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G.O., No. 2448 M

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[Despatch Abstract.]

Bubonic plague

Communicating with remarks to the Surgn.-General, the Sanity. Comr. and the President Munl. Comrs., Madras, Surgn.-Major Bannerman's report on plague in Bombay and Poona.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

Government {1897} of Madras

LOCAL AND MUNICIPAL.

Recd. } 1897. *Enclosures*

Regd. *Spare copies*

G.O., No. 2448 M., 6th November 1897.

NOVEMBER.

Bubonic Plague.

Communicating, with remarks, to the Surgeon-General, the Sanitary Commissioner and the President, Municipal Commission, Madras, Surgeon-Major Bannerman's report on plague in Bombay and Poona.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers:—

From Surgeon-Major-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General with the Government of Madras, to the Secretary to Government, Local and Municipal Department, dated Madras, 20th October 1897, No. 395.

With reference to your Demi-official No. 56, dated 5th October 1897, I have the honour to forward in original the report of Surgeon-Major Bannerman now on special duty in Bombay on (*a*) the exact system on which house-to-house visitation was carried out in Bombay and Poona; he has not been in Karachi; (*b*) how far he has made himself familiar with the plague hospital system; (*c*) the bacteriology and (*d*) the treatment of the disease. The plans promised I will send on when I receive them from the Sanitary Commissioner.

2. With reference to paragraph 6 of his report, I concur in his recommendation that along with the removal of the patient to hospital, a system of inoculation should be enforced, and that Government should address Dr. Haffkine (through the Government of Bombay), with the view of making arrangements for an early supply of this prophylactic. As this prophylactic takes about six weeks it is desirable that immediate action should be taken. In my opinion, the Government of Madras should offer to pay for whatever extra assistance Dr. Haffkine may require to meet our wants.

I differ from the Sanitary Commissioner who has suggested that Dr. Bannerman should remain in Bombay to assist Dr. Haffkine. I think he would be more useful here on special plague duty in directing and supervising such inoculations and in administrating the special hospitals that would have to be opened if the plague became epidemic.

3. With reference to paragraph 7, the Municipal Council in Madras have already made preparations for opening plague hospitals in Royapuram, Vepery and Royapettah under the District Surgeons, but these are only meant to deal with isolated cases. If the disease was to spread, I consider that the President of the Municipality should be given a special Plague Officer, a Magistrate who, with him and Surgeon-Major Bannerman, would be able to carry out a similar organisation to that described in this report. The public should be informed that if they desire to have special hospitals for their own classes and castes, they must come forward and organise them under the control of the above officers.

4. If house-to-house visitation has to be carried out, the assistance of influential natives and of the Military will have to be obtained. The rule that no corpse was allowed to be removed from Poona without a certificate from a medical man certifying to the cause of death was an especially good one.

5. With reference to paragraph 8 of the report, these hints are well worth the attention of the above officers should any extension of the present hospitals be required or should new ones have to be organised. I concur with Dr. Bannerman that the floors of the wards should be impervious, and consider this a most important point in view of the fact that the bacillus is known to develop in earth. The only other plan would be to build more wards, so that one could be evacuated once a week in order to allow of the floor being disinfected and changed.

6. With reference to paragraph 10 of the report, it is very desirable that we should be supplied with copies of the report as soon as it is ready for distribution.

7. I would suggest that this report, with the orders of Government, should be put in print as soon as possible in order that copies may be sent to all concerned for their guidance and that I should be sent twenty copies.

From Surgeon-Major W. B. BANNERMAN, M.D., B.Sc., Inspector of Vaccination and Deputy Sanitary Commissioner for Madras, to the Sanitary Commissioner for Madras, dated 13th October 1897.

In accordance with your endorsement, No. 3485–S. of 8th October, on letter No. 5–1-Tour, from the Surgeon-General with the Government of Madras, I have the honour to submit the report therein called for.

2. The unavoidable slight delay that has taken place is due to the fact that I was absent from Bombay, assisting Dr. Haffkine in experiments he was conducting in the treatment of plague patients with curative serum, and in watching the methods of house-to-house visitation carried out by the authorities in Poona.

3. In regard to the query of Government as to how far I have made myself acquainted "with the exact system on which house-to-house visitation for the plague was carried out in Bombay, Poona and Karachi, and as to how far he has made himself familiar with the plague hospital system, as well as the bacteriology and treatment of the disease," I would state that I have gone round with the Plague Committees of both Bombay and Poona and have studied their methods of working, and that I propose to go round again with the Bombay Committee to see what modifications they may have introduced as the result of further experience. I am also familiar with many of the plague hospitals in Bombay, having visited them on numerous occasions to study the disease and to collect material for bacteriological research, and during the past week I have spent from five to six hours daily in the General Plague Hospital at Poona, which contains over 200 patients, helping to carry out the experiments on serum treatment noted above.

4. As regards treatment, I need only repeat what was contained in the former report submitted to Government, viz., good feeding and nursing, the patient being kept in the recumbent position till four days at least after temperature has come to normal as heart failure is so much to be dreaded, large quantities of stimulants, alcoholic and medicinal, nervine tonics such as strychnine, and such drugs as ammonium carbonate, caffiene citrate, tincture of strophanthus, tincture of digitalis and nitrate of pilocarpine. Fever is best treated by sponging and icecap, antifebrin and phenacetin not being suitable and having a transient effect only. Headache by bromide of ammonium, opiates, icecap or evaporating lotions. Sleeplessness by bromides, opiates or camphorodyne. Vomiting by bismuth and hydrocyanic acid in effervescing draughts. Pulmonary congestion by diffusable and alcoholic stimulants, with digitalis, turpentine stupes and blisters. Surgeon-Captain Thomson, I.M.S., who was in charge of the Parel Hospital and from whose report the above information is taken notes that "As a special mode of treatment, liq. hydrargyri perchloridi was resorted to from a conviction of the value of such a powerful disinfectant in specific disease * *. At first it was given in drachm doses well diluted three times daily; later, in half-ounce doses every two hours for four doses; and then in the same quantities every eight hours. In no case of plague did these enormous doses induce salivation, though this phenomenon was carefully sought for." In one case which turned out to be another disease, salivation was produced after the third dose, so he concludes that "this mode of treatment is therefore both diagnostic and rational."

As regards the treatment of buboes, he strongly deprecates attempts to induce suppuration, and holds that when they are left to themselves the tendency is for them to subside, and that when irritants are avoided and sedative applications used, only 7 per cent. end in suppuration. On the other hand if irritants are applied, a very large number suppurate and having to be opened lead to the formation of large granulating surfaces slow to heal and retarding convalescence.

5. As far as the experiments at Poona were carried last week, it would appear that serum has little or no effect, but as Dr. Haffkine has not yet completed his observations, no more need be said.

6. As regards the prophylactic treatment, however, I have been permitted by Dr. Haffkine to say that from observations made at Damaun, Lanowli and Kirkee, it is certain that the mortality in an epidemic can be reduced by 75 per cent. by this means. These observations—in which I have been privileged to assist—have been carried out with the greatest scientific accuracy so that the figures may be verified by the whole world, and Dr. Haffkine intends, I believe, to ask Government to appoint an investigation committee to verify the results. By a system of slips given to each individual as he is inoculated it has been found possible to follow up each case afterwards and to take a census of the inhabitants of each hut on investigation sheets, and so to ascertain exactly the percentage of attacks and deaths among the inoculated and those not inoculated living in the same house with them. As Dr. Haffkine is now working at the figures and will very shortly submit a report to Government, I am not at liberty to enter into further details, but in the urgency of the present state of affairs in Madras, he has kindly permitted me to communicate the above facts.

Acting in the light of the above important discovery I would strongly recommend that along with removal of the patient to hospital, a system of inoculation should be enforced on the lines so successfully adopted during outbreaks of small-pox.

As the prophylactic appears to begin to exert its protective influence after 12 hours, it should be possible to modify the working of the segregation system in the direction of shortening the period of seclusion now practised. If the inhabitants of an infected house were to be at once inoculated and removed for 24 hours to a segregation camp, they might then be allowed to return, the house in the meantime having been disinfected. In this way a great saving may be effected in a large epidemic, as only one-tenth of the amount of accommodation will be required at the segregation camp. I would therefore venture to suggest that Government be recommended to address Dr. Haffkine with a view to making arrangements for an early supply of his prophylactic. I may say that at present the material takes about six weeks to prepare and that *immediate action* is therefore advisable. The house in which Dr. Haffkine's laboratory is situated is kept up by the Bombay municipality, and the material for manufacture and servants supplied by Government. As the trained assistants formerly employed in the laboratory have now all been recalled to duty elsewhere, it is probable that Dr. Haffkine will ask for help in this direction, as it is absolutely impossible with the present establishment to do more than supply the demands of the Bombay Presidency.

7. *Plague Hospital System and House-to-House Visitation.*—For this purpose the city was divided into ten districts, each in charge of a Commissioned Medical Officer, or, when these could not be supplied, of influential local practitioners. Each district was divided into divisions and these again into sections. The divisions were under the charge of local medical men who reported to, and worked under the District Medical Officers of Health. Under these, worked a vast army of inspectors, overseers and coolies engaged in general sanitation and disinfection of houses. As far as possible each district was provided with a Government hospital, and one or more private caste hospitals; altogether there were 15 Government and 28 private hospitals.

The following were the duties of the District Health Officers:—

to superintend the general sanitation of the district, reporting to the Plague Committee and the Municipal Health Officer daily;
to supervise district hospitals and attend them in routine;
to supervise search parties with the Justices of the Peace;
to control disinfection;
to inspect segregation camps;
to call the attention of the special officer to insanitary buildings;
to supervise cemeteries and report on the registration of burials and cremations;
to send daily reports to the Plague Committee and Health Officer of casualties and to make any suggestions.

A special feature of the arrangements was the large number of private hospitals established by the various sections of the community. These were superintended by the District Medical Officers, but were in charge of private practitioners chosen by the people themselves, and did much to overcome the opposition of the people to removal to hospital. The plan of allowing relatives to accompany patients to hospital also acted in the same direction.

Near each district hospital was the office and temporary barracks for the military and police employed in connection with the search parties, this arrangement being adopted as being convenient in case of any sudden disturbance.

Hand ambulances on bicycle wheels with India-rubber tyres and with stretchers attached were used to convey the sick.

House-to-house visitation was carried on in Bombay largely by means of help given by Justices of the Peace, and others specially enrolled for the occasion. These constituted the "conductors of search parties," and being influential men they greatly conduced to the smooth working of the system. The following account of the present manner of searching adopted in Poona will, I think, give a sufficiently accurate idea of how things are managed. There are now only two search parties each in charge of a British Officer. Formerly there were more but owing to the scarcity of troops no more can be organised at present. The whole city is overtaken in fifteen days, but this, of course, is much too infrequent; formerly it was gone through in five days.

Each party is divided into as many sub-parties as possible, and each of these consists of one British soldier, two sepoys and a native gentleman. The British soldier carries a hammer to break open doors with, one sepoy carries a lantern and another a pot of red paint. Every house in the street is systematically entered and thoroughly searched. If nothing is found a St. Andrew's cross is made on the door by the sepoy with the red paint, and the date added. If a plague case is found a long vertical line is made on the door with the date —|— 28–9–97 / —|— 29–9–97 / 26–9–97 and the matter is reported to the municipal office by the gentleman in charge of the party. The patient is sent to hospital in an ambulance cart with a certificate in charge of an orderly who brings back a receipt from the admitting officer there. The rest of the inhabitants are segregated with the exception of one man left in charge of the household property, and the house is disinfected as soon as possible. The disinfecting party when finished draw a horizontal line through the top of the vertical line left by the search party, adding the date of disinfection. Then next day the whitewashers arrive on the scene, and after completing their work draw a second horizontal line at the bottom of the vertical line adding the date, as shown above. Any doors forced are afterwards secured by a pioneer told off for the purpose. Before the search begins a cordon of troopers is drawn round the quarter to prevent the people removing patients in vehicles, as they are very apt to do. One specially good feature noticed in Poona was the plan adopted for ascertaining the actual number of deaths taking place. No body is allowed to be removed from the city without a certificate from a medical man certifying to the cause of death. The Deputy Sanitary Commissioner and a subordinate staff are told off for this purpose, going round to the houses where deaths are reported and issuing certificates after examination. Intimation is sent to the municipal office and at stated hours the visitations are made, starting from the office at 7 A.M. and noon, and at 5, and 10 P.M. Besides the military search parties two assistant health officers go round to look after general sanitation and as they go quietly gather information and with such success that I am told they get hold of two to three times the number of cases that the search parties do. As in Madras the people will probably be more amenable to reason than in either Bombay or Poona, probably this system could be arranged for, and the objectionable search parties to a large extent dispensed with.

