

Original Articles.

NOTES ON AN EPIDEMIC OF PYREXIA OF UNCERTAIN ORIGIN.

By G. E. STEWART,
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AN epidemic of an acute fever, presenting many points of resemblance to that described by Lt.-Col. Wimberley, in the *I. M. G.* of August 1910, occurred in the 127th Baluchis in Poona in the autumn of 1910.

The regiment returned from field service in Somaliland in June 1910 and occupied the centre set of three Native Infantry lines, all similar in situation and construction and separated from each other only by a road and a space of about 50 yards. The other two sets of lines were occupied by the 114th Mahrattas and 80th Carnatic Infantry, both of which remained entirely unaffected by the epidemic.

The lines were old and badly constructed, leaked freely during the rains and swarmed with fleas, bugs and other vermin.

While in Somaliland the regiment suffered considerably from climate and bad water, and consequently was not in a good state of health on its return. About half the regiment went on furlough in June, returning mostly between the 21st and 27th October.

All men returning from furlough were segregated in tents about 150 yards outside the lines and received a daily dose of quinine, grs. x, for a period of ten days. They did the usual parades with the other men.

The epidemic commenced during the last few days of September, and was most severe in October and November. At the end of November the regiment was moved into camp for three weeks for Brigade Training, and the epidemic as such ceased immediately, though a few cases occurred subsequently as shown in the accompanying table.

The disease in September and October was confined almost entirely to the right wing of the regiment, consisting of Pathan companies. The Punjabi and Baluch companies of the left wing remained practically unaffected until late in October, after which cases occurred amongst them, but as shown in the table they were at no time so severely implicated. There was nothing apparent in the housing, water-supply or general conditions to explain this difference.

The few women and children in the lines did not suffer appreciably from the epidemic, possibly owing to the partial isolation from infected persons afforded by their separate huts.

In addition to the admitted cases many men were said to have had fever in the lines, but were able to do duty and did not report sick.

Table showing Admissions for Pyrexia of Uncertain Origin.

	Right Wing.	Left Wing.	Total.	Average Strength of Regiment.	Percentage of Admission.
September (25th—30th)	8	—	8	422	1.9
October	47	11	58	545	10.6
November	83	38	121	870	13.9
December	9	7	16	860	1.9
January, (1911)	10	2	12	800	1.5
February	2	1	3	736	0.4
March	4	—	4	610	0.6
TOTAL	163	59	222

Age had no apparent effect on the incidence of the disease.

The officers and their families were quite unaffected.

Two men probably acquired the disease in hospital, one a ward orderly and the other a patient admitted for other causes.

It is probable that many of the cases admitted as "Pyrexia of uncertain origin" and particularly those lasting only one or two days may have been of a different nature from the typical fever causing the epidemic. Some may have been malarial, although the blood examinations were negative, and others due to causes such as chills, gastro intestinal disturbances, etc., which commonly produce transient pyrexias.

However, as there was nothing to differentiate these cases they were all classed as "Pyrexia of uncertain origin," and for this reason, I believe, a larger proportion of cases are classified as lasting under four days than would have occurred if these casual pyrexias could have been separated from the specific fever causing the epidemic.

Malaria was not prevalent in the regiment at the time; 19 cases occurred between September 1st and March 31st.

It is noticeable that, occupying the same lines, in the autumn of the previous year 39 cases had been admitted in the 127th Baluchis for "Influenza" and 1 for "Pyrexia," and that as in this year the incidence was chiefly in the Pathan companies, 27 cases as against 13 in the other wing.

The clinical features were as follows:—
The incubation period was doubtful; among men returning from furlough the earliest typical case occurred on the 8th day after arrival in Poona. Two other cases of slight pyrexia for one day only occurred on the 3rd and 6th day after arrival, but these may have been due to other causes.

The onset was sudden and usually accompanied by chilliness or rigors. No preliminary pains before the fever is said to occur sometimes in dengue.

The symptoms were very variable in degree; some cases had nothing but slight malaise and

others were completely prostrated and racked with pains.

Headache was usual, not invariable; general, frontal and sometimes very severe.

Pains in the lumbar region and down the back of the legs were generally complained of and were often severe.

No swelling or pains in joints.

Tongue usually furred and white but not thickly so. The "strawberry" tongue was not noted.

Vomiting occurred at onset of pyrexia in a few cases.

Bowels usually constipated.

