

PROCEEDINGS OF THE PLAGUE COMMISSIONER.

(1899)

PRINTED.

No. 308
24

DATED 1/2/99.

Despatch in D.S. to S.C. 1/2/99.

Despatch to all with specimens 9/2/99

[Despatch Abstract.]

Disinfection

Communicating, with remarks, to all Colles.
letter from the Sany. Comm. forwarding his opinion
on the _____ of ordinary mud and cowdung
flours; requesting the Sany. Comm. to send the "portable
disinfectant" to Vellore for trial; and informing
him that the portable burner will also be tried
when ready.

BACK PAPERS.

No.	Date.	No.	Date.

FURTHER PAPERS.

No.	Date.	No.	Date.
Sp 852 P 99			
C No 7966 P 99			
Sp 1030 P 99			

Proceedings of the Plague Commissioner, MADRAS — 1899.

Proof for approval

Please correct and stamp
6/2/99

Recd.

Enclosures

1899.

Regd.

Spare copies

Proceedings, No. ³⁰⁸/₂₄, 1st February 1899.

FEBRUARY.

Disinfection.

Communicating, with remarks, to all Collectors letter from the Sanitary Commissioner forwarding his opinion on the — (of ordinary mud and cowdung floors) requesting the Sanitary Commissioner to send the "gravity disinfector" to Vellore for trial; and informing him that the portable burner will also be tried when ready.

his

H.S.
6-2-99

PROCEEDINGS OF THE PLAGUE COMMISSIONER.

READ—the following paper:—

G.O., No. 1549 P., dated 9th December 1898.

Recording letter from the Government of India forwarding copy of despatch from the Secretary of State for India to His Excellency the Viceroy on the subject of the disinfection of ordinary mud and cowdung floor against plague.

Ref. on C. No. 2567.

Forwarded to the Sanitary Commissioner for favour of opinion with reference to paragraphs 4, 5, 7 and 8 of Lieutenant-Colonel R. Boustead's remarks. Our present system of disinfection takes overlong, and could not be attempted on any large scale. Lieutenant-Colonel R. Boustead's proposal would apparently make it a still lengthier proceeding. The Venice Convention recommends as an alternative disinfectant a 5 per cent. solution of pure crystallized carbolic acid, or 5 per cent. of crude commercial carbolic acid in a warm solution of soft soap. Perhaps the latter, rubbed in with brushes, might permeate the ordinary floors and walls and be sufficient disinfection by itself without digging up the floors and burning them.

(Signed) L. E. BUCKLEY,
Plague Commissioner.

30th December 1898.

From Lieutenant-Colonel W. G. KING, M.B., C.M., D.P.H., Sanitary Commissioner for Madras, to the Plague Commissioner, Madras, dated Bellary, 23rd January 1899, No. 250-S.

With reference to your Ref. on C. No. 2567, dated 30th December 1898, I have the honour to state that it would be undesirable to place any reliance upon Lieutenant-Colonel Boustead's recommendation, having regard to the fact that these are entirely unsupported by experiments conducted either by himself or others. He appears to have read in the "Overland Mail" a lay version of Mr. Hankin's experiments, and to have made his deductions therefrom. These represented Mr. Hankin's incomplete results. Subsequent to the period thus referred to, Mr. Hankin worked further at the subject. He was then able to invite attention to the efficacy of burning over flooring by means of straw, and of using sulphuric acid solution, in cases where mud or cowdung was dealt with. It does not appear that by the sulphuric acid process an absolutely sterile flooring was secured; but, on the other hand, Lieutenant-Colonel Boustead is certainly not in a position to show that his mode of procedure would go any further towards that end. Mr. Hankin, in advising this solution, ends with a statement that most of the medical profession are likely to agree with him, having regard to the known effect of acids upon the microbe of plague:—"Dilute sulphuric acid * * * is not volatile and, if used in sufficient quantities, is likely for some time at least to make the floor an unsuitable medium for the bubonic microbe."