8. With reference to paragraph 3 of the Surgeon-General's letter, I submit a description of the hospitals in use in Bombay and Poona. Through the courtesy of C. C. James, Esq., I am enabled to send two plans of hospitals and buildings attached. A standard plan was adopted in Bombay, the unit being twenty beds forming one section. Half and quarter sections were also used and for larger hospitals a multiple of the unit to any required extent. As the scale and design was not altered every body knew what was required when a new hospital had to be established. The twenty beds are arranged in an area of 120+24 square feet, thus giving to each bed a superficial area of 144 square feet, which is certainly none too large under the circumstances. A ring fence of bamboo matting surrounds the hospital and buildings; the wards are at the end of the site farthest from the entrance, close to which are the wards for the patient's friends, with latrines conveniently near. The buildings are composed of posts and framing of bamboo or jungle wood, sunk well into the ground. There is a 12-inch plinth of rammed red earth. The sides are single bamboo matting; the roofs of two layers of palm leaves with a ceiling of cloth in some cases. The whole whitewashed once a week inside and out with the exception of the roof. The beds are in double rows and screens of matting are arranged between each pair of beds. The cook-houses are of corrugated iron on wooden framing; drinking water from taps to suit all castes; the privies on the dry-earth system, night-soil being removed by hand after disinfection, they had a washing place in connection paved and drained by glazed 4-inch half-pipes. Similar drains led from the various bath-rooms to a cesspool or neighbouring drain. The only alteration made as the result of experience was the erection of a general cook-house for the wards and an extra bath-room for the nurses. In the larger hospitals an office and dispensary were erected, otherwise a corner of one of the wards was used for the purpose. The cost of such a hospital is said to be "As. 6 per square foot of area covered." In Poona there is but one general hospital. The wards are arranged in *echelon* so as to allow of as much perflation as possible. The width of the wards is regulated by the length of the corrugated iron sheets of which the roofs are made. The sides are made of matting or grass and the upper halves open on hinges, affording good ventilation by day when open and shelter from winds at night when shut. The wards run east and west the doors on the north side and verandahs of grass thatching on the three other sides. The mortuary here is of corrugated iron which is a good plan as it prevents the entrance of animals. The cots in use are the ordinary country charpoys either with nawar or rope strapping or with rabbit wire netting stretched across. This latter is certainly a sanitary arrangement but the netting is apt to get slack. The only improvement I can suggest is that the floors should be rendered impervious, but this, of course, would add to the expense. "The staff of a one-section hospital was fixed as follows:—

2 Nurses.	1 Bheesty.
1 Ayah.	2 Sweepers.
1 Hospital Assistant.	2 Nurses servants.
4 Ward Orderlies.	1 Hospital cook.

"If there were many severe cases, it was found necessary to supplement the staff with an extra nurse, to increase the number of ward orderlies, and when the caste and other conditions of the patients required it, the number of cooks also."

Equipment—	Furniture—
1 table.	20 towels.
4 screens.	20 plates.
2 chairs.	6 spoons.
1 washstand table.	2 pails.
1 cupboard.	20 spittoons earthenware.
1 almirah	1 iron can for poultices.
20 cots.	20 bowls common.
6 camp lanterns.	20 mats for cots.

Office.

1 table.	2 chairs.

Cook-room.

1 table, common.	1 spoon, large.
1 kettle.	1 knife.
6 cooking utensils.	3 plates, iron.
4 cans for hot water, &c.	1 pail.

Dispensary.

1 table.	1 shelf.

Hospital Assistant's Quarters.

1 table.	1 bedstead, cheap cane.
1 chair.	

Nurses' Quarters.

For 2 nurses.	2 bedsteads, complete.
2 tables.	2 commodes.
2 chairs.	2 chambers.
1 arm-chair.	2 sets washstand and crockery.
1 shelf.	2 towel horses.

Crockery, &c., for Nurses.

4 knives.	2 plates, large.
4 forks.	2 plates, small.
2 spoons.	2 tumblers.
2 tea spoons.	1 teapot.
2 cups and saucers.	

Clothing.

20 pillow-cases.	20 sarees.
24 towels.	20 pairs slippers for ward-boys.
24 dusters.	40 pairs socks.
40 blankets.	36 linen caps.
30 coats.	3 table-cloths for nurses.
30 trousers.	12 women's night-dresses.
50 dhoties.	6 childrens' do.
36 sheets.	

Instruments.

2 enema tubes.	1 measure glass, 2 oz.
36 bottles, 6 oz.	1 minim do.
½ gross corks.	1 pair of scissors.
10 glasses for serving medicine.	2 packets pill boxes.
10 feeding cups.	2 pots decoction, tin.
4 clinical thermometers.	1 pot infusion.
12 bandages.	3 pencils, camel hair.
½ lb. cotton wool.	1 syringe, hypodermic.
1 syringe, large.	2 do. enema.
1 do. small.	2 do. glass.
2 spatulas.	3 catheters 6, 7, 8.
1 pestle and mortar.	1 corkscrew.
1 slab.	3 icebags.
1 spirit lamp.	½ lb. lint.
1 scales and weights.	12 yds. cloth sheeting.
1 measure glass.	3 bedpans.
	1 pocket case.

Medicines.

1 lb. acid, boric.
3 lb. do. carbolic.
2 oz. do. gallic.
1 oz. do. hydrocyan dil.
6 oz. do. sulphuric.
6 oz. ammonii brom.
2 oz. ammon. carb.
2 lb. aqua destil.
1 dr. argenti nitras.
1 lb. oleum terebinth.
6 lb. do. arachis.
4 drms. opium.
2 oz. potass citratis.
2 oz. „ iodidum.
1 oz. pulvis ipecac co.
2 oz. jalapae co.
4 oz. phenacetin.
1 oz. pill hydrarg.
8 oz. acid tart.
8 oz. alumen.
1 lb. ammonii chloride.
1 dr. atropin sulph.
4 oz. bismuthi subnit.
4 oz. borax.
½ oz. caffiene cit.
2 oz. camphora.
1 dr. cocainae hydrochlor.
2 lb. cheretta.
4 oz. chloroform.
2 oz. colodion.
1 oz. creasotum.
4 drs. cupri sulph.
½ yd. diachalon plaster.
½ oz. ext. belladon.
2 oz. do. ergot liq.
1 oz. do. gentian.
½ oz. guiacol.
½ lb. glycerine.
½ lb. gum acac.
4 oz. hydrarg perchlod.
½ oz. do. subchlor.
2 oz. iodoform.
½ lb. lin. camph co.
4 oz. do. iodi.
1 lb. do. saponis.
4 oz. liq. ammon. acet.
4 oz. do. arsenicalis.
½ oz. liq. epispast.
1 oz. do. morph. hydrochl.
1 lb. do. plumbi subacat.
2 oz. do. strych.
4 lb. magnes sulph.
½ oz. ol. anethi.
1 oz. ol. menth pip.
2 oz. ol. cinamom.
5 oz. ol. ricini.
2 oz. pot. bicarb.
8 oz. do. chlor.
8 oz. do. nitras.
4 oz. do. permang.
8 oz. pulv. cretæ arom. c. opio.
8 oz. quin. sulph.
6 oz. pot. brom.
½ lb. sacc. alb.
½ oz. santoninum.
1 oz. sodii bicarb.
3 oz. do. salicyl.
4 oz. spt. meth.
1 lb. do. etheris nit.
1 lb. do. ammon. aromat.
2 lb. do. rect.
1 lb. sulph. sublim.
8 oz. syrup chloral hyd.
8 oz. do. tolu.
½ oz. tinct. aconiti.
2 dr. do. aurantii.
2 oz. do. cadr. co.
2 oz. do. cinchon.
2 oz. do. digitalis.
2 oz. do. hamamelidis.
2 oz. do. hyoscy.
4 oz. do. iodi.
4 oz. do. opii.
2 oz. do. seillae.
2 oz. do. assafoet.
2 oz. do. belladon.
4 oz. do. catechu.
½ lb. unguent hydrarg.
1 lb. do. simplex.
½ lb. vaselina.
½ lb. vini. ipecac.
½ oz. zinci. ox.
2 oz. do. sulph.

9. I propose to return to Madras during the course of this month.

10. As General Gatacre's Committee are publishing a full account of all the arrangements made by them in Bombay, I would suggest the advisability of applying for an early copy, as the report is a very full one and will contain plans of all the hospitals, &c.

ADDITION TO DIRECTIONS TO SEARCHERS.

To Rule 11.

The medical examination of a woman shall, if so demanded by the woman herself, or by her husband or nearest relative on her behalf, be made by a lady doctor.

Poona,
6th October 1897.

R. A. LAMB,
Chairman, P.P.C.

DIRECTIONS FOR SEARCHERS.

A search party is composed of one British and two native soldiers and a native gentleman. It is provided with a pickaxe, a lantern, a pot of paint and a note-book.

2. A search division is composed of ten search parties and is under the command of an officer. One lady and three native soldiers are attached to each search division and one medical officer to every two search divisions. A search division is provided with one or two ambulances and one cart to convey property to the segregation camp. Each search division will assemble daily, Sundays excepted, at the place and time which will be intimated on the previous day to the officer in command of the search division, to each native gentleman on duty with the division each day, to the ladies and the medical officer attached to divisions, and to the District Superintendent of Police.

3. Search parties shall make careful house-to-house inspection in the area assigned to their division in order to discover plague cases and dead bodies.

4. When a search party comes to a house the native gentleman will explain to the inmates the object of the visit and demand admission.

5. Should the inmates fail to admit the search party promptly or should there be no one to open the house-door, the search party will force their way in.

6. The search party will carefully search all parts of the house, and in doing so may force open all inner doors which are not on application opened by the inmates.

7. The soldiers will inspect all persons in the house in order to ascertain whether any of them are sick; provided that if the inmates so desire the inspection of the women in the house will be made by the lady attached to the division.

8. The native gentleman will accompany the soldiers through the house, will act as interpreter between them and the inmates of the house, will point out to them the god room and the cook-room in a Hindu house, will himself search those rooms in cases in which there is no caste objection to his doing so, accompanied by any one of the soldiers to whose entrance into those rooms there is no caste objection, and will obey the orders of the officer commanding the search division.

9. Except as provided in paragraph 8, the search party will not enter the god room or cook-room of a Hindu house unless—

(1) there are persons in these rooms who refuse to leave them; or

(2) there is reason to suspect that these rooms contain a corpse or a sick person; or

(3) access to other portions of the house cannot be obtained except through these rooms.

In these cases the search party may enter these rooms.

10. The search party will not open boxes or cupboards unless they have reason to suspect that they contain corpses or sick persons.

11. On a corpse or a sick person being found, one member of the party will summon the medical officer attached to the division, while the remainder will detain the inmates of the house. Should the medical officer after examination suspect that the case is one of plague, a segregation squad will be sent for. Any person that the medical officer suspects to be suffering from plague will be removed in an ambulance with one member of the household as an attendant (should any be willing to accompany him) to a plague hospital. Such of the remaining inmates of the house as the medical officer may indicate will be taken charge of by the segregation squad. The inmates of the house and the [neighbours should be desired to make immediate

arrangements for the burial or burning of any corpse that may be found. Should nobody be found willing to undertake this duty, a funeral party will be summoned from the City Police office.

12. The officer in charge of a search division will note the names of all plague patients and corpses, and the number of the house, name of the street and the *Peth* where the patients and corpses are found, and report them as early as possible on the same day, at the City Municipal office.