Catarrh of respiratory tract in only a small proportion of cases, and I think not more than was prevalent at the time among the rest of the regiment.

Epistaxis occurred in four cases only, and at the beginning of the disease.

The pulse was usually full and rapid in the early stages, but during the terminal rise and first few days of convalescence it was often markedly slow, in many cases less than 60 per minute.

Injection of the conjunctivæ and photophobia was not uncommon, particularly in cases where the headache and other pains were severe.

Spleen and liver were not enlarged perceptibly.

No rash or desquamation in any case.

Rigors only occurred at onset.

Sweating on defervescence was not marked.

No delirium, cardiac or nervous affections, except prostration which was often marked.

No complications occurred.

Blood examinations were made in each case and were negative.

Character of the Fever:—

The duration of pyrexia varied considerably and was not always easy to calculate, as often the men did not report sick immediately and were hazy in their statements as to how long they had been ill. The following is approximately correct.

Under 2 days	in	13 Cases	or 6	per cent.
2—4	days	105	"	48
5—7	"	93	"	44
8	"	3	"	1.5
9	"	1	"	0.5

In the most common type the temperature usually ran up to 102° or over at the onset, gradually sank with morning remissions for the next few days, and then either dropped to normal (Charts No. I and II) or showed a terminal rise, lasting one or two days and giving a "saddle-back" (Charts No. III, IV and V). This terminal rise occurred in 103 out of 218 charts, or nearly 50%, and was usually lower but sometimes higher than the initial rise.

Occasionally there was a period of apyrexia before the terminal rise; this lasted 1 day in 16 cases and 2 days in 10 cases out of 218. (Charts Nos. VI and VII.)

Defervescence was usually sudden; by crisis in about 70% of cases.

The initial fever was under 103° in 66% of cases, between 103 and 104° in 24% and over 104° in 10%.

Relapses and second attacks:—Two cases had slight rises of temperature, 5 and 6 days respectively, subsequent to the termination of the primary fever.

Three cases had more than one attack; one after an interval of 18 days (Chart No. IX) and one after 79 days (Chart No. X). The third case (Chart No. XI) would appear to have had an abortive attack when first admitted, a mild attack after an interval of 12 days of apyrexia and then atypical attacks after another 19 days. He was an anæmic, debilitated man, and remained in hospital under observation during the whole time. It is noticeable that in these three cases the subsequent attacks were in each case more severe than the first, indicating an absence of protection.

Mortality:—Nil.

Convalescence:—There was marked prostration and weakness after defervescence. Recovery was slow but complete. No sequelæ were noted.

Treatment:—Quinine by the mouth and hypodermically, arsenic, salicylates, salol, creosote and carbolic acid were tried without effect on the temperature.

Nature of the Fever:—As regards clinical features and seasonal incidence the epidemic resembles closely that described by Lt.-Col. Wimberley, I.M.S.

I am disinclined to think that it could be "Phlebotomus Fever" or any other disease carried by flying insects for the following reasons:—(1) the two regiments lying on each side of the 127th Baluchis and separated only by a narrow space from it remained entirely unaffected; (2) the incidence was much greater on one wing of the regiment than the other, although living close together and under similar conditions; (3) the women and children in their separate huts in the lines remained free; (4) sand-flies were not prevalent at the time; (5) the duration of pyrexia in a large proportion of the cases was longer than is usually described in sand-fly fever.

The facts that men returning from furlough were practically free during their period of segregation in tents and that the epidemic ceased as soon as the regiment was moved into camp would indicate that the infection was acquired in the lines, possibly by the agency of fleas, bugs or other vermin with which they were infested.

The absence of a rash, flushing or desquamation of the skin, of involvement of the joints and the lesser degree of pains in most cases would negative dengue fever.

The catarrhal, gastric or nervous symptoms of Influenza were absent in nearly all cases.

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CHART I.

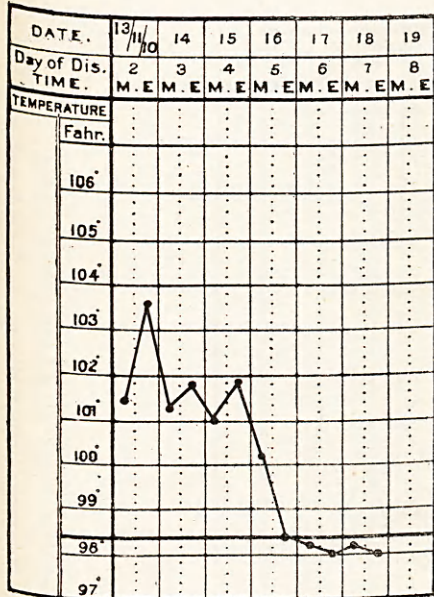


CHART II.