2. Lieutenant-Colonel Boustead's remarks, however, assume that the preparation of perchloride of mercury employed does not take into account the tendency to form albuminates of mercury. In this Presidency, however, no other solution of the perchloride has been recommended by this office than combined with hydrochloric acid—it having long been recognized in European practice that this combination was essential, if the inimical action upon the perchloride of mercury of albuminous matters so frequently found in substances to be disinfected was to be frustrated. The formula (Local Government Board, England) which all Sanitary Inspectors have been taught to use is the following:—

Perchloride of mercury	..	..	..	..	..	..	oz. 1
Hydrochloric acid	..	..	..	..	..	..	oz. 1
Aniline blue	..	..	..	..	..	..	gr. 5
Water	..	..	..	..	..	..	gal. 3

There are doubtless many occasions when both the strengths of the acid and the perchloride of mercury could be advantageously doubled. It is with reference to this formula that the provision for hydrochloric acid appears in the list of disinfectants allowed ambulance staffs. Taking advantage of the results of Mr. Hankin's experiments with sulphuric acid, this has also been provided, on the understanding that it be used wherever mud or cowdung material of so thick a nature has to be attacked that the ordinary perchloride solution may fail.

3. Lieutenant-Colonel Boustead advances as one of the reasons why sea water should be employed, in the first place—or even a solution of common salt—that the chlorine present would have a beneficial effect. I think it may go without argument that the amount of free chlorine in sea water, or in a solution of salt, may fairly be regarded as a negligible quantity.

4. In connection with your remarks as to the length of time at present consumed in effecting disinfection, I am of opinion that the attempt to burn all floors within an infected area by the "kiln method" might well be dispensed with. In houses where cases have actually occurred, it is a method that can do no harm and, if carefully conducted, may do much good. But the chance of this toilful method being conducted with any degree of thoroughness where houses throughout an extensive area, e.g., a so-called "infected block," are concerned, seems to me, from practical observation, so remote that I think both expense and time may well be spared in this particular.

5. In another detail, I think time and efficiency can be secured, namely, by arranging a different system in regard to distribution of the disinfecting solution upon walls. Any one who has tried to work a Chinese pump for half an hour, will be convinced that the possession of a good conscience is essential, plus much perseverance and physical strength. The great effort needed is a direct inducement to scamp the work. Holding this view, I have designed a portable "gravity disinfector." This allows of the elevation of a receptacle containing 20 gallons of the disinfectant, which is thence distributed by hose under a head of from 18 to 20 feet. Two men can work and transport the machine. Recognizing also that the process of disinfection by heat (than which indubitably none can be better, but which to be effectual must be under complete control, be conducted, if possible, *in situ* instead of after disturbance), I can shortly offer you a readily portable machine that will, by means of kerosine-oil gas, united with a blast, secure such heat and direct application as shall without doubt ensure the effectual killing of the plague microbes whether surrounded by albuminous material or not. By means of a flexible tube the blast can be applied with the same facility to any given part as the "painter's lamp." I am of opinion that with the aid of such a machine all objections raised by Lieutenant-Colonel Boustead can be correctly met.

PROCEEDINGS—No. 308, dated 1st February 1899.

The Sanitary Commissioner's letter is communicated to all Collectors. Their attention is especially invited to the fourth paragraph. For the present, the kiln-burning of floors should not be wholly given up. In towns and villages in which

No. 308, 1st FEBRUARY 1899.

999
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plague is not indigenous, the floors of infected houses should always be burnt. Where plague is indigenous, the floors of houses actually infected, and as far as possible, of immediately adjacent houses, should be treated in this way; other houses in a block in which a general disinfection is being carried out need not be kiln-burnt.

2. The Sanitary Commissioner is requested to send the "gravity disinfector" designed by him and referred to in paragraph 5 of his letter to Vellore for trial and to report the cost of it. The portable burner will also be tried as soon as ready.

Personal Assistant,
for Plague Commissioner.

To all Collectors (A-L).
" the Sanitary Commissioner.

Copy to the Surgeon-General.

" " President, Municipal Commission, Madras.

" " Secretary to Government, Local and Municipal Department.

Exd. A. F. Eccleston.

PLAGUE COMMISSIONER'S OFFICE.

(1899)



CURRENT No. 1107

Progs.
Letter
Ref.

From

The Sanitary Commissioner
for Madras.

No. 257

Dated 23 January 1899.

Received 26-1-1899

Registered 26-1-1899

Enclosures

Spare copies

SUBJECT.

Submitting his opinion with
reference to his endorsement
No. 257 dated 30. 12. 1898
on G.O. No. 1549 P dated 9 Dec
98 on the subject of the dis-
infection of ordinary mud
floor against
plague.

BACK PAPERS.