13. The inmate of any infected house which is ordered to be vacated, will be required to choose whether such valuable property as they may possess should be delivered to a neighbour after disinfection, or should be sent to the warehouse. If they chose the latter alternative, the property will be packed and marked with the letter W. In cases where neither of these courses is practicable, the medical officer may in his discretion allow one inmate of the house to remain in it in charge of the property.

14. Persons removed to a plague hospital may take with them only such articles as the medical officer may permit. Persons removed to a segregation camp may send to the camp, clothes, bedding, cooking pots, and other necessaries and comforts, in the cart assigned for that purpose.

15. Except property to be removed to a plague hospital or a segregation camp, no property shall be removed from an infected house till the house has been disinfected by the disinfecting party.

16. The mat or bedding of a plague patient will be burnt in the street, but no other property will be destroyed by search parties.

16-A. The medical officer will pay from an advance supplied him for the purpose such compensation as he may deem necessary for property destroyed under paragraph 16 and will take the receipt of the payee.

17. After searching a house, the search party will paint such mark upon it as may from time to time be prescribed as a sign that it has been searched. An accouut must be kept in the note book provided for the purpose of the number of houses searched.

18. The medical officer will cause a vertical red line to be painted on each infected house, and the date of search to be painted beside it.

19. The three native soldiers attached to a search division will be employed on fastening up doors that have been forced open.

20. The medical officer will be accompanied by a man carrying a yellow flag to show his whereabouts.

21. The segregation squads will at present consist of police and will be posted during the search at the point at which the search division assembled in the morning.

22. The particular attention of all engaged in search operations is drawn to the orders regarding complaints.

Poona,
27*th September* 1897.

(Signed) R. A. LAMB,
Chairman, P.P.C.

No. T—46.

Forwarded to the Surgeon-General with the Government of Madras. Undersigned has already, on the strength of the favourable opinion of Surgeon-Major Bannerman as to Mr. Haffkine's prophylactic, advised that Government adopt its use as early as feasible, and further that Surgeon-Major Bannerman should be deputed to manufacture it for this Presidency.

(Signed) W. G. KING, Surgn.-Lieut.-Col.,
18*th October* 1897. *Sanitary Commissioner for Madras.*

From Surgeon-Major-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General, Madras, to the Secretary to Government, Local and Municipal Department, dated 21st October 1897, No. 398.

With reference to paragraph 1 of my letter, No. 395 of the 20th instant, I have the honour to forward the accompanying two plans of plague hospitals.

Order—No. 2448 M., dated 6th November 1897.

A supply of Dr. Haffkine's prophylactic sufficient to inoculate 500 persons has already been received, but as this will not go far if the plague should unfortunately break out in the Presidency, the Government of Bombay will be requested to be good enough to inform this Government whether Dr. Haffkine can send to this Government further supplies, if the necessity for the same should arise.

2. As to the use of the prophylactic, the Government observes that, if persons who have been in contact with plague cases and have been segregated can, after inoculation, be safely released from segregation on the expiry of a period of 24 hours, instead of being kept for the much longer period now prescribed, not only would such an inducement prove most valuable in leading many persons to submit themselves voluntarily to inoculation, but the measure would have the great advantage, as pointed out by Surgeon-Major Bannerman, of reducing to a very large extent the amount of accommodation to be provided in a widespread epidemic for segregation purposes, and would also go far to lessen the necessary inconvenience caused to the public in the working of the plague rules. His Excellency the Governor in Council is, however, averse from modifying the segregation period in favour of those who have been inoculated without expert advice. The Surgeon-General and the Sanitary Commissioner will therefore be requested to favour Government with their opinion in the matter, and the Bombay Government will also be addressed in view of learning the opinion of the medical officers of that Government who have had opportunities of studying the subject.

3. Surgeon-Major Bannerman may for the present remain in Bombay, whence he can be recalled by telegram should his presence for the purposes indicated in paragraph 2 of the Surgeon-General's letter be required. The suggestions in paragraphs 3 and 4 of the same officer's letter can be considered later on if unfortunately the plague should break out.

4. Surgeon-Major Bannerman's remarks and suggestions in regard to the hospitals in use in Bombay and Poona are, as stated by the Surgeon-General, worthy of attention in the event of the need arising for the extension of the present hospital accommodation or for the organization of new hospitals. Of the two plans submitted by Dr. Bannerman, the plan on blue paper seems well suited for adoption for hospital accommodation in the case of any epidemic. The only doubt is as to whether thatched roofs at the pitch shown would not be liable to leak seriously; apparently the plan should be modified so as to show a roof-pitch of 45 degrees. If the Sanitary Commissioner, after consulting the Sanitary Engineer, is of the same opinion, he will have the plan redrawn with this alteration and submit copies to Government for circulation to local boards and mufassal municipalities as well as to the President, Municipal Commission, Madras. The white paper plan appears incomplete in certain particulars, and a reference will be made to Surgeon-Major Bannerman regarding it.

5. Application has already been made for the supply of copies of the report of General Gatacre's committee.

(True Extract.)

G. S. FORBES,
Secretary to Government.

To all Collectors.
" all Presidents of District Boards.
" all Chairmen of Municipal Councils.
" the President, Municipal Commission, Madras.
" the Surgeon-General.
" the Sanitary Commissioner.

Exd. T. K. Narayana Aiyangar.

Government {1897} of Madras.

LOCAL AND MUNICIPAL.

Proof for approval.

Press
Standard
as revised

Recd.	} 1897.	*Enclosures*
Regd.		*Spare copies*

G.O., No. 2448 M., 6th November 1897.

NOVEMBER.

Bubonic Plague.

Communicating, with remarks, to the Surgeon-General, the Sanitary Commissioner and the President, Municipal Commission, Madras, Surgeon-Major Bannerman's report on plague in Bombay and Poona.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers:—

From Surgeon-Major-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General with the Government of Madras, to the Secretary to Government, Local and Municipal Department, dated Madras, 20th October 1897, No. 395.

With reference to your Demi-official No. 56, dated 5th October 1897, I have the honour to forward in original the report of Surgeon-Major Bannerman now on special duty in Bombay on (*a*) the exact system on which house-to-house visitation was carried out in Bombay and Poona; he has not been in Karachi; (*b*) how far he has made himself familiar with the plague hospital system; (*c*) the bacteriology and (*d*) the treatment of the disease. The plans promised I will send on when I receive them from the Sanitary Commissioner.

2. With reference to paragraph 6 of his report, I concur in his recommendation that along with the removal of the patient to hospital, a system of inoculation should be enforced, and that Government should address Dr. Haffkine (through the Government of Bombay), with the view of making arrangements for an early supply of this prophylactic. As this prophylactic takes about six weeks it is desirable that immediate action should be taken. In my opinion the Government of Madras should offer to pay for whatever extra assistance Dr. Haffkine may require to meet our wants.

I differ from the Sanitary Commissioner who has suggested that Dr. Bannerman should remain in Bombay to assist Dr. Haffkine. I think he would be more useful here on special plague duty in directing and supervising such inoculations and in administrating the special hospitals that would have to be opened if the plague became epidemic.

3. With reference to paragraph 7 the Municipal Council in Madras have already made preparations for opening plague hospitals in Royapuram, Vepery and Royapettah under the District Surgeons, but these are only meant to deal with isolated cases. If the disease was to spread, I consider that the President of the Municipality should be given a special Plague Officer, a Magistrate who, with him and Surgeon-Major Bannerman, would be able to carry out a similar organisation to that described in this report. The public should be informed that if they desire to have special hospitals for their own classes and castes, they must come forward and organise them under the control of the above officers.

4. If house-to-house visitation has to be carried out, the assistance of influential natives and of the Military will have to be obtained. The rule that no corpse was allowed to be removed from Poona without a certificate from a medical man certifying to the cause of death was an especially good one.

5. With reference to paragraph 8 of the report, these hints are well worth the attention of the above officers should any extension of the present hospitals be required or should new ones have to be organised. I concur with Dr. Bannerman that the floors of the wards should be impervious, and consider this a most important point in view of the fact that the bacillus is known to develop in earth. The only other plan would be to build more wards, so that one could be evacuated once a week in order to allow of the floor being disinfected and changed.

6. With reference to paragraph 10 of the report it is very desirable that we should be supplied with copies of the report as soon as it is ready for distribution.

7. I would suggest that this report, with the orders of Government, should be put in print as soon as possible in order that copies may be sent to all concerned for their guidance and that I should be sent twenty copies.

From Surgeon-Major W. B. BANNERMAN, M.D., B.Sc., Inspector of Vaccination and Deputy Sanitary Commissioner for Madras, to the Sanitary Commissioner for Madras, dated 13th October 1897.

In accordance with your endorsement. No. 3485–S. of 8th October, on letter No. 5–1-Tour, from the Surgeon-General with the Government of Madras, I have the honour to submit the report therein called for.

2. The unavoidable slight delay that has taken place is due to the fact that I was absent from Bombay, assisting Dr. Haffkine in experiments he was conducting in the treatment of plague patients with curative serum, and in watching the methods of house-to-house visitation carried out by the authorities in Poona.

3. In regard to the query of Government as to how far I have made myself acquainted "with the exact system on which house-to-house visitation for the plague was carried out in Bombay, Poona and Karachi, and as to how far he has made himself familiar with the plague hospital system, as well as the bacteriology and treatment of the disease," I would state that I have gone round with the Plague Committees of both Bombay and Poona and have studied their methods of working, and that I propose to go round again with the Bombay Committee to see what modifications they may have introduced as the result of further experience. I am also familiar with many of the plague hospitals in Bombay, having visited them on numerous occasions to study the disease and to collect material for bacteriological research, and during the past week I have spent from five to six hours daily in the General Plague Hospital at Poona, which contains over 200 patients, helping to carry out the experiments on serum treatment noted above.

4. As regards treatment, I need only repeat what was contained in the former report submitted to Government, viz., good feeding and nursing, the patient being kept in the recumbent position till four days at least after temperature has come to normal as heart failure is so much to be dreaded, large quantities of stimulants, alcoholic and medicinal, nervine tonics such as strychnine, and such drugs as ammonium carbonate, caffiene citrate, tincture of strophanthus, tincture of digitalis and nitrate of pilocarpine. Fever is best treated by sponging and icecap, antifebrin and phenacetin not being suitable and having a transient effect only. Headache by bromide of ammonium, opiates, icecap or evaporating lotions. Sleeplessness by bromides, opiates or camphorodyne. Vomiting by bismuth and hydrocyanic acid in effervescing draughts. Pulmonary congestion by diffusable and alcoholic stimulants, with digitalis, turpentine stupes and blisters. Surgeon-Captain Thomson, I.M.S., who was in charge of the Parel Hospital and from whose report the above information is taken notes that "As a special mode of treatment, liq. hydrargyri perchloridi was resorted to from a conviction of the value of such a powerful disinfectant in specific disease. At first it was given in drachm doses well diluted three times daily; later, in half-ounce doses every two hours for four doses; and then in the same quantities every eight hours. In no case of plague did these enormous doses induce salivation, though this phenomenon was carefully sought for." In one case which turned out to be another disease, salivation was produced after the third dose, so he concludes that "this mode of treatment is therefore both diagnostic and rational."

As regards the treatment of buboes, he strongly deprecates attempts to induce suppuration, and holds that when they are left to themselves the tendency is for them to subside, and that when irritants are avoided and sedative applications used, only 7 per cent. end in suppuration. On the other hand if irritants are applied, a very large number suppurate and having to be opened lead to the formation of large granulating surfaces slow to heal and retarding convalescence.

5. As far as the experiments at Poona were carried last week, it would appear that serum has little or no effect, but as Dr. Haffkine has not yet completed his observations, no more need be said.

6. As regards the prophylactic treatment, however, I have been permitted by Dr. Haffkine to say that from observations made at Damaun, Lanowli and Kirkee, it is certain that the mortality in an epidemic can be reduced by 75 per cent. by this means. These observations, in which I have been privileged to assist, have been carried out with the greatest scientific accuracy so that the figures may be verified by the whole world, and Dr. Haffkine intends, I believe, to ask Government to appoint an investigation committee to verify the results. By a system of slips given to each individual as he is inoculated it has been found possible to follow up each case afterwards and to take a census of the inhabitants of each hut on investigation sheets, and so to ascertain exactly the percentage of attacks and deaths among the inoculated and those not inoculated living in the same house with them. As Dr. Haffkine is now working at the figures and will very shortly submit a report to Government, I am not at liberty to enter into further details, but in the urgency of the present state of affairs in Madras, he has kindly permitted me to communicate the above facts.