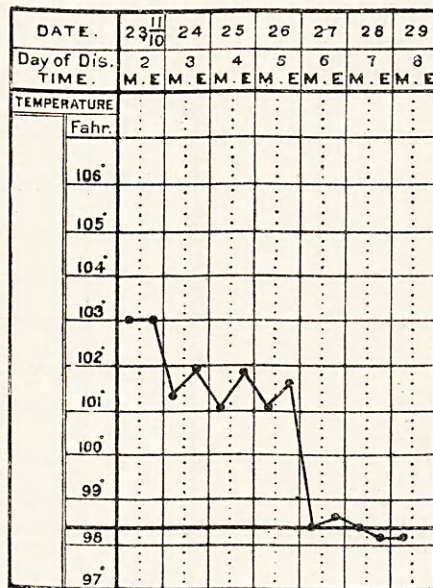


CHART III.

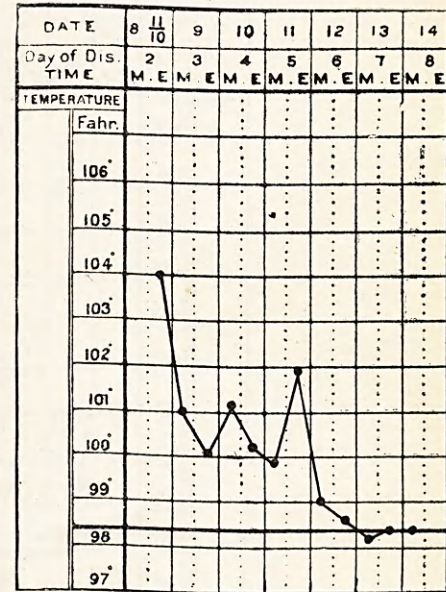


CHART IV.

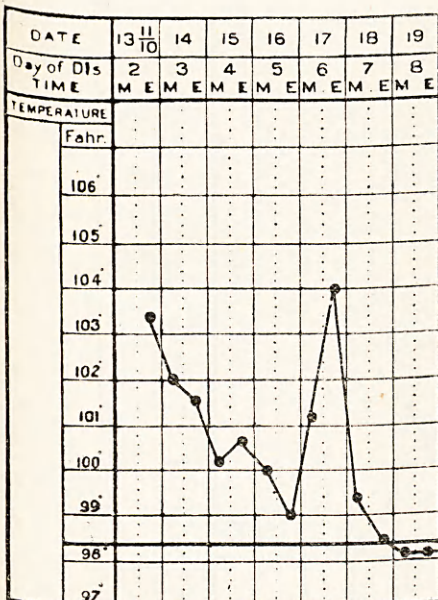


CHART V.

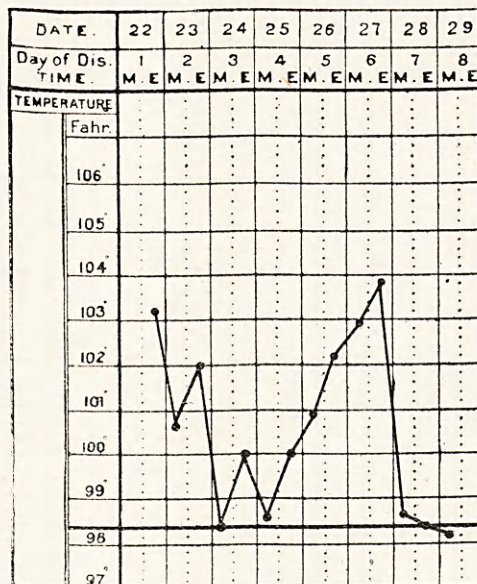
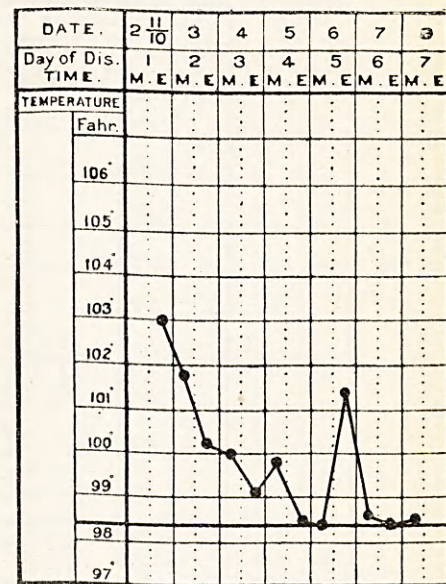


CHART VI.



