

soldiers, the usual parasite found when they are attacked with malarial fever being that of malignant tertian. Among the Egyptians, who are so often miscalled Arabs by the tourists in Cairo, both parasites are found, mixed infections being quite common, but the number of cases showing the benign tertian parasite alone preponderate. Another point of interest with regard to Sudanese troops is that, when they are moved to a malarious district after having been stationed for many months in a healthy station such as Khartoum, where malarial fever is now almost extinct, owing to the extermination of mosquitoes, they frequently suffer from attacks of fever, which are in some cases very severe, but after a few weeks they appear to become partially immune, and the admissions to hospital for malarial fevers diminish in consequence. This is of practical importance from a military point of view when it is intended to bring Sudanese troops for use in expeditions into malarious districts when they have been previously stationed in non-malarious ones; such troops should, if possible, be sent up at least two months before it is intended to begin operations, so that they may have time to become acclimatised.

NIGHT URINALS: A SUGGESTION.

BY CAPTAIN ROBERT J. BLACKHAM.

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THE question of night urinals for soldiers is a sanitary matter of interest to every officer of our Corps, and as I believe I am right in saying that the methods now in use in India find little favour with most of us, I think no apologies are necessary for submitting the following remarks on this important subject.

Captain W. S. Harrison, Assistant Professor of Pathology in the Royal Army Medical College, writing on the subject of "Our Present Position with Regard to Enteric Fever in India," says: "The question of night urinals is a more difficult one [than that of day urinals]. If one leaves the men with only the present day urinals they will not use them and the ground will continue to be soiled; if one provides occasional urine tubs or other receptacles for night use the same result will follow, *plus* a slop round the tubs. Urinals off the barrack-rooms would be objectionable on account of smell, and moreover, unless sufficient were provided, say four to a company, the soiling of the ground would continue little abated. The simplest plan of all would be to provide each man with a chamber pot for night use; it is the best arrangement for preventing droppings on the floor, for the men would hold them close up when using them. If they had a quantity of disinfectant put in them the urine would be rendered harmless as soon as passed, they could be emptied and cleansed each morning and a fresh supply of disinfectant could be put into them. The presence of non-commissioned officers in

the room and the general feeling among the men would ensure their proper use, and the fact that they are used in hospital and cause no trouble there, shows that they are practicable. The chief objection to them arises from the presence of drunken men; but if a man is too drunk to use a chamber pot he is too drunk to be in a barrack-room; the guard-room is a more appropriate resting place for him" (JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. iii., p. 50).

This expression of opinion may be considered the last word on the subject of night urinals in India, and has hitherto passed unchallenged in these columns, but I venture to join issue with the learned writer on several points. I agree that it is unnecessary to provide urinals off the barrack-rooms, as this would involve great expense, not only in erection but in annual up-keep, yet I do not think Captain Harrison's alternative of providing each soldier with a chamber pot will find favour with either medical officers, commanding officers, or soldiers themselves. It would cost a great amount of money to provide these pots in the first instance, their maintenance in good order would be expensive, and the outlay involved by the use of a *sufficient* amount of non-poisonous disinfectant would be simply enormous. Moreover, the cleansing of the pots would require an army of *mehtars* for its efficient performance, and an expenditure of thousands of rupees on *gharons* alone. As Captain Harrison is aware, the routine issue of chamber pots to soldiers in hospitals has been discontinued; and, apart from this, I think it is scarcely correct to draw a parallel between the barrack-room and the hospital ward, as patients in hospital are invariably strictly sober, whereas, although *drunken* soldiers certainly do find their way to the guard-room, it is a well-established fact that a number of men thoroughly "fuddled," but not legally drunk, succeed in passing the sentry and "answering to their names" night after night in every barracks in the Empire. These gentry are the individuals who would play sad havoc with Captain Harrison's neat little row of chamber pots.

I think we should be chary of advocating any system of conservancy which relies entirely on chemical disinfectants, as in unskilled hands so many sanitary sins are committed in the name of disinfection, and the cost involved is always considerable if a reliable and at the same time non-poisonous disinfection is used.

Even the large sum of £18,000 per annum, which Captain Harrison proposes to save the State, would go a comparatively short way in the purchase of popular higher phenols and the provision and up-keep of chamber pots for 100,000 men.