Acting in the light of the above important discovery I would strongly recommend that along with removal of the patient to hospital, a system of inoculation should be enforced on the lines so successfully adopted during outbreaks of small-pox.

As the prophylactic appears to begin to exert its protective influence after 12 hours, it should be possible to modify the working of the segregation system in the direction of shortening the period of seclusion now practised. If the inhabitants of an infected house were to be at once inoculated and removed for 24 hours to a segregation camp, they might then be allowed to return, the house in the meantime having been disinfected. In this way a great saving may be effected in a large epidemic, as only one-tenth of the amount of accommodation will be required at the segregation camp. I would therefore venture to suggest that Government be recommended to address Dr. Haffkine with a view to making arrangements for an early supply of his prophylactic. I may say that at present the material takes about six weeks to prepare and that *immediate action* is therefore advisable. The house in which Dr. Haffkine's laboratory is situated is kept up by the Bombay municipality, and the material for manufacture and servants supplied by Government. As the trained assistants formerly employed in the laboratory have now all been recalled to duty elsewhere, it is probable that Dr. Haffkine will ask for help in this direction, as it is absolutely impossible with the present establishment to do more than supply the demands of the Bombay Presidency.

7. Plague Hospital System and House-to-House Visitation.—For this purpose the city was divided into ten districts, each in charge of a Commissioned Medical Officer, or when these could not be supplied, influential local practitioners. Each district was divided into divisions and these again into sections. The divisions were under the charge of local medical men who reported to, and worked under the District Medical Officers of Health. Under these, worked a vast army of inspectors, overseers and coolies engaged in general sanitation and disinfection of houses. As far as possible each district was provided with a Government hospital, and one or more private caste hospitals; altogether there were 15 Government and 28 private hospitals.

The following were the duties of the District Health Officers:—

to superintend the general sanitation of the district, reporting to the Plague Committee and the Municipal Health Officer daily;

to supervise district hospitals and attend them in routine;

to supervise search parties with the Justices of the Peace;

to control disinfection;

to inspect segregation camps;

to call the attention of the special officer to insanitary buildings;

to supervise cemeteries and report on the registration of burials and cremations;

to send daily reports to the Plague Committee and Health Officer of casualties and to make any suggestions.

A special feature of the arrangements was the large number of private hospitals established by the various sections of the community. These were superintended by the District Medical Officers, but were in charge of private practitioners chosen by the people themselves, and did much to overcome the opposition of the people to removal to hospital. The plan of allowing relatives to accompany patients to hospital also acted in the same direction.

Near each district hospital was the office and temporary barracks for the military and police employed in connection with the search parties, this arrangement being adopted as being convenient in case of any sudden disturbance.

Hand ambulances on bicycle wheels with India-rubber tyres and with stretchers attached were used to convey the sick.

House-to-house visitation was carried on in Bombay largely by means of help given by Justices of the Peace, and others specially enrolled for the occasion. These constituted the "conductors of search parties," and being influential men they greatly conduced to the smooth working of the system. The following account of the present manner of searching adopted in Poona will, I think, give a sufficiently accurate idea of how things are managed. There are now only two search parties each in charge of a British Officer. Formerly there were more but owing to the scarcity of troops no more can be organised at present. The whole city is overtaken in fifteen days, but this, of course, is much too infrequent; formerly it was gone through in five days.

Each party is divided into as many sub-parties as possible, and each of these consists of one British soldier, two sepoys and a native gentleman. The British soldier carries a hammer to break open doors with, one sepoy carries a lantern and another a pot of red paint. Every house in the street is systematically entered and thoroughly searched. If nothing is found a St. Andrew's cross is made on the door by the sepoy with the red paint, and the date added. If a plague case is found a long vertical line is made on the door with the date —|— 28-9-97 —|— 29-9-97 26-9-97 and the matter is reported to the municipal office by the gentleman in charge of the party. The patient is sent to hospital in an ambulance cart with a certificate in charge of an orderly who brings back a receipt from the admitting officer there. The rest of the inhabitants are segregated with the exception of one man left in charge of the household property, and the house is disinfected as soon as possible. The disinfecting party when finished draw a horizontal line through the top of the vertical line left by the search party, adding the date of disinfection. Then next day the whitewashers arrive on the scene, and after completing their work draw a second horizontal line at the bottom of the vertical line adding the date, as shown in the margin. Any doors forced are afterwards secured by a pioneer told off for the purpose. Before the search begins a cordon of troopers is drawn round the quarter to prevent the people removing patients in vehicles, as they are very apt to do. One specially good feature noticed in Poona was the plan adopted for ascertaining the actual number of deaths taking place. No body is allowed to be removed from the city without a certificate from a medical man certifying to the cause of death. The Deputy Sanitary Commissioner and a subordinate staff are told off for this purpose, going round to the houses where deaths are reported and issuing certificates after examination. Intimation is sent to the municipal office and at stated hours the visitations are made, starting from the office at 7 A.M. and noon, and at 5, and 10 P.M. Besides the military search parties two assistant health officers go round to look after general sanitation and as they go quietly gather information and with such success that I am told they get hold of two to three times the number of cases that the search parties do. As in Madras the people will probably be more amenable to reason than in either Bombay or Poona, probably this system could be arranged for, and the objectionable search parties to a large extent dispensed with.

8. With reference to paragraph 3 of the Surgeon-General's letter, I submit a description of the hospitals in use in Bombay and Poona. Through the courtesy of C. C. James, Esq., I am enabled to send two plans of hospitals and buildings attached. A standard plan was adopted in Bombay, the unit being twenty beds forming one section. Half and quarter sections were also used and for larger hospitals a multiple of the unit to any required extent. As the scale and design was not altered every body knew what was required when a new hospital had to be established. The twenty beds are arranged in an area of 120+24 feet, thus giving to each bed a superficial area of 144 square feet, which is certainly none too large under the circumstances. A ring fence of bamboo matting surrounds the hospital and buildings; the wards are at the end of the site farthest from the entrance, close to which are the wards for the patient's friends, with latrines conveniently near. The buildings are composed of posts and framing of bamboo or jungle wood, sunk well into the ground. There is a 12-inch plinth of rammed red earth. The sides are single bamboo matting; the roofs of two layers of palm leaves with a ceiling of cloth in some cases. The whole whitewashed once a week inside and out with the exception of the roof. The beds are in double rows and screens of matting are arranged between each pair of beds. The cook-houses are of corrugated iron on wooden framing; drinking water from taps to suit all castes. The privies on the dry-earth system, night-soil being removed by hand after disinfection, they had a washing place in connection paved and drained by glazed 4-inch half-pipes. Similar drains led from the various bath-rooms to a cesspool or neighbouring drain. The only alteration made as the result of experience was the erection of a general cook-house for the wards and an extra bath-room for the nurses. In the larger hospitals an office and dispensary were erected, otherwise a corner of one of the wards was used for the purpose. The cost of such a hospital is said to be "As. 6 per square foot of area covered." In Poona there is but one general hospital. The wards are arranged in *echelon* so as to allow of as much perflation as possible. The width of the wards is regulated by the length of the corrugated iron sheets of which the roofs are made. The sides are made of matting or grass and the upper halves open on hinges, affording good ventilation by day when open and shelter from winds at night when shut. The wards run east and west the doors on the north side and verandahs of grass thatching on the three other sides. The mortuary here is of corrugated iron which is a good plan as it prevents the entrance of animals. The cots in use are the ordinary country charpoys either with nawar or rope strapping or with rabbit wire netting stretched across. This latter is certainly a sanitary arrangement but the netting is apt to get slack. The only improvement I can suggest is that the floors should be rendered impervious, but this, of course, would add to the expense. "The staff of a one-section hospital was fixed as follows:—

2 nurses.	1 sheesty.
1 ayah.	2 sweepers.
1 hospital Assistant.	2 nurses servants.
4 ward Orderlies.	1 hospital cook.

"If there were many severe cases, it was found necessary to supplement the staff with an extra nurse, to increase the number of ward orderlies, and when the caste and other conditions of the patients required it, the number of cooks also."

Equipment—	Furniture—
1 table.	20 towels.
4 screens.	20 plates.
2 chairs.	6 spoons.
1 washstand table.	2 pails.
1 cupboard.	20 spittoons earthenware.
1 almirah	1 iron can for poultices.
20 cots.	20 bowls common.
6 camp lanterns.	20 mats for cots.

Office.

1 table.	2 chairs.

Cook-room.

1 table, common.	1 spoon, large.
1 kettle.	1 knife.
6 cooking utensils.	3 plates, iron.
4 cans for hot water, &c.	1 pail.

Dispensary.

1 table.	1 shelf.

Hospital Assistant Quarters.

1 table.	1 bedstead, cheap cane.
1 chair.	

Nurses' Quarters.

For 2 nurses.	2 bedsteads, complete.
2 tables.	2 commodes.
2 chairs.	2 chambers.
1 arm-chair.	2 sets washstand and crockery.
1 shelf.	2 towel horses.

Crockery, &c., for Nurses.

4 knives.	2 plates, large.
4 forks.	2 plates, small.
2 spoons.	2 tumblers.
2 tea spoons.	1 teapot.
2 cups and saucers.	

Clothing.

20 pillow-cases.	20 sarees.
24 towels.	20 pairs slippers for ward-boys.
24 dusters.	40 pairs socks.
40 blankets.	36 linen caps.
30 coats.	3 table-cloths for nurses.
30 trousers.	12 women's night-dresses.
50 dhoties.	6 childrens' do.
36 sheets.	

Instruments.

2 enema tubes.	1 measure glass, 2 oz.
36 bottles, 6 oz.	1 minim do.
½ gross corks.	1 scissors.
10 glasses for serving medicines.	2 packets pill boxes.
10 feeding cups.	2 pots decoction, tin.
4 clinical thermometers.	1 pot infusion.
12 bandages.	3 pencils, camel hair.
½ lb. cotton wool.	1 syringe, hypodermic.
1 syringe, large.	2 do. enema.
1 do. small.	2 do. glass.
2 spatulas.	3 catheters 6, 7, 8.
1 pestle and mortar.	1 corkscrew.
1 slab.	3 icebags.
1 spirit lamp.	½ lb. lint.
1 scales and weights.	12 yds. cloth sheeting.
1 measure glass.	3 bedpans.
	1 pocket case.

Medicines.