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CHART VII.

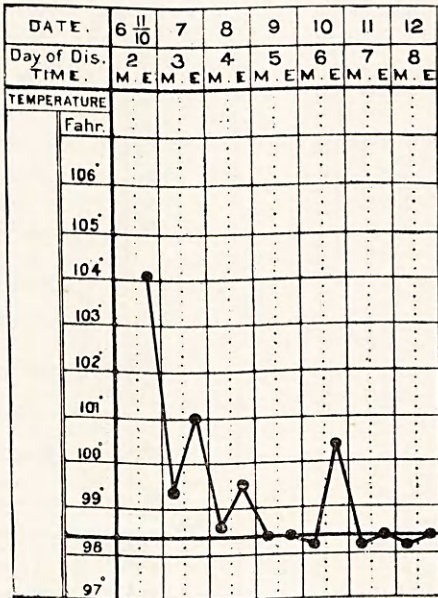


CHART VIII.

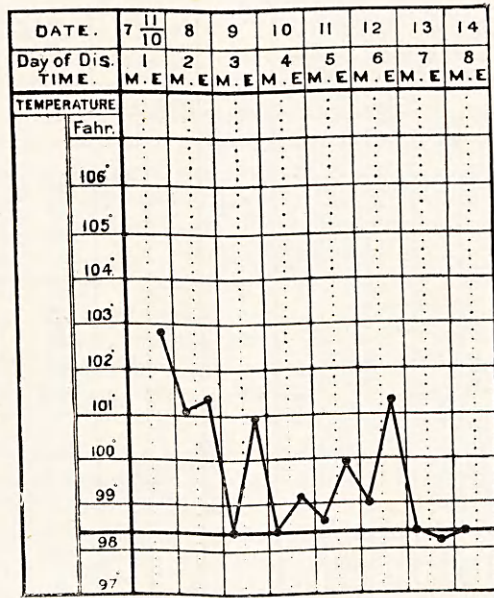
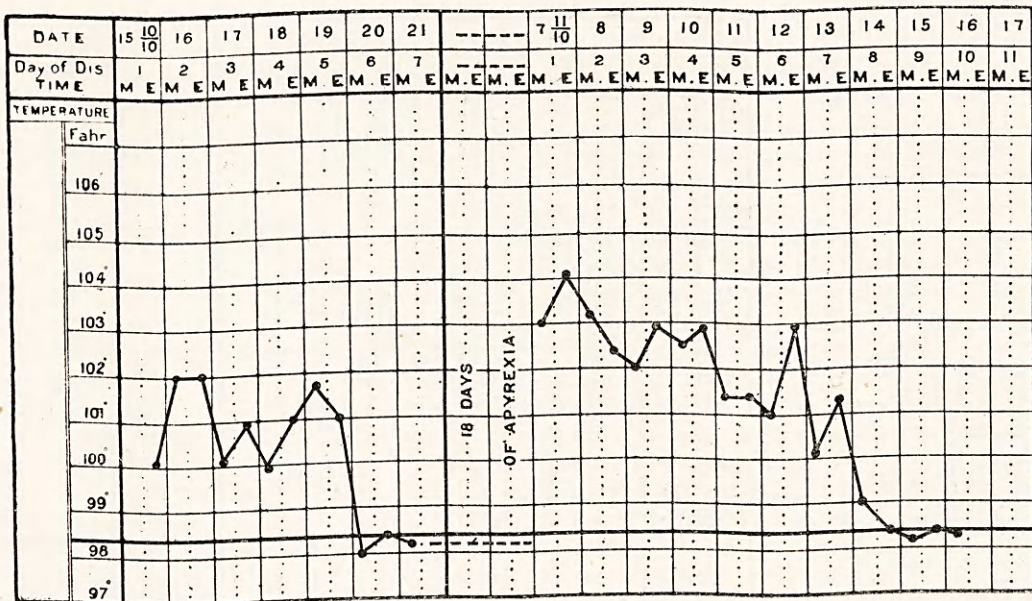


CHART IX.



