.

Rocha comes to Recife from Parahya to discuss the service there and to talk about his leave; I am forced rather against my will to talk harshly to him about giving to Ceasar the things that pertain to Caesar; finally relent somewhat and promise to get him relief before the end of July but insist that he make up his mind now whether he wishes to return to our service or not after his short leave in Sao Paulo.

MEC sends copy of letter from lawyer representing the old employees of the Malaria Service in the state of Rio who did not get paid after the month of Sept; on the same mail comes the notice that the President of the state of Rio has approved the request that the malaria accounts be paid from a special draingge budget which is available this year.

Advise Natal that Davis reports livers of IGOMEZ, MFRANCISCA and PFELIX negative.

June 27th. Wire Rio to write ERR how cars should be billed for free importation into the port of Santos for the GMC; Dolye to remain with Cunningham week or ten days and then relieve Rocha in Parahyba. I get shot of local typhoid vaccine by mistake. This is the second.

Rickard says that shift of responsibility for the Recife service will be made to Machado on Monday of next week.

NOTE (25 April 1968): For correspondence WAS to FFR, with translation to Fraga and Fraga's reply, see insert after last entry of August 1930.

Copies began here.

Paris green Natal June
FLS 1930

June 28. Left Recife at 11:20 AM on NYRBA plane Sao Luiz. Dr. Nello Tavares and the new guarda chefe in Natal came out to the plane and reported nothing new there; malaria continues to be a serious problem. The Paris green sent up from the Rio office has been received and is being used on the river side breeding places. Arrived in Fortaleza at 2 PM but landing was delayed because of police visit.

Dr. Samuel Uchoa, director of the State and Federal Health Services in Ceara, who has been directing the yellow fever service in Fortaleza since March, met me at the landing. We spent the following three hours discussing the local and national aspects of the yellow fever situation. Dr. Uchoa is and has been for a long time anxious for the service to be extended to the interior. On June 23 after receiving confirmation of the Braquelais case from Maranguape, Uchoa wired Connor asking for authorization to extend the campaign to include centers of population in the interior and mentioned especially Oros, Queixada and Senador Pompeu and calling attention to the expected influx of foreigners with the re-opening of the Obras contra as Seccas of the Federal government. I explained to him in outline the programme for the immediate future upon which he himself suggested that no change should be made until after the arrival of Dr. Doyle. On learning that plans had been made to send in a full time man to take over the service, Uchoa showed me the draft of a telegram to MEC which he had expected to send in the near future asking to be relieved from the direction of the yf service because of the weight of other duties.

The Maranguape case came in for considerable discussion; Uchoa finds it strange that a single case could appear in this town with no preceding nor posterior cases in spite of the heavy steg breeding encountered. I cite the Estancia and Timbauba cases of 1928 as exactly parallel cases in which the epidemiological inquiry failed to reveal other cases and told Uchoa that this is the type of thing that has apparently been going on for a long time in the "endemic" areas of north Brazil. I also cite the discovery in Belem of two cases in Brazilian children in widely separated zones of the city through routine autopsies and the failure to find any connection between these two cases or any indication of the occurrence of other cases in the immediate surroundings.

Uchoa brings up question of guarda chefe for discussion; he feels that there was no justification for the charges preferred against the guarda chefe to Dr. Connor and that the man should not be transferred as a punishment. I reply that anonymous letters never receive attention from me and that in any case the question of subordinate personnel and their punishment if necessary is to be left in the hands of the local director. No change will be made then before Doyle's arrival who should be able to choose his own guarda chefe if the present one does not suit.

Uchoa insists that the service in Fortaleza is in good shape and that the service in Maranguape was very efficient and very rapid in its results; the cooperation in Maranguape was all that could be desired, a conto being voted by the municipality to help in the work and regulations for the restriction of raising pigs being immediately enforced. Loose hogs in the streets were actually shot down by the local police authority.