1 lb. acid boric.
3 lb. do. carbolic.
2 oz. do. gallic.
1 oz. do. hydrocyan dil.
6 oz. do. sulphuric.
6 oz. ammonii brom.
2 oz. ammon. carb.
2 lb. aqua destil.
1 dr. argenti nitras.
1 lb. oleum terebinth.
6 lb. do. Arachis.
4 drms. opium.
2 oz. potass citratis.
2 oz. ,, iodidum.
1 oz. pulvis ipecac co.
2 oz. jalapae co.
4 oz. phenacetin.
1 oz. pill hydrarg.
8 oz. acid tart.
8 oz. alumen.
1 lb. ammonii chloride.
1 dr. atropin sulph.
4 oz. bismuthi subnit.
4 oz. borax.
½ oz. caffiene cit.
2 oz. camphora.
1 dr. cocainae hydrochlor.
2 lb. cheretta.
4 oz. chloroform.
2 oz. colodion.
1 oz. creasotum.
4 drs. cupri sulph.
½ yd. diachalon plaster.
½ oz. ext. belladon.
2 oz. do. ergot liq.
1 oz. do. gentian.
½ oz. guiacol.
½ lb. glycerine.
½ lb. gum acac.
4 oz. hydrarg perchlod.
½ oz. do. subchlor.
2 oz. iodoform.
½ lb. lin. camph co.
4 oz. do. iodi.
1 lb. do. saponis.
4 oz. liq. ammon. acet.
4 oz. do. arsenicalis.
½ oz. liq. epispast.
1 oz. do. morph. hydrochl.
1 lb. do. plumbi subacat.
2 oz. do. strych.
4 lb. magnes sulph.
½ oz. ol. anethi.
1 oz. ol. menth pip.
2 oz. ol. cinamom.
5 oz. ol. ricini.
2 oz. pot. bicarb.
8 oz. do. chlor.
8 oz. do. nitras.
4 oz. do. permang.
8 oz. pulv. cretae arom copio.
8 oz. quin. sulph.
6 oz. pot. brom.
½ lb. sacc. alb.
½ oz. santoninum.
1 oz. sodii bicarb.
3 oz. do. salicyl.
4 oz. spt. meth.
1 lb. do. etheris nit.
1 lb. do. ammon. aromat.
2 lb. do. rect.
1 lb. sulph. sublim.
8 oz. syrup chloral hyd.
8 oz. do. tolu.
½ oz. tinct. aconiti.
2 dr. do. aurantii.
2 oz. do. cadr. co.
2 oz. do. cinchon.
2 oz. do. digitalis.
2 oz. do. hamamelidis.
2 oz. do. hyoscy.
4 oz. do. iodi.
4 oz. do. opii.
2 oz. do. seillae.
2 oz. do. assafoet.
2 oz. do. belladon.
4 oz. do. catechu.
½ lb. unguent hydrarg.
1 lb. do. simplex.
½ lb. vaselina.
½ lb. vini. ipecac.
½ oz. zinci. ox.
2 oz. do. sulph.

9. I propose to return to Madras during the course of this month.

10. As General Gatacre's Committee are publishing a full account of all the arrangements made by them in Bombay, I would suggest the advisability of applying for an early copy, as the report is a very full one and will contain plans of all the hospitals, &c.

ADDITION TO DIRECTIONS TO SEARCHERS.

To Rule 11.

The medical examination of a woman shall, if so demanded by the woman herself, or by her husband or nearest relative on her behalf, be made by a lady doctor.

Poona,
6th October 1897.

R. A. LAMB,
Chairman, P.P.C.

DIRECTIONS FOR SEARCHERS.

A search party is composed of one British and two native soldiers and a native gentleman. It is provided with a pickaxe, a lantern, a pot of paint and a note-book.

2. A search division is composed of ten search parties and is under the command of an officer. One lady and three native soldiers are attached to each search division and one medical officer to every two search divisions. A search division is provided with one or two ambulances and one cart to convey property to the segregation camp. Each search division will assemble daily, Sundays excepted, at the place and time which will be intimated on the previous day to the officer in command of the search division, to each native gentleman on duty with the division each day, to the ladies and the medical officer attached to divisions, and to the District Superintendent of Police.

3. Search parties shall make careful house-to-house inspection in the area assigned to their division in order to discover plague cases and dead bodies.

4. When a search party comes to a house the native gentleman will explain to the inmates the object of the visit and demand admission.

5. Should the inmates fail to admit the search party promptly or should there be no one to open the house-door, the search party will force their way in.

6. The search party will carefully search all parts of the house, and in doing so may force open all inner doors which are not on application opened by the inmates.

7. The soldiers will inspect all persons in the house in order to ascertain whether any of them are sick; provided that if the inmates so desire the inspection of the women in the house will be made by the lady attached to the division.

8. The native gentleman will accompany the soldiers through the house, will act as interpreter between them and the inmates of the house, will point out to them the god room and the cook-room in a Hindu house, will himself search those rooms in cases in which there is no caste objection to his doing so, accompanied by any one of the soldiers to whose entrance into those rooms there is no caste objection, and will obey the orders of the officer commanding the search division.

9. Except as provided in paragraph 8, the search party will not enter the god room or cook-room of a Hindu house unless—

(1) there are persons in these rooms who refuse to leave them; or

(2) there is reason to suspect that these rooms contain a corpse or a sick person; or

(3) access to other portions of the house cannot be obtained except through these rooms.

In these cases the search party may enter these rooms.

10. The search party will not open boxes or cupboards unless they have reason to suspect that they contain corpses or sick persons.

11. On a corpse or a sick person being found, one member of the party will summon the medical officer attached to the division, while the remainder will detain the inmates of the house. Should the medical officer after examination suspect that the case is one of plague, a segregation squad will be sent for. Any person that the medical officer suspects to be suffering from plague will be removed in an ambulance with one member of the household as an attendant (should any be willing to

accompany him) to a plague hospital. Such of the remaining inmates of the house as the medical officer may indicate will be taken charge of by the segregation squad. The inmates of the house and the neighbours should be desired to make immediate arrangements for the burial or burning of any corpse that may be found. Should nobody be found willing to undertake this duty, a funeral party will be summoned from the City Police office.

12. The officer in charge of a search division will note the names of all plague patients and corpses, and the number of the house, name of the street and the peth where the patients and corpses are found, and report them as early as possible on the same day, at the City Municipal office.

13. The inmate of any infected house which is ordered to be vacated, will be required to choose whether such valuable property as they may possess should be delivered to a neighbour after disinfection, or should be sent to the warehouse. If they chose the latter alternative, the property will be packed and marked with the letter W. In cases where neither of these courses is practicable, the medical officer may in his discretion allow one inmate of the house to remain in it in charge of the property.

14. Persons removed to a plague hospital may take with them only such articles as the medical officer may permit. Persons removed to a segregation camp may send to the camp, clothes, bedding, cooking pots, and other necessaries and comforts, in the cart assigned for that purpose.

15. Except property to be removed to a plague hospital or a segregation camp, no property shall be removed from an infected house till the house has been disinfected by the disinfecting party.

16. The mat or bedding of a plague patient will be burnt in the street, but no other property will be destroyed by search parties.

16-A. The medical officer will pay from an advance supplied him for the purpose such compensation as he may deem necessary for property destroyed under paragraph 16 and will take the receipt of the payee.

17. After searching a house, the search party will paint such mark upon it as may from time to time be prescribed as a sign that it has been searched. An accouut must be kept in the note book provided for the purpose of the number of houses searched.

18. The medical officer will cause a vertical red line to be painted on each infected house, and the date of search to be painted beside it.

19. The three native soldiers attached to a search division will be employed on fastening up doors that have been forced open.

20. The medical officer will be accompanied by a man carrying a yellow flag to show his whereabouts.

21. The segregation squads will at present consist of police and will be posted during the search at the point at which the search division assembled in the morning.

22. The particular attention of all engaged in search operations is drawn to the orders regarding complaints.

POONA,
27*th September* 1897.

(Signed) R. A. LAMB,
Chairman, P.P.C.

No. T—46.

Forwarded to the Surgeon-General with the Government of Madras. Undersigned has already, on the strength of the favourable opinion of Surgeon-Major Bannerman as to Mr. Haffkine's prophylactic, advised that Government adopt its use as early as feasible, and further that Surgeon-Major Bannerman should be deputed to manufacture it for this Presidency.

(Signed) W. G. KING, Surgn.-Lieut.-Col.,
18*th October* 1897. *Sanitary Commissioner for Madras.*

From Surgeon-Major-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General, Madras, to the Secretary to Government, Local and Municipal Department, dated 21st October 1897, No. 398.

With reference to paragraph 1 of my letter, No. 395 of the 20th instant, I have the honour to forward the accompanying two plans of plague hospitals.

ORDER—No. 2448 M., dated 6th November 1897.

A supply of Dr. Haffkine's prophylactic sufficient to inoculate 500 persons has already been received, but as this will not go far if the plague should unfortunately break out in the Presidency, the Government of Bombay will be requested to be good enough to inform this Government whether Dr. Haffkine can send to this Government further supplies if the necessity for the same should arise.

2. As to the use of the prophylactic the Government observes that, if persons who have been in contact with plague cases and have been segregated can, after inoculation, be safely released from segregation on the expiry of a period of 24 hours, instead of being kept for the much longer period now prescribed, not only would such an inducement prove most valuable in leading many persons to submit themselves voluntarily to inoculation, but the measure would have the great advantage, as pointed out by Surgeon-Major Bannerman, of reducing to a very large extent the amount of accommodation to be provided in a widespread epidemic for segregation purposes, and would also go far to lessen the necessary inconvenience caused to the public in the working of the plague rules. His Excellency the Governor in Council is however averse from modifying the segregation period in favour of those who have been inoculated without expert advice. The Surgeon-General and the Sanitary Commissioner will therefore be requested to favour Government with their opinion in the matter, and the Bombay Government will also be addressed in view to learning the opinion of the medical officers of that Government who have had opportunities of studying the subject.

3. Surgeon-Major Bannerman may for the present remain in Bombay, whence he can be recalled by telegram should his presence for the purposes indicated in paragraph 2 of the Surgeon-General's letter be required. The suggestions in paragraphs 3 and 4 of the same officer's letter can be considered later on if unfortunately the plague should break out.

4. Surgeon-Major Bannerman's remarks and suggestions in regard to the hospitals in use in Bombay and Poona are, as stated by the Surgeon-General, worthy of attention in the event of the need arising for the extension of the present hospital accommodation or for the organization of new hospitals. Of the two plans submitted by Dr. Bannerman, the plan on blue paper seems well suited for adoption for hospital accommodation in the case of any epidemic. The only doubt is as to whether thatched roofs at the pitch shown would not be liable to leak seriously; apparently the plan should be modified so as to show a roof-pitch of 45 degrees. If the Sanitary Commissioner, after consulting the ~~Superintending~~ Engineer, is of the same opinion, he will have the plan redrawn with this alteration and submit copies to Government for circulation to local boards and mufassil municipalities as well as to the President, Municipal Commission, Madras. The white paper plan appears incomplete in certain particulars, and a reference will be made to Surgeon-Major Bannerman regarding it.

5. Application has already been made for the supply of copies of the report of General Gatacre's committee.

(True Extract.)

Secretary to Government.

To the President, Municipal Commission, Madras—
" Surgeon-General.
" Sanitary Commissioner.

Exd. T. K. Narayana Aiyangar.

[L & M.]
150—30-6-97.

LOCAL AND MUNICIPAL DEPARTMENT.

Papers to be read in proceedings:—

118

Again G.O., No. dated 189 .

Again G.O., No. dated 189 .

Current No. 3620 M of 1897, dated 20th Oct. , from the Surg. Genl

" " 3637 M " 1897 " 21st — , " do

" " " 189 , " , "

Prev

ORDER. No. 2448 M dd 6-11-97

Make copies for Govt. Gaz. & H.F. & Pt. M.C. also one & also reference to D.B.

Dr. Bannerman's interesting report will be printed and circulated to all Collectors, Presidents of Dt. Boards, Chairmen of municipal councils and President municipal com.rs Madras for information.

& A Supply of Dr Haffkine's prophylactic sufficient to inoculate 500 persons has already been received, but as this will not go far if the plague should unfortunately break out in the Presidency, the Government of Bombay will be requested to ~~be good enough to ascertain~~ inform this Govt whether Dr Haffkine ~~if he~~ can send to this Government further supplies if the necessity for the same should arise.

As to the use of the prophylactic

the Government- ~~is of opinion~~ that ~~no one~~ person should be compelled to submit himself to inoculation; ~~but~~ argues that ~~if a certain big number of Dr Bamerman's pets it is~~ likely that segregated persons or persons who have been in contact with plague cases, can after inoculation be safely released from segregation on the expiry of a period of 24 hours, instead of being kept for the much longer period now prescribed, a handy and much more valuable inducement would be provided in leading many persons to submit themselves voluntarily to inoculation, but the measure would have the great advantage of reducing to a very large extent the amount of accommodation to be provided in a widespread epidemic for segregation purposes, and also of lessening the inconvenience caused to the public and the working of the plague rules as pointed out by Surgeon Major Bamerman;

His Excellency the Governor in Council is however averse to ~~making~~ ~~the segregation period in favour of~~ ~~allowing the~~ persons who have been inoculated ~~to escape~~ the Scheme without further expert advice. The Surgeon General and the Sanitary Commissioner will therefore be requested to favour Government with their opinion in the matter and the Bombay Government will also be addressed in view to obtaining the opinion of such of the medical officers, as have had opportunities of studying the subject.