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CHART X.

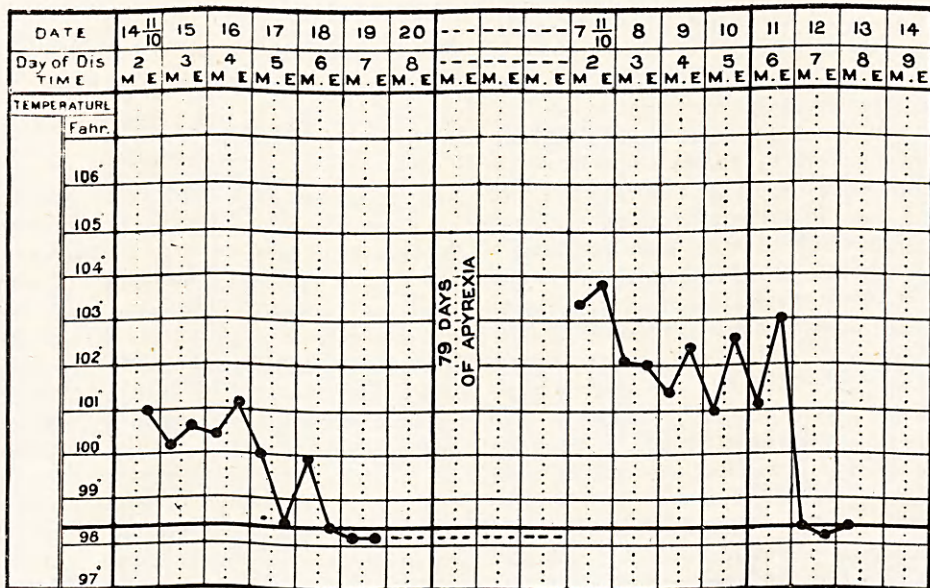
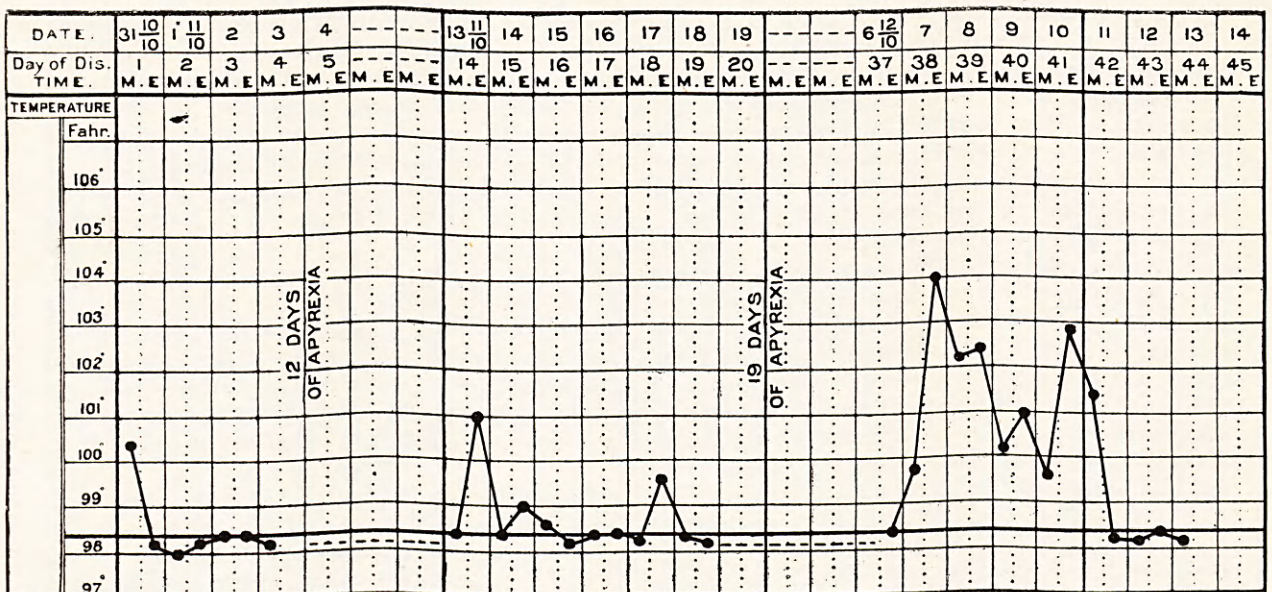


CHART XI.