No.	Date.

FURTHER PAPERS.

No.	Date.

Government 1898 of Madras.
LOCAL AND MUNICIPAL.

Cumulated no: 2567
1898

100 pages

Recd.

Enclosures

Regd.

1898.

Spare copies

G.O., No. 1549 P., 9th December 1898.

DECEMBER.

Disinfection.

Recording letter from the Government of India forwarding copy of despatch from the Secretary of State for India to His Excellency the Viceroy on the subject of the — of ordinary mud and cowdung floor against plague.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers :—

Despatch from the Right Hon'ble Lord GEORGE HAMILTON, Her Majesty's Secretary of State for India, to His Excellency the Right Honourable the Governor-General of India in Council, dated India Office, London, 20th October 1898, No. 182 (Revenue).

I enclose, for the information of your Excellency's Government, copy of a letter which has been received from Lieutenant-Colonel R. Boustead, I.M.S., retired, on the subject of the disinfection of ordinary mud and cowdung floor against plague.

ENCLOSURE.

From Lieutenant-Colonel R. BOUSTEAD, I.M.S., Retired, to the Under Secretary of State for India, dated London, 20th September 1898.

I have the honour to submit that, in the *Overland Mail* of the 10th September, page 1181, which—through my moving about—I have only now received, I observe a paragraph headed

"Cowdung and the Microbes of Plague,"

in which it is stated that Mr. Hankin and Lieutenant Storrocks, R.A., have carried out a series of experiments with especial reference to "Disinfection against Plague."

They discovered that it is extremely difficult to disinfect an ordinary mud and cowdung floor, and that instead of eradicating the microbes the ordinary solutions of sublimate, *i.e.*, perchloride of mercury and carbolic acid, are found to lead to an apparent increase to the number of microbes present, and that the resistance to disinfection depends on some substance in the cowdung which protects the microbes from the action of the disinfectants. That substance has not been discovered, and to leave it undiscovered would be to grant immunity to one of the most fertile sources of plague propagation.

May I venture to suggest that there are manifest reasons why those powerful germicides may have failed to destroy the microbes of plague.

First, the cowdung naturally contains a considerable amount of albuminous, coagulable slime which, when spread over a mud floor, in the usual way, becomes dried and almost impervious to water, but when solutions of sublimate are sprayed over this coating of cowdung the slime in it is coagulated (as is albumen) by the action of the sublimate and forms an actual impervious film which is a sufficient protection to almost all the microbes that are beneath it. It encases them as it were in a water-proof covering. No aqueous solution of sublimate or carbolic acid would be able to effectively penetrate this coagulum and disinfect the microbes below, except perhaps

where the coating of cowdung was broken through. Again, in the decomposition of the cowdung on floors (which is continual) ammonia gas is generated, some of it is fixed in organic matters, some of it is free, being given off continually, and this alkali precipitates and renders abortive (useless) the germicidal properties of the sublimate by converting it into the simple ammonia chloride of mercury, which is useless as a germicide, thus, further, the excellent germicidal properties of the sublimate are destroyed by ammonia within the cowdung.

But I would suggest that, if the cowdung (or simple mud) floors of plague-infected dwellings were first saturated with sea water or with an equally strong or stronger solution of common salt and then well sprayed with the sublimate disinfectant, most of the sublimate would be carried in solution through the film, as sublimate is held in perfect solution by common salt and it will permeate the film through the pores and passages which the salt water has caused by dissolving the slimy albuminous film of the cowdung.

Moreover, the chlorine of the sea water—in addition to its rendering the sublimate into a perfect condition for the destruction of microbes—is a disinfectant itself, and it also considerably neutralizes the ammoniacal gas in the ground—whether free or in combination—producing chloride of ammonium, a substance which also holds the sublimate in perfect solution in water and renders it more active as a germicide in earthy matter—floors, woodwork, drains, &c.

The sea water—or salt and water for up-country use—is, I think, equally necessary for a first application to cowdung floors when carbolic acid solutions are used, as it renders the floor more permeable to the disinfectant.

Where disinfection by spraying is undesirable or insufficient it would, perhaps, be advisable to take an inch, or more, deep of the cowdung covering off the floors and burn it to calcination, then dig from eight inches to a foot of the floor, replacing it with fresh earth, well beaten down level, then sprayed with the sublimate and finally well smeared with plenty of coal tar from the gasworks, followed when nearly dry with half an inch layer of dry sea sand which when quite dry could be swept of all superfluity that had not adhered. This would make an impervious solid and perfectly aseptic floor which would be difficult, if not impossible, for any microbes to enter, and ought not to be expensive at all.