3. The Government agrees with the Surgeon General in considering that Dr. Bamerman would be more useful in Madras in directing and supervising inoculations for the prevention of plague and in having general charge of plague hospital arrangements, instead of remaining in Bombay to assist Dr Haffkine. Any help that Dr Haffkine may require in the preparation of his prophylactic for supply to this Government may be given on receipt of the reply to the reference to the Bombay Government proposed to be made in para 2. Meanwhile, the Surgeon General should direct Dr Bamerman to return back to Madras.

3 4. The suggestions in paras 3 and 4 of the Surgeon General's letter can be considered later on if unfortunately the plague should break out.

4 5. Major Bamerman's remarks and suggestions in regard to the hospitals in use in Bombay and Poona

Please see Hon'ble Member's remarks regarding Dr B. Hon'ble Member will kindly minute that D.O.S. should return to Madras.

Surgeon Major Bamerman may for the present remain in Bombay, where he can be recalled by telegram should the necessity of his presence in the purposes indicated in para 2 of the S.G's letter be required.

are, as stated by the Surgeon General, well worthy of attention in the event of the present hospitals or the organization of new hospitals becoming necessary. Of the two plans submitted by Dr. Bannerman, the ~~blue paper~~ plan on blue paper seems well suited for adoption for hospital accommodation in the case ~~the hospitals to accommodate persons suffering from~~ of any epidemic ~~infectious disease~~. The only doubt is as to whether the thatched roofs of the pitch shown would be liable to leak seriously; apparently the plan ~~and the Government considers~~ will be modified ~~that the sections should be reduced~~ so as to show a roof-pitch of 45 degrees. The Sanitary Commissioner after consulting the D.S. is of the same opinion he will have the plan redrawn with this alteration and submit copies to Government for circulation to local boards and mufassil municipalities as well as to the President-Municipal Commissioners.

The white paper plan appears incomplete & purports to provide for 10 beds, but the area covered by the hospital is only 720 Sq: feet. So that each patient can have only 72 Sq: feet whereas Dr Bannerman states in para 8 of his report that a superficial area of 144 Sq: feet for each patient is none too large. Nurses' quarters and other particulars are also not shown in the plan. It will therefore be returned to Dr. Bannerman in view to the necessary details being filled in and further information submitted.

5. Application has already been made for the supply of 4 copies of the report of General Gatacres' Committee. The Bombay Government will also be requested to furnish copies of the orders constituting this Committee & that which worked in Poona & vesting them with powers.

make a separate reference to D.S & also meantime at once to S. C. who may be able to explain

To the Bst. mun. comr. Madras
The Surg. Genl. "
" Sanit. comr. with the plan (on blue paper)
signed copies dated 8/11/97
All collectors
" Prests of D.C. Bds
" Chairmen of mun. Cs
Secretary to G. 10/11/97

Is any certain particulars, and reference will be made to Surgn Maj. Baines respecting it

C. No. 3620 m & 3637 m.

For orders.

In reply to this office D.O. No. 56 of the 5th inst., requesting the Surgeon General to report whether Dr. Bannerman is acquainted with the exact System on which house to house visitation for the plague was carried out in Bombay Poona & Karachi and as to how far he has made himself familiar with the plague hospital System as well as with the bacteriology & treatment of the disease, the Surgeon General forwards Dr. Bannerman's report in original, which gives full information on these heads & remarks as follows:—

(1) That along with the removal of the patient suffering from plague to the hospital, a System of inoculation should be enforced & that Government should address Dr Haffkine for the supply of the plague prophylactic. From the linked

P. in G.O. No. 2159 A. M. d/ 4-10-97.

The supply of prophylactic already obtained (500 doses) will do perhaps for the present, but it would not go far if plague should break out here. In that case we should want Dr. Bannerman back here to take general charge of our plague hospital arrangements. We had better ∴ ask the Bombay Govt. to ascertain from Dr. Haffkine if he can send us further supplies of the prophylactic (genuine stone-saponine) if importunately it should be needed.

As to the use of the prophylactic, I don't imagine that we can compel anyone to submit himself to it. But see para 6 of Dr. Bannerman's report in which he suggests that segregated persons (i.e. persons who have been in contact with plague cases) shall be released from segregation after 24 hours instead of being kept for 10 days or whatever the time is. This indisposition would probably lead many persons to submit themselves to inoculation. But I should not like to adopt this recommendation without expert advice — better ask the B.G. & the Bombay Govt. what they think & also ask the Bombay Govt. to obtain the opinion of their medical officers who have studied the subject, of course explaining why we trouble them.

WS

We have done this S/R.

file - c. No. 3621 - it will be seen that the Sanitary Comr. is already in receipt of enough of this prophylactic to suffice for the inoculation of 500 cases.

(2) That he considers it would be more useful if Dr. Bannerman were in madras directing & supervising inoculations for the prevention of plague & administrating the Special hospitals that would have to be opened, if the plague breaks out, instead of his remaining in Bombay to assist Dr. Haffkine.

(3) That if the disease spreads in madras, the President of the municipal commission should be given a special plague Officer, a magistrate who will work with him. Maj. Bannerman would be able to carry out all the necessary arrangements as in Bombay.

(4) That if house to house visitation has to be carried out the assistance of influential natives & of the military will have to be obtained: that the rule that no corpse was allowed to be removed from Poona without a certificate from a medical man as to the cause of death was a good one.

(5) That the suggestions regarding plague hospitals made by Dr Bannerman may be usefully adopted if the present hospitals are extended or new ones organized.

(6) That the report of General Gatacre's committee should be supplied to this Govt as soon as copies are ready.

2. Orders on points (2) (3) and (4) may wait till there is any fear of plague breaking out actually in madras. The draft letter to the Govt of Bombay will be addressed with regard to General Gatacre's committee's report is submitted below.

H.H.
27/10/97

H.H.

Dr the present Dr Bannerman had better remain in Bombay preparing a supply of the Serum. He can be recalled at any moment should signs of an outbreak of plague appear. A copy of the present

Vide p 3

be may accept this
HS
Yes: but see
Hon's later minute
HS

A regulation to this effect can be made should plague appear.
HH

Yes - The blue paper plan seems all right except that the hatched roofs of the pitched shown on head like views. I consider that the sections should be drawn so as to show a roof pitch of 45°. Better if the plan redrawn with this alteration & simulate copies 5 d. Nos & Imperial Numbers as well as Bombay City - Would be a good surgical plan for the outbreak of any epidemic.

The white paper plan I don't follow. It is said to be for 10 beds - But the hospital is only 720 s.f. to that each patient would have only 72 s.f. whereas Dr. Bannerman says 144 s.f. are none to much - [illegible] Nurses' Quarters to be not shown at all. Either [illegible] to be put in.
HS

On 4th Oct telegraphed - vide slip T - asking Bombay for copies of reports & papers regarding the plague
H.H.
27/10/97

Yes: should the necessity arise
HH

Yes - But as to the powers of the Commr which will then be established? I see in the Poona the Chairman of the Plague Cmtee has issued directions & members which from their tenor must have the force of law - However the order constituting this & similar Cmtees committees & vesting them with powers? Presumably they issued in the Bombay Gaz: - Govt please let copies -
HS

Yes - Many made some pleasant remarks on the report & letter, which see
HS
29/10/97

Yes, a slip - a propos - Lymph
HH

Col. Sir G. K. is going to write in about the best mode of inspecting corpses
HS

Report by D.S. may be sent
to the Sanitary Comm.r

18/10/97

[1]

OFFICE OF SURGEON-GENERAL
WITH THE GOVERNMENT OF MADRAS,

No. 395

Madras, 20th October 1897 ~~1896.~~

From

SURGEON-MAJOR-GENERAL C. SIBTHORPE, C.B., F.R.C.P.I.,
SURGEON-GENERAL WITH THE
GOVERNMENT OF MADRAS,

To

THE ~~HON'BLE THE CHIEF~~ SECRETARY TO GOVERNMENT,
DEPARTMENT.
Local and Municipal

SIR,

With reference to your D.O.No.56, dated 5th October 1897, I have the honour to forward in original the report of Surgeon-Major Bannerman now on special duty in Bombay on (a) the exact system on which house to house visitation was carried out in Bombay and Poona; he has not been in Karachi; (b) how far he has made himself familiar with the plague hospital system (c) the bacteriology and (d) the treatment of the disease. The plans promised I will send on when I receive them from the Sanitary Commissioner.

2. With reference to paragraph 6 of his report I concur in his recommendation ~~that~~ along with the removal of the patient to hospital, a system of inoculation should be enforced and that Government should address Dr.Haffkine through the Government of Bombay with the view of making arrangements for an early supply of this prophylactic. As this prophylactic takes about six weeks it is desirable that immediate action should be taken. In my opinion the Government of Madras should offer to pay for whatever extra assistance Dr.Haffkine may require to meet our wants.

I differ from the Sanitary Commissioner who has suggested that Dr.Bannerman should remain in Bombay to assist Dr. Haffkine. I think he would be more useful here on special Plague duty in directing and supervising such inoculations and in administrating the special hospitals that would have

to

to be opened if the Plague became epidemic.

3. With reference to paragraph 7 the Municipal Council in Madras have already made preparations for opening plague hospitals in Royapuram, Vepery and Royapettah under the District Surgeons, but these are only meant to deal with isolated cases. If the disease was to spread, I consider that the President of the Municipality should be given a special Plague Officer, a Magistrate who with him and Surgeon Major Bannerman would be able to carry out a similar organisation to that described in this report. The public should be informed that if they desire to have special hospitals for their own classes and castes ~~ they must come forward and organise them under the control of the above officers.

4. If house to house visitation has to be carried out the assistance of influential natives and of the Military will have to be obtained. The rule that no corpse was allowed to be removed from Poona without a certificate from a Medical man certifying to the cause of death was an especially good one.

5. With reference to paragrpah 8 of the report these hints are well worth the attention of the above officers should any extension of the present hospitals be required or should new ones have to be organised. I concur with Dr.Bannerman that the floors of the wards should be impervious and consider this a most important point in view of the fact that the bacillus is known to develope in earth. The only other plan would be to build more wards so that one could be evacuated once a week in order to allow of the floor ~~ being disinfected and changed.

6. With reference to paragraph 10 of the report it is very desirable that we should be supplied with copies of the report as soon as it is ready for distribution.

7. I would suggest that this report with the orders of Government should be put in print as soon as possible in order that copies may be sent to all concerned for their guidance and that I should be sent twenty copies.

I have the honour to be,
Sir,
Your most obedient Servant,

Surgeon-Major-General,
Surgeon-General with Govt of Madras.

750—1-4-97.

OFFICE OF SANITARY COMMISSIONER,

No. Camp Bombay, ~~Fort St. George~~, 13th October, 1897.

From

SURGEON MAJOR W. B. BANNERMAN, M.D, B.Sc.,
INSPECTOR OF VACCINATION
AND DEPUTY SANITARY COMMISSIONER FOR MADRAS,

To

THE Sanitary Commissioner for Madras
Fort St. George
M A D R A S.

Enclosure.

Two plans sent by book post. Obtained in Office will be forwarded.

SIR,

In accordance with your endorsement No.3485/S of 8th. October, on letter No.Tour 5/1, from the Surgeon-General with the Government of Madras, I have the honour to submit the report therein called for.

2. The unavoidable slight delay that has taken place, is due to the fact that I was absent from Bombay assisting Dr. Haffkine in experiments he was conducting in the treatment of plague patients with curative serum, and in watching the methods of house-to-house visitation carried out by the authorities in Poona.

3. In regard to the query of Government as to how far I have made myself acquainted "with the exact system on which house to house visitation for the plague was carried out in Bombay, Poona and Karachi, and as to how far he has made himself familiar with the plague hospital system, as well as the bacteriology and treatment of the disease", I would state that I have gone round with the Plague Committees of both Bombay and Poona, and have studied their methods of working, and that I propose to go round again with the Bombay Committee to see what modifications they may have introduced as the result of further experience. I am also familiar with many of the plague hospitals in Bombay, having visited them on numerous occasions to study the disease and to col-

lect material for bacteriological research, and during the past week I have spent from 5 to 6 hours daily in the general plague hospital at Poona, which contains over 200 patients, helping to carry out the experiments on serum treatment noted above.