In many points the disease resembles seven-day fever, but a large proportion of cases did not last so long, there was no mottled rash and the strawberry tongue was not noted. There may be minor points of difference, but if so, the name is misleading.

Epidemics of a fever of very similar nature have been reported recently from several parts of India, and it is only by comparing them that we are likely to arrive at any conclusion as regards their identity; it is for this reason that I submit these notes.

NIGHT-SOIL CONSERVANCY IN CANTONMENTS.

BY P. HEHIR, F.R.C.S., ED.,
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THE question of night-soil conservancy and the best method of getting rid of excreta as speedily as possible is one of the most serious problems in the practical sanitation of large cantonments and standing camps on field service. In billets in villages and when the force is small and deep trenching is adopted, the question is associated with fewer difficulties, but in the case of large cantonments and in standing camps on field service, the subject is literally one of vital significance.

The greatest danger from excreta is the fact that with large masses of troops some are almost certainly suffering from one or more forms of infectious diseases communicable through excreta. In the case of ordinary excreta not specifically infective, it is not until the ordure begins to decompose that it is injurious. The period when this decomposition sets in varies with the season of the year, and particularly depends upon whether the liquid and solid excreta have been mixed; when mixed, putrefaction rapidly ensues, and carburetted hydrogen gases are given off, especially in the hot weather. All excreta should, therefore, be removed from the neighbourhood of barracks or incinerated as expeditiously as possible, and before this putrefaction sets in.

It is not necessary here to go over the evidence which connects various diseases with a defective conservancy system beyond stating that, apart from ascariasis and ankylostomiasis, the chief specific diseases arising from neglected and inefficiently worked conservancy are—enteric fever, bacillary or epidemic dysentery, infective diarrhoea and cholera.

Various systems of dealing with the night-soil of cantonments are in existence—the *pail system*, *dry-earth system*, and *incineration* in combination with the pail system.

Pail System.—The pail system in one or other of its various forms is in general use in Indian cantonments. It implies really the use of a movable cesspool, consisting of a pail or pan.

The pail is used alone in the latrines of Native troops, and in the case of European troops some liquid disinfectant is usually kept in the pail. As a rule, the pails are emptied periodically during the day.

A brief description of what is done in large cantonments will enable us to understand the working of the pail system. There is a conservancy establishment consisting of scavengers and bullock-drivers; there are also a certain number of water-tight iron night-soil carts to convey the night-soil away from the latrines. Each cart has the latrines of a certain area allotted to it, with its driver and scavengers. These men are responsible for carrying out their work in that area.

The latrines are placed in relation to definite barracks in various parts of the cantonment, and consist of either galvanised or corrugated iron, or masonry or brick-sheds, with compartments. Each compartment has a recess into which an iron pan or bucket fits. The pans are emptied several times during the day into intermediate receptacles; these are elongated iron, cylindrical-shaped utensils, usually having a capacity of 4 to 6 gallons, provided with water-tight iron covers. A sufficient number of these are attached to each privy to contain the contents of the pails, so that the pans are kept more or less free from accumulated ordure. The contents of the intermediate receptacles are emptied into the night-soil carts in most instances. The night-soil is then conveyed to and deposited in trenches (superficial or deep), or on prepared soil situated reasonably remotely from all barracks, bazaars, wells, tanks and sources of water-supply.

The pans, receptacles, carts and latrines are regularly tarred; and lately in many cantonments, a quantity of liquid disinfectants has been used to prevent smell, to kill or delay the multiplication of disease germs, and to prevent the breeding of flies. The plan above sketched, more or less modified, is that which is adopted in most cantonments in India, and it is an exceedingly laborious and expensive one.

In some places carts are not used. Then the intermediate receptacle which is filled from the pails or pans used in the latrines is carried on the head of one man, or when of large size, suspended on a pole between two men, or when of small size, two are suspended from the ends of a pole and carried on the shoulder of one man; in this latter case the pails actually used in the latrines are carried in this way, an intermediate receptacle then not being necessary. Water-tight covers are provided. The contents of the receptacles or pails are discharged direct into the night-soil trenches.

When removal has to be carried out, removal of the pails actually used in the latrines is by far the best way of doing this, one man carrying two pails at the ends of a bamboo slung across the shoulder. In this case the size of the pails