Received telegrams before leaving Recife: from Rio stating that Rio papers are copying alarming information from papers in Para and that presence of yf there is due to insufficient personnel and material in our service and that Ambassador Morgan has asked the government for official information regarding the disease in Belem; from Rio stating that a very suspect Portuguese has been removed to the SSebastiao Hospital from the Cattete district in Rio but that the medicos in charge have not made a definite diagnosis as yet; from Bahia stating that a very suspicious Swiss has arrived in SSalvador from Ilheos::: I wired Wilson to investigate Ilheos with one of his doctors and to Rio that only three cases are known to have occurred in Belem including those discovered by routine autopsies.

Wilson also wires regarding the purchase of the projector from Burke; I reply that this purchase was authorized by Dr. Connor and that the projector should remain for the present in Bahia.

June 29. Sunday. Up at 4 in the morning to get away at six. Two passengers and about thirty gallons of gasoline had to be left at Fortaleza because of inability of the Sao Luis to rise from the water with a full load. From the air it would appear that Aracahu and Camocim, Ceara, and Parnahiba, Piahy, are sufficiently important centers to merit consideration on any extensive programme of yellow fever control in this area. Arrived at Maranhao about ten thirty and Para at 2 PM. We had a good tail wind all the way from Recife to Para and kept well ahead of schedule throughout the trip.

Dr. Crawford reports rather optimistically regarding the local situation in spite of all the newspaper talk of yellow fever epidemic. Since July of 1929 only three cases of yellow fever are known to have been in Belem; one dying on the 16th of May and one dying on the 21st of May, both picked up accidentally postmortem by routine autopsies, neither having been suspected nor reported; the third, an Englishman by the name of Chandler died June 21st. The liver examination report on this last case has not yet been received but from history of illness duration of the disease and the macroscopical examination of the body, yellow fever is believed to be the most probable cause of death. These cases occurred in three rather widely separated parts of the city and so far as could be learned have no connection one with either of the others. Two cases were in Brazilian children of six and seven years of age respectively; on inquiry the father and mother of one of these cases (Lucimar dos Passos from Val de Caes) both gave suspicious case histories for themselves but reported nothing for their other three children. (Dr. Crawford has already drawn blood for protection tests on the father and mother and I am suggesting that we get bloods from the three children to determine if possible whether the entire family has not been immunized with the appearance of only one serious case.) No report was secured for suspicious illnesses in the families nor associates of Edgar Faria and Chandler.

In checking over the two cases which occurred in May, Nothing striking was discovered in the nature of stegomyia breeding in and around the houses where the cases occurred; fourteen pupal foci in roof gutters were found within one block of the house where Chandler died however. The regular routine service of the zone guarda was apparently in good shape.

Crawford reports that the news items referring to lack of personnel and overwork of the guardas published here and copied in the Rio press were instigated by some disgruntled employees or rather ex-employees who desired to make trouble; insists that there is apparently no ill will on the part of the local press and that no difficulty is encountered in getting any desired propaganda put before the people through the press.

Crawford believes that the local stegomyia problem can be handled efficiently without any great increase in personnel; all but one of the servants on the ditching work have been taken off and assigned to the increased roof gutter squads or put on vacant lot clean ups. Roof gutters and vacant lot trash collections seem to be the special problems needing emphasis at the present time. The roof gutter problem has been taken up with the governor who is quite ready to cooperate and adopt the same regulations as are now in force in the Federal district; he suggests however that for legal reasons this measure should go on the books as a regulation of the city council of Belem. This regulation has been drawn up and submitted and should be passed during the coming week. Crawford reports good cooperation from both the state and the federal health authorities in Belem.