4. As regards treatment I need only repeat what was contained in the former report submitted to Government:- viz. good feeding and nursing, the patient being kept in the recumbent position till four days at least after temperature has come to normal as heart failure is so much to be dreaded, large quantities of stimulants, alcoholic and medicinal, nervine tonics such as strychnine, and such drugs as ammonium carbonate, caffiene citrate, tincture of strophanthus, tincture of digitalis, and nitrate of pilocarpine. Fever is best treated by sponging and icecap, antifebrin and phenacetin not being suitable and having a transient effect only. Headache by bromide of ammonium, opiates, icecap or evaporating lotions. Sleeplessness by bromides, opiates or camphorodyne. Vomiting by bismuth and hydrocyanic acid in effervescing draughts. Pulmonary congestion by diffusable and alcoholic stimulants, with digitalis, turpentine stupes and blisters. Surgeon-Captain Thomson, I.M.S who was in charge of the Parel hospital and from whose report the above information is taken notes that "As a specia mode of treatment, liq. hydrargyri perchloridi was resorted to from a conviction of the value of such a powerful disinfectant in specific disease. ++++ At first it was given in drachm doses well diluted three times daily; later in half ounce doses every two hours for four doses; and then in the same quantities every eight hours. In no case of plague did these enormous doses induce salivation, though this phenomenon was carefully sought for." In one case which turned out to be another disease salivation was produced after the third dose, so he concludes that "this mode of treatment is therefore both diagnostic and rational."

As regards the treatment of buboes, he strongly deprecates attempts to induce suppuration, and holds that when they are left to themselves the tendency is for them to subside, and that when irritants are avoided and sedative applications used, only 7 per cent end in suppuration. On the other hand if irritants are applied, a very large number suppurate and having to be opened lead to the formation of large granulating surfaces slow to heal and retarding convalescence.

5. As far as the experiments at Poona were carried last week, it would appear that serum has little or no effect, but as Dr. Haffkine has not yet completed his observations, no more need be said.

6. As regards the prophylactic treatment however, I have been permitted by Dr. Haffkine to say that from observations made at Damaun, Lanowli, and Kirkee, it is certain that the mortality in an epidemic can be reduced by 75 per cent by this means. These observations,- in which I have been privileged to assist,- have been carried out with the greatest scientific accuracy so that the figures may be verified by the whole world, and Dr. Haffkine intends I believe, to ask Government to appoint an investigation committee to verify the results By a system of slips given to each individual as he is inoculated it has been found possible to follow up each case afterwards and to take a census of the inhabitants of each hut on investigation sheets, and so to ascertain exactly the percentage of attacks and deaths among the inoculated and those not inoculated living in the same house with them. As Dr. Haffkine is now working at the figures and will very shortly submit a report to government, I am not at liberty to enter into further details, but in the urgency of the present state of affairs in Madras, he has kindly permitted me to communicate the above facts.

Acting in the light of the above important discovery I would strongly recommend that along with removal of the patient to hospital, a system of inoculation should be enforced on the lines so successfully adopted during outbreaks of small-pox.

formerly

As the prophylactic appears to begin to exert its protective influence after 12 hours, it should be possible to modify the working of the segregation system in the direction of shortening the period of seclusion now practised. If the inhabitants of an infected house were to be at once inoculated and removed for 24 hours to a segregation camp, they might then be allowed to return, the house in the meantime having been disinfected. In this way a great saving may be effected in a large epidemic, as only one-tenth of the amount of accommodation will be required at the segregation camp. I would therefore venture to suggest that Government be recommended to address Dr. Haffkine with a view to making arrangements for an early supply of his prophylactic. I may say that at present the material takes about 6 weeks to prepare and that immediate action is therefore advisable. The house in which Dr. Haffkine's laboratory is situated is kept up by the Bombay municipality, and the material for manufacture and servants supplied by Government. As the trained assistants formerly employed in the laboratory, have now all been recalled to duty elsewhere, it is probable that Dr. Haffkine will ask for help in this direction, as it is absolutely impossible with the present establishment to do more than supply the demands of the Bombay presidency.

7. Plague Hospital System, and House-to-House Visitation.

For this purpose the city was divided into 10 districts, each in charge of a Commissioned Medical Officer, or when these could not be supplied, influential local practitioners. Each district was divided into divisions and these again into sections. The divisions were under the charge of local medical men who reported to, and worked under the district medical officers of health. Under these worked a vast army of inspectors, overseers and coolies engaged in general sanitation and disinfection of houses. As far as possible each district was provided with a Government hospital, and one or more private caste hospitals; altogether there were 15 Government, and 28 Private Hospitals.

The following were the duties of the District Health Officers:-

To superintend the general sanitation of the district reporting to the Plague Committee and the municipal Health Officer daily.

To supervise district hospitals and attend them in routine.

To supervise search parties with the Justices of the Peace.

To control disenfection.

To inspect segregation camps.

To call the attention of the special officer to insanitary buildings.

To supervise cemeteries, and report on the registration of burials and cremations.

To send daily reports to the Plague Committee and Health Officer of casualties, and to make any suggestions.

A special feature of the arrangements was the large number of private hospitals established by the various sections of the community. These were superintended by the district medical officers, but were in charge of private practitioners chosen by the people themselves, and did much to overcome the opposition of the people to removal to hospital. The plan of allowing relatives to accompany patients to hospital also acted in the same direction.

Near each district hospital was the office and temporary barracks for the military and police employed in connection with the search parties, this arrangement being adopted as being convenient in case of any sudden disturbance.

Hand ambulances on bicycle wheels with india-rubber tyres and with stretchers attached were used to convey the sick.

House-to-house visitation was carried on in Bombay largely by means of help given by Justices of the Peace, and others specially enrolled for the occasion. These constituted the "Conductors of search parties" and being influential men they greatly conduced to the smooth working of the system. The following account of the present manner of searching adopted in Poona will I think give a sufficiently accurate idea of how things are managed. There are now only two search parties each in charge of a British Officer.

Formerly

Formerly there were more but owing to the scarcity of troops no more can be organised at present. The whole city is overtaken in 15 days, but this of course is much too infrequent; formerly it was gone through in five days.

Each party is divided into as many sub-parties as possible, and each of these consists of one British soldier, two sepoys and a Native Gentleman. The British soldier carries a hammer to break open doors with, one sepoy carries a lantern and another a pot of red paint. Every house in the street is systematically entered and thoroughly searched. If nothing is found a St. Andrew's cross is made on the door by the sepoy with the red paint, and the date added. If a plague case is found a long vertical 28-9-97
line is made on the door with the date 29-9-97
26-9-97
and the matter is reported to the municipal office by the gentleman in charge of the party. The patient is sent to hospital in an ambulance cart with a certificate in charge of an orderly who brings back a receipt from the admitting officer there. The rest of the inhabitants are segregated with the exception of one man left in charge of the household property, and the house is disinfected as soon as possible. The disinfecting party when finished draw a horizontal line through the top of the vertical line left by the search party, adding the date of disinfection. Then next day the white-washers arrive on the scene, and after completing their work draw a second horizontal line at the bottom of the vertical line adding the date, as shown in the margin. Any doors forced are afterwards secured by a pioneer told off for the purpose. Before the search begins a cordon of troopers is drawn round the quarter to prevent the people removing patients in vehicles, as they are very apt to do. One specially good feature noticed in Poona was the plan adopted for ascertaining the actual number of deaths taking place. No body is allowed to be removed from the city without a certificate from a medical man certifying to the cause of death. The Deputy Sanitary

purpose, going round to the houses where deaths are reported and issuing certificates after examination. Intimation is sent to the municipal office and at stated hours the visitations are made, starting from the office at 7 a.m. and noon, and at 5, and 10 p.m. Besides the military search parties two assistant health officers go round to look after general sanitation and as they go quietly gather information and with such success that I am told they get hold of 2 to 3 times the number of cases that the search parties do.

As in Madras the people will probably be more amenable to reason than in either Bombay or Poona, probably this system could be arranged for, and the objectionable search parties to a large extent dispensed with.

8. With reference to para 3 of the Surgeon-General's letter, I submit a description of the hospitals in use in Bombay and Poona. Through the courtesy of C.C. James Esq. I am enabled to send two plans of hospitals and buildings attached. A standard plan was adopted in Bombay the unit being 20 beds forming one section. Half and quarter sections were also used and for larger hospitals a multiple of the unit to any required extent. As the scale and design was not altered every body knew what was required when a new hospital had to be established. The twenty beds are arranged in an area of 120+24 feet, thus giving to each bed a superficial area of 144 square feet, which is certainly none too large under the circumstances. A ring fence of bamboo matting surrounds the hospital and buildings; the wards are at the end of the site farthest from the entrance, close to which are the wards for the patients friends, with latrines conveniently near. The buildings are composed of posts and framing of bamboo or jungle wood, sunk well into the ground. There is a 12" plinth of rammed red earth. The sides are single bamboo matting; the roofs of two layers of palm leaves with a ceiling of cloth in some cases. The whole whitewashed once a week inside and out with the exception of the roof. The beds are in double rows and screens screens are arranged

of matting are arrangedbetween each pair of beds. The cook houses are of corrugated iron on wooden framing, drinking water from taps to suit all castes. The privies on the dry earth system, night-soil being removed by hand after disinfection, they had a washing place in connection paved and drained by glazed 4" half-pipes. Similar drains led from the various bathrooms to a cesspool or neighbouring drain. The only alteration made as the result of experience was the erection of a general cookhousefor the wards and an extra bathroom for the nurses. In the larger hospitals an office and dispensary were erected, otherwise a corner of one of the wards was used for the purpose., The cost of such a hospi al is said tobe"annas 6 per squarefoot of area covered". In Poona there is but one general hospital. The wards are arranged in <u>echelon</u> so as to allow of as much perflation as possible. The width of the wards is regulated by the length of the corrugated iron sheets of which the roofs are made. The sides are made of matting or grass and the upper halves open on hinges, affording good ventilation by day when open and shelter from winds at night when shut. The wards run east and west the doors on the north side and verandahs of grass thatching on the three other sides. The mortuary here is of corrugated iron which is a good plan as it prevents the entrance of animals. The cots in use are the ordinary country charpoys either with nawar or rope strapping or with rabbit wire netting stretched across. This latter is certainly a sanitary arrangement but the netting is apt to get slack The only improvement I can suggest is that the floors should be rendered impervious, but this of course would add to the expense. "The staff of a one-section hospital was fixed as follows:-

2 Nurses	1 Bheesty
1 Ayah	2 Sweepers
1 Hospital Assistant	2 Nurses servants
4 Ward Orderlies	1 Hospital Cook

If there were many severe cases, it was found necessary to supplementthe staff with an extra nurse, to increase the number of ward orderlies, and when the caste and other conditions of the patients required it, the number of cooks also".