The walls of infected dwellings might be sprayed with a one per cent. solution of a 30 Vol. saturation of Formaldehyde or with a 1-500 solution of sublimate.

I cannot but think that among other causes of infection insect life has an important share in propagating the plague by direct inoculation—the virus is most potent. Mosquitoes and flies, bugs and vermin (which abound in the East) by puncturing and feeding upon plague-stricken persons, and subsequently settling upon and puncturing healthy persons with their poison-laden organs, they deposit the virus as effectively as if it were done by the point of a lancet or by an hypodermic syringe, and disseminate the disease just as Purulent Ophthalmia is carried broadcast by flies, &c., and I think it would be a wise precaution against such a terrible disease that all mosquito and other bites should be touched as quickly as possible with a 1-500 solution of sublimate especially by nurses and attendants on plague patients.

I shall endeavour to forward a copy of this to the Surgeon-General with the Government of Bombay next mail.

No. 4638.

Copy forwarded to the Government of Madras for information.

(By order.)

HOME DEPARTMENT (Sanitary-Plague),
Simla, 29th November 1898.

(Signed) R. NATHAN,
Under Secy. to the Govt. of India.

4 No. 1549 P., 9TH DECEMBER 1898.

ORDER—No. 1549 P., dated 9th December 1898.

Recorded.

(True Extract.)

V. Raghava Sharma
for Secretary to Government.

Copy to the Plague Commissioner.
" the Sanitary Commissioner.
" the Surgeon-General.
" the President, Municipal Commission, Madras.
" all Collectors (A—L).

Sept 2-1-99.

See Plan see pages 203—330.

of the Venetian Convention.

Long
copy

Reference 2567 of 98

Forwarded to the Sec. for perusal of opinion with
ref. to para 4.5 & 7.4. L. Mr. R.B.'s remarks.

Our present system of disinfection
late meeting, & could not be attempted on any large
scale. L. Mr. B.'s proposal or apparently make it a

Still lengthy proceeding. The Venetian Convention recommends as an
alternative disinfectant a 5% solution of pure crystallized carbonic acid,
or 5% of good commercial carbonic acid in a weak solution of soft
soap. Perhaps the latter, mixed in with brushes, might permeate the
building floors, & be better disinfection by itself, without the use of the 2/4

Exd. P. Seetharam.

[500-5-11-98.]

PLAGUE.

No. 250
S

From

Lieut.-Colonel W. G. King, M.B., C.M., D.P.H.,
Sanitary Commissioner for Madras,

To

The

Plague Commissioner
Madras

Enclosure.

Sir,

With reference to your Ref. on
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honor to state that it would be
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upon Lieut. Col. Boustead's recom-
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He appears to have read in the
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therefrom. These represented
his Hankin's incomplete results.
Subsequent to the period thus
referred to, Mr. Hankin worked
further at the subject. He was then
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48
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Hydrochloric Acid	℥ 1
Aniline blue	℥ i
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4. In connection with your remarks as to the length of time at present consumed in effecting disinfection, I am of opinion that the attempt to burn all floors within an infected area by the "Kils method" might well be dispensed with. In houses where cases have actually occurred, it is a method that can do no harm and if carefully conducted may

58
may do much good. But, the chance of this filthy method being conducted with any degree of thoroughness where houses throughout an extensive area, e.g., a so-called "infected block" are concerned, seems to me, from practical observation, so remote that I think both expense and time may well be spared in this particular.

5. In another detail, I think time and efficiency can be secured, namely, by arranging a different system in regard to distribution of the disinfecting solution upon walls. Any one who has tried to work a Chinese pump for half an hour, will be convinced that the possession of a good conscience is essential, plus much perseverance and physical strength. The great effort needed is a direct inducement to scamp the work. Holding this view I have designed a portable "gravity disinfectant." This allows of the elevation of a receptacle containing 20 gallons of the disinfectant, which is thence distributed by hose under a head of from 18 to 20 feet. Two men

Car

Instruct
Director

House
Kils
method

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REPRINT AGAIN No. 182

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Wing — A.

ENCLOSURES TO D. No.

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