June 30. Call on Dr. Albino Cordeiro of the State Health Service and Dr. Jayme Aben-Athab. Dr. Albino insists that the roof gutter regulation is now before the council and will surely be voted within the next three days. I express to him our thanks for his cooperation in getting the routine autopsies which revealed the presence of yellow fever in Belem a full month before the Chandler case was announced and called his attention to the fact that this latter case might well be entirely accidental and the only one of its class and that we might have gone on for months without knowing of the infection without the autopsies which he has enabled us to secure. I then discussed the importance of securing routine autopsies from the interior of the state and explained to him the system now in use in the state of Rio de Janeiro through which the township clerks send in liver specimens from fevercases dying after less than

June 30. continued. eight days illness. As any innovation in any service here will at first meet with opposition, I suggested that Albino and I discuss the matter with the President of the state. Dr. Albino promised to find out who is responsible for the cemeteries in the interior of this state and through which channel we could best secure liver specimens and arrange for a meeting with the governor on July 2nd.

Dr. Crawford and I thanked Dr. Aben-Athar of the Prophylaxia Rural for the fine cooperation he has been giving in the matter of fines and forcing the correction of roof gutters and in the examination of routine liver specimens in his laboratory. He assures us that he is vitally interested in the whole problem of yellow fever and that anything he can do to aid the service will be done willingly. We discuss fully the yellow fever situation as we see it throughout Brazil today and call his attention to what is being done with routine autopsies here and in the states of Rio de Janeiro and Rio Grande do Norte. He assures me that he will be able to secure autopsies for us in the following points where he has services organized: ALENQUER SANTAREM CAMETA CACHOEIRA IGARAPE-ASSU BRAGANCA and BREVES. Our service will furnish necessary containers and will forward the specimens to the Bahia laboratory for examination as this routine would really work a hardship on Dr. AbenAthar who is his own anatomist. Somehow I have more faith in securing specimens from these various places than I would have in case someone else had made the promise.

Discuss roof gutter problem with Crawford and suggest that we had better get out and see what is happening in roof gutters where foci were found one two and three weeks ago as we have at present no information on which to base the interval for routine reinspections.

Crawford states that he is entirely satisfied with the work of Dr. Silva who is just now completing his first six months of service; I therefore authorize a two hundred milreis per month increase in his salary.

July 1. Visit roof gutters of one two and three weeks ago; find some corrections made, more not made. We take down seven meters of goppergutter in a "repeater". Crawford and I agree that it would probably be well to have a special squad to visit all roof gutters where foci have been found fifteen days after the discovery of the first focus. Roof gutter breeding in Para will probably be a greater problem in the dry months than in the rainy season as there is throughout the year some rain which will keep water in the gutters but which will seldom come down in sufficient quantity to flush them out.

Receive wire from Rio asking authorization to advance one months salary to Dr. Manoel Leal Ferreira who leaves on July 3rd for the USA; authorize this as it had already been promised by Dr. Connor. Advise Saõ Luis, Portaleza, Natal, Recife, Bahia, Bahia Lab and Rio of my schedule till the 15th of July.

Dr. Crawford and I visited the house where Edgar Faria, the six year old Brazilian child, living in the city of Belem, discovered to have had yf through routine autopsy on May 21st, died. The house is one of the poorer type structures of one story but is outside of the heavy malaria zone. At first the family insisted that there had been no other cases of illness in the family but when they discovered that our intentions were of the best and that we were interested in other than fatal or nigh unto fatal illnesses, they admitted that five of the twelve persons resideing in the house had suffered from attacks of fever, headache, body pains and vomiting between January and June of this year; these attacks were sufficiently severe to cause confinement to bed for from four to thirty days. From the history given, I believe malaria can be ruled out in these cases and am convinced that there were probably a series of cases in this family but that because of large number of immunes in surrounding houses or low number of stegomyia serving as vectors, there was apparently no local explosion of the disease.* We later visited the house of Lucimar Passos in Val de Caes but were able to obtain no further information than that already noted June 29.

* NOT CONFIRMED BY PROTECTION TESTS.

July 1933 - Reexamination of Edgar slide by HEP after 28000 other livers results in negative diagnosis
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