Equipment:-	Furniture.
1 table	20 towels
4 screens	20 plates
2 chairs	6 spoons
1 washstand table	2 pails
1 cupboard	20 spittoons earthenware
1 almirah	1 iron can for poultices
20 cots	20 bowls common
6 camp lanterns	20 mats for cots

Office

1 table	2 chairs

Cook-room

1 table common	1 spoon large
1 kettle	1 knife
6 cooking utensils	3 plates iron
4 cans for hot water etc.	1 pail

Dispensary

1 table	1 shelf

Hospital Asst. Quarters

1 table	1 bedstead cheap cane
1 chair	

Nurse's Quarters

For 2 nurses	2 bedsteads complete
2 tables	2 commodes
2 chairs	2 chambers
1 armchair	2 sets washstand & crockery
1 shelf	2 towel horses

Crockery etc for nurses

4 knives	2 plates large
4 forks	2 plates small
2 spoons	2 tumblers
2 tea spoons	1 teapot
2 cups & saucers	

Clothing

20 pillow-cases	20 sarees
24 towels	20 pairs slippers for ward-boys
24 dusters	40 pairs socks
40 blankets	36 linen caps
30 coats	3 table-cloths for nurses
30 trousers	12 women's night- dresses
50 dhoties	6 childrens do.
36 sheets	

Instruments

2 enema tubes	1 measure glass 2 oz.
36 bottles 6 oz.	1 minim do.
½ gross corks	1 scissors
10 glasses for serving med.	2 packets pillboxes
10 feeding cups	two pots decoction tin
4 clinical thermometers	1 do. infusion
12 bandages	3 pencils camel hair
½ lb. cotton wool	1 syringe hypodermic
1 syringe large	2 do enema
1 do. small	2 do. glass
2 spatulas	6 catheters 6 7 8.
1 pestle & mortar	1 corkscrew
1 sl b	3 icebags
1 spirit lamp	½ lb. lint
1 scales & wts	12 yds cloth sheeting.
1 measure glass	3 bedpans
	1 pocket case

Medicines

1 lb. acid boric	1 lb. oleum terebinth.
3 lbs. do. carbolic	6 lbs. do. Arachis
2 oz. do. Gallic	4 drms opium
1 oz. do hydrocyan dil.	2 oz potass citratis
6 oz. do. sulphuric	2 oz do. iodidum
6 oz. Ammonii brom.	1 oz. pulvis ipecac co.
2 oz. ammon carb.	2 oz jalapae co.
2 lbs. aqua destil.	4 oz phenacetin
1 dr. argenti nitras	1 oz pill hydrarg

8 oz. acid tart — 2 oz pot bicarb
8 oz. alumen — 8 oz do chlor
1 lb. ammonii chloride — 8 oz do. nitras
1 dr. atropin sulph — 4 oz. do. permang
4 oz bismuthi subnit — 8 oz pulv cretae arom c opio
4 oz borax — 8 oz. quin sulph
½ oz caffiene cit — 6 oz pot brom
2 oz. camphora — ½ lb sacc alb
1 dr cocainae hydrochlor — ½ oz. santoninum
2 lbs cheretta — ½ oz. sodii bicarb
4 oz chloroform — 3 oz do. salicyl
2 oz collodion — 4 oz spt. meth
1 oz creasotum — 1 lb. do. etheris nit.
4 drs cupri sulph — 1 lb. do. ammon aromat
½ yd diachalon plaster — 2 lbs. do. rect
½ oz ext belladon — 1 lb sulph sublim
2 oz do ergot liq — 8 oz syrup chloral hyd
1 oz do. gentian — 8 oz do. tolu
½ oz hyascyl — ½ oz tinct aconiti
1 lb glycerine — 2 oz. do. aurant.
½ lb gum acac — 2 oz do. cadr co.
4 oz hydrarg perchlod — 2 oz. do. cinchon.
½ oz. do. subchlor. — 2 oz. do. digitalis
2 oz iodoform — 2 oz. do. hamamelidis
½ lb. lin camph co. — 2 oz. do. myrrh
4 oz. do. iodi — 4 oz. do. iodi
1 lb. do. saponis — 4 oz. do. opii
4 oz. liq ammon acet — 2 oz. do scillae
4 oz do. arsenicalis — 2 oz. do. assafoet.
½ oz. do. epispast — 2 oz. do. belladon
1 oz do. morph. hydrochlor — 2 oz. do. catechu
1 lb. do plumbi subacat — ½ lb unguent hydrarg.
2 ox do. strych. — 1 lb. do simplex
4 lbs magnes sulph. — ½ lb. vaselina
½ oz ol anethi — ½ lb. vini ipecac
1 oz do menth pip — ½ oz. zinci ox.
2 oz. do. cinamom
5 oz do. ricini — 2 oz. do. sulph.

9. I propose to return to Madras during the course of this month.

10 As General Gatacre's committee are publishing a full account of all the arrangements made by them in Bombay, I would suggest the advisability of applying for an early cop as the report is a very full one and will contain plans of all the hospitals etc.

I have the honour to be,

Sir,

Your most obedient servant,

W S Bamberman M.D.

Surgeon-Major, I.M.S.

Inspector of Vaccination & Dy. Sanitary Comr.

OFFICE OF SURGEON-GENERAL
19 OCT 1897
WITH GOVT OF MADRAS

No 1
46

URGENT.

Forwarded to the Surgeon General with the Government of Madras. H.E. has already, on the strength of the favourable opinion of Surgeon-Major Bamberman as to the Haffkine prophylactic, advised that Government adopt it use as early as feasible, and further that Surgeon Major Bamberman should be deputed to manufacture it for the Presidency.

W S King.

18/10/97.

3/2620 Nov 1897

ADDITION TO DIRECTIONS TO SEARCHERS.

To Rule 11.

The medical examination of a woman shall, if so demanded by the woman herself, or by her husband or nearest relative on her behalf, be made by a Lady Doctor.

R. A. LAMB,
Chairman,
P. P. C.

Poona,
6th October 1897.

DIRECTIONS FOR SEARCHERS.

1. A search party is composed of one British and two Native Soldiers and a Native gentleman. It is provided with a pickaxe, a lantern, a pot of paint and a note book.

2. A search division is composed of 10 search parties and is under the command of an officer. One lady and three Native Soldiers are attached to each search division, and one medical Officer to every two search divisions. A search division is provided with one or two ambulances and one cart to convey property to the segregation camp. Each search division will assemble daily, Sundays excepted, at the place and time which will be intimated on the previous day to the officer in command of the search division, to each Native gentleman on duty with the division each day, to the ladies and the medical officer attached to divisions, and to the District Superintendent of Police.

3. Search parties shall make careful house to house inspection in the area assigned to their division in order to discover plague cases and dead bodies.

4. When a search party comes to a house the Native gentleman will explain to the inmates the object of the visit and demand admission.

5. Should the inmates fail to admit the search party promptly or should there be no one to open the house door the search party will force their way in.

6. The search party will carefully search all parts of the house and in doing so may force open all inner doors which are not on application opened by the inmates.

7. The soldiers will inspect all persons in the house in order to ascertain whether any of them are sick; provided that if the inmates so desire the inspection of the women in the house will be made by the lady attached to the division.

8. The Native gentleman will accompany the soldiers through the house, will act as interpreter between them and the inmates of the house, will point out to them the god room and the cook room in a Hindu house, will himself search those rooms in cases in which there is no caste objection to his doing so, accompanied by any one of the soldiers to whose entrance into those rooms there is no caste objection; and will obey the orders of the officer commanding the search division.

9. Except as provided in para 8, the search party will not enter the god room or cookroom of a Hindu house unless:—

(1) There are persons in these rooms who refuse to leave them; or

(2) there is reason to suspect that these rooms contain a corpse or a sick person; or

(3) Access to other portions of the house cannot be obtained except through these rooms.

In these cases the search party may enter these rooms.

10. The search party will not open boxes or cupboards unless they have reason to suspect that they contain corpses or sick persons.

11. On a corpse or a sick person being found, one member of the party will summon the Medical Officer attached to the division, while the remainder will detain the inmates of the house. Should the Medical Officer after examination suspect that the case is one of plague, a segregation squad will be sent for. Any person that the Medical Officer suspects to be suffering from plague will be removed in an ambulance with one member of the household as an attendant (should any be willing to accompany him) to a plague hospital. Such of the remaining inmates of the house as the Medical Officer may indicate will be taken charge of by the segregation squad. The inmates of the house and the neighbours should be desired to make immediate arrangements for the burial or burning of any corpse that may be found. Should nobody be found willing to undertake this duty a funeral party will be summoned from the City Police office.

12. The officer in charge of a search division will note the names of all plague patients and corpses, and the number of the house, name of the street and the Peth where the patients and corpses are found, and report them as early as possible on the same day, at the City Municipal office.

13. The inmate of any infected house which is ordered to be vacated, will be required to choose whether such valuable property as they may possess should be delivered to a neighbour after disinfection, or should be sent to the warehouse. If they chose the latter alternative, the property will be packed and marked with the letter W. In cases where neither of these courses is practicable the Medical Officer may in his discretion allow one inmate of the house to remain in it in charge of the property.

14. Persons removed to a plague hospital may take with them only such articles as the Medical Officer may permit. Persons removed to a segregation camp may send to the camp, clothes, bedding, cooking pots and other necessaries and comforts, in the cart assigned for that purpose.

15 Except property to be removed to a plague hospital or a segregation camp, no property shall be removed from an infected house till the house has been disinfected by the disinfecting party.

16. The mat or bedding of a plague patient will be burnt in the street, but no other property will be destroyed by search parties.

16a. The Medical Officer will pay from an advance supplied him for the purpose such compensation as he may deem necessary for property destroyed under para 16, and will take the receipt of the payee.

17. After searching a house, the search party will paint such mark upon it as may from time to time be prescribed as a sign that it has been searched. An account must be kept in the note book provided for the purpose of the number of houses searched.

18. The Medical Officer will cause a vertical red line to be painted on each infected house, and the date of search to be painted beside it.

19. The three Native soldiers attached to a search division will be employed on fastening up doors that have been forced open.

20. The Medical Officer will be accompanied by a man carrying a yellow flag to show his whereabouts.

21. The segregation squads will at present consist of Police and will be posted during the search at the point at which the Search Division assembled in the morning.

22. The particular attention of all engaged in search operations is drawn to the orders regarding complaints.

R. A. LAMB,
Chairman
P. P. C.

Poona, 27th Sept. 1897.

2159-tm-

Local & Munl. (1897) Department.

CURRENT No. 3620

From Surgeon-Major-General C. Sibthorpe, C.B., F.R.C.P.I.
Surgeon-General with the Govt. of Madras.

Order No. 395

Dated 20th October 1897.

Received

Registered 21-10-97

Enclosures 3

Spare copies

SUBJECT.

Forwing and Dr. Bannerman's report on Plague in Bombay and Poona with his remarks thereon.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

[2]

168

No. 398

OFFICE OF SURGEON-GENERAL
WITH THE GOVERNMENT OF MADRAS,

Madras, 21st October 1898.

From

SURGEON-MAJOR-GENERAL C. SIBTHORPE, F.R.C.P.I., C.B.
SURGEON-GENERAL WITH THE
GOVERNMENT OF MADRAS,

To

THE ~~HON'BLE THE CHIEF~~ SECRETARY TO GOVERNMENT,
Local and Municipal DEPARTMENT.

SIR,

With reference to paragraph 1 of my letter No: 395 of the 20th instant, I have the honor to forward the accompanying two plans of plague hospitals.

I have the honor to be,
Sir,
Your most obedient Servant,

C. Sibthorpe
Surgeon-Major-Genl:
Surgeon-General
with the Govt. of Madras.

Local & Munl. (1897) Department.

CURRENT No. 3857/M

From Surgeon-Gen. Gen. C. Lilthorpe CB. FRCS. Surgeon-General with the Govt. of Madras.

Order

No. 398

Dated 21st October 1897.

Received 22nd Oct. 1897

Registered 22nd Oct. 1897

Enclosures 2 plans

Spare copies

SECRETARY TO GOVERNMENT LOCAL & MUNICIPAL DEPARTMENT

SUBJECT.

Forwarding two plans of plague hospitals referred to in this office letter No. 395 J 20th instant regarding the submission of Dr. Bannerman's report on plague in Bombay and Poona.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Ye with Minister's ans

For Signature

Magnet- This G.O be addressed to all Collectors, all Presidents of District Boards & all chairmen of municipal councils?

verified. Letter of 9th March 1897 & Letter of 23rd Feb. 1897

Magnet

5/11/97

My doubt was as to para 6 of D. No 25 Revenue dt 18th Feb. 1896. Whether this D.O. should be sent to Municipalities also.

Copy sent to Press. 6-11-97

Returned for signature. 10-11-97

Despatched to print. 11-11-97

Number of copies required. Order complete. 660 Letter only. Order complete with Letter.

14

Read again G.O. No. 189 Dated.

Current No. 3620 Rev & 3637 Rev } A.

Enclosures to C. No.

Order of Government

Letter of Government.

Statement with do.

Papers not filed up being meant for despatch in original.

1

N.B.—

A = Print in full.
B = Not to be printed.
P = Print abstract only.
Q = Print heading only.