

that the common house-fly breeds only in night-soil, at any rate it breeds in great profusion in it, and not in other situations where one would expect it to. He found that if night-soil was spread out thinly on a tray and allowed to dry quickly, that no growth occurred, and that even if the night-soil so experimented with already contained larvæ, these died when the night-soil became dry. The addition of lime or perchloride of mercury also inhibited the breeding. With a view to at any rate diminishing the number of these flies, and at the same time lessening the dangers which they, with their power of conveying bacteria, threaten, the treatment of all night-soil with either lime or perchloride of mercury, both of which are equally efficacious, seems to be a measure worthy of consideration. He thinks it too early in these experiments to lay down hard and fast rules, but considers that there is sufficient evidence to state that the common house-fly breeds in great profusion in night-soil, and not in the vicinity of cook-houses, &c., where it is to be found in such vast numbers; these latter situations being, apparently, only its feeding grounds.

These experiments of Captain Franklin's are important, as the natural history of the common house-fly ought to be thoroughly investigated. It is remarkable how little is known of its breeding habits, although the adult flies are so numerous. As there are several species of house-flies, it would be well if the specific name is given, and Captain Franklin's attention might be drawn to a paper by Ernest E. Austen, in the ROYAL ARMY MEDICAL CORPS JOURNAL, June, 1904.

Correspondence.

THE THERMAL DEATH POINT OF PATHOGENIC BACTERIA AND THE "PORTABLE (ARMY) EXCRETA STERILISER."

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—In the current number of the Journal (September, 1906), which I have just received, are two interesting papers dealing with the "Griffith" water steriliser, by Lieutenant-Colonel R. H. Firth, R.A.M.C., and Dr. Griffith, respectively.

Dr. Griffith quotes the opinions of five recognised authorities regarding the thermal death point of the *B. typhosus abdominalis*. Three of the five consider that exposure for ten minutes to a temperature of 60° C, or even lower (50° and 56° C.), is sufficient to destroy it. Dr. Griffith's own experiments also go to prove that pathogenic bacteria in general are readily destroyed by exposure to temperatures a long way below boiling point for a few seconds. They are, in fact, even less resistant to this agent than has been generally supposed.

In the November number of the Journal for 1905 I described a simple and practical apparatus for the sterilisation of excreta under all conditions of military life, which I have named "the portable (Army) excreta steriliser." The sterilisation (of pathogenic bacteria) is effected by raising the temperature of the sewage to 60° C. for thirty minutes. It appears to me, however, that a temperature of 55° C., maintained for fifteen minutes, would be amply sufficient. This is all to the advantage of the process, as it means that the work can be done more quickly and even more cheaply than my estimate shows. I believe that the most economical and most generally applicable conservancy methods we can adopt in India, that will, at the same time, give the British soldier protection from the enteric fever scourge, are:—

(1) To abolish the use of dry-earth entirely in the latrines.
 (2) To substitute a weak antiseptic solution, viz., crude carbolic acid, half an ounce to the gallon.

(3) The pans to be filled two-thirds full every morning with this solution, and emptied when requisite, but not every time they are used, as this is wasteful and unnecessary.

Only a weak carbolic solution is required, as the object is not to attempt to sterilise the excreta, but (i.) to prevent access of flies; (ii.) to counteract putrefaction, and (iii.) to lower resistance of the sewage bacteria.

(4) Empty the pans directly into the chamber of the steriliser, thus doing away with the objectionable receptacles.

(5) The "portable (Army) excreta steriliser" should be placed in the enclosure which is always to be found on one side of the latrine block.

(6) Sterilisation should be carried on at fixed hours during the day, and the sterilised sewage be emptied at once.

(7) Institute day removal at fixed hours.

Night removal should be absolutely forbidden, as it means the conveyance of gallons of dangerous material through the cantonment without proper supervision.¹ The only real objection to day removal is the horrible stench given forth from the Crowley carts. This stench alone condemns the dry-earth method, as it shows how little deodorant power dry-earth possesses. There will be no stench if the system I suggest is instituted.

(8) Abandon shallow trenching, whether of the Allahabad or the Thornhill pattern. Trenches to be three feet deep and to be filled in when within twelve inches of the surface.

I object to shallow trenching for the following reasons: (i.) it is

¹Of course, if "practical" sterilisation of the excreta is effected by the "hot wet" process I have advocated, the chief objection to night removal disappears. Nevertheless, I recommend day removal as an additional safeguard, acting on the same principle as the careful householder who has bolts placed on the door which is already provided with a lock. The same reason leads me to favour the deep trench even for sterilised sewage.

dangerous to attempt to make your conservancy system a successful commercial enterprise, as safety is likely to be sacrificed for the sake of profit; (ii.) it is a mistake to rely upon an agent, the physical conditions of which are liable to such great variations as the soil, to convert the often dangerous sewage into harmless and valuable manure without danger to the health of the community. The sewage should be made harmless before it is committed to the ground; to do otherwise is to lean for safety on the broken reed of chance, instead of on the iron staff of science.

I am, &c.

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September 25th, 1906.

THE EMPLOYMENT OF NON-COMMISSIONED OFFICERS
AND MEN OF THE ROYAL ARMY MEDICAL CORPS IN
INDIA.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—I am addressing this to you in the hope that other officers of the Corps may be induced to ventilate their opinions on the above subject.

The present system in vogue in India of employing soldiers from the units in garrison as nursing orderlies is out of date, unsuitable in every way, and has many grave disadvantages from the point of view of the regimental officer, the medical officer, and the man himself. The regimental officer, often at his wits' end to get through the amount of work called for from him in these strenuous times, is hardly to be blamed if the men he sends to hospital as orderlies are not noted for intelligence. They are, in fact, too often the men whom he can best spare, *i.e.*, the most useless and lazy. Of course, there are many excellent nurses among the regimental nursing orderlies—men who seem to have hit upon their vocation, so to speak. These men prefer to remain as nurses, take an interest in their work, and can be properly trained. But, unfortunately, a large number of men do not care for the work, and their one object is to get back to duty again. Another great disadvantage of the system is that the hospital orderly is constantly being changed; no sooner has he been partially trained than he returns to duty to go through, say, a course of musketry, or what not, and a raw man is sent in his place, who has to be trained all over again from the beginning. The consequence of this is that there are always a number of partially-trained men doing duty as nurses, who are often, owing to pressure of work, called upon to do duties which could only be properly