In the plains of India, I think that a sufficient number of ordinary receptacles placed on a stand in the verandah, *at the proper level, in a good light*, and surrounded by a tray of sawdust or lime, to catch droppings, constitutes as good a means of receiving liquid night ordure as any other, and if disinfection of the urine is desired, the best and simplest

disinfectant is heat. The heat could readily be applied in a modified *pipa*, such as the apparatus devised by Major (now Lieutenant-Colonel) Glenn Allen (JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. v., p. 606). This mode of treating urine costs very little, as 50 gallons, or the approximate nightly output of urine for half a battalion, could be "practically sterilised"—which is a vastly different thing to being mixed with a disinfectant—for the small outlay of about 4 to 6 annas, according to the price of wood.

I think that the "slop" to which Captain Harrison rightly refers, is not due so much to the present form of receptacle as to the bad light in which it is placed. Even in English barracks and hospitals it is difficult to get the urinals properly lighted, and in Indian barracks there is often no attempt to light the vicinity of the night urinals, with the inevitable result that in the morning they are found surrounded by pools of urine.

In the hills of India this method does not, however, recommend itself, as it does not obviate the necessity for getting rid of a large quantity of *liquid* sewage. Even in the plains, where there is abundant land for its eventual disposal, liquid sewage is difficult to deal with; but in the hills its disposal is a very serious sanitary problem, as sufficient land is, as I have pointed out elsewhere (JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. vi., p. 663), rarely available for its reception; and, apart from this, the question of transport of liquid excreta arises in an acute form.

In the plains the filth cart, or "ironclad," offers an admittedly faulty solution of the problem, but these carts cannot be used in the hills, as wheeled traffic is impossible along mountain paths; and in consequence the urine of the night urinals, together with all waste material, has to be carried by hand to the cantonment garden, or mixed with refuse and destroyed in the cantonment incinerator. This manual method of removing the excreta of the subjects of typhoid bacilluria must be a fruitful source of the outbreaks of enteric fever so painfully familiar to those of us who have served in the Simla and Murree Hills.

Obviously the ideal method of disposal of urine in the hills would be to receive it in some absorbent and deodorant material, which could be carried away on the heads of the sweepers and burnt without further manipulation in an incinerator.

On looking round for such a method, the experiments carried out by the late Dr. Vivian Poore with sawdust at once suggest themselves to our mind. Although familiar to most of us, Lieutenant-Colonel A. M. Davies, Professor of Hygiene in the Royal Army Medical College, informs me that this method has never been *seriously* tried on a large scale in India, notwithstanding the fact that it seems well adapted, if not for the tropical heat of the plains, at least for the temperate climate experienced in all hill stations. I would remind my readers that Dr. Poore placed in his rooms at University College Hospital, a vessel containing 6 lbs. weight

of sawdust, and during about three months added to it 626 ounces, *i.e.*, 39 lbs., of urine, with the result that $3\frac{1}{2}$ lbs. of filtrate appeared. The sawdust therefore absorbed, or caused to disappear by evaporation, six times its own weight of urine; and Dr. Poore asserts that his "experiments with sawdust, extending from December to July, and carried on in all kinds of weather, and indoors as well as out of doors, have *in no instance* given rise to offensive smell. If the surface of the filter, which has been some time in use, be stirred, and the nose almost buried in it, a strong smell of ammonia is perceived, but it is the smell of pure ammonia without foulness. The filter which I kept in my room at the College for some time never made me aware of its presence by any odour" ("Rural Hygiene," third edition, pp. 180-181). I think that the reason why sawdust has not been long since *seriously* tried in India is, as pointed out by Lieutenant-Colonel H. A. Haines (JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. vi., p. 671), because it is not readily obtainable, and, in the Simla Hills at any rate, it would be well-nigh as expensive as a chemical disinfectant; but as I have shown in another article, we have everywhere on the Himalayan slopes an excellent absorbent vegetable material which will, I feel assured, be found almost, if not quite, equal to sawdust in most respects; I mean pine needles (JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. vi., p. 662). These needles can be obtained in the vicinity of every hill station for the labour of collecting them; and I suggest that troughs containing the needles in the form of a rough powder should be placed on the verandahs of barrack-rooms and used as night urinals. These troughs should be placed at a convenient height, *and well lighted by reliable lamps*, as much of the fouling of the verandah under the existing system is, as I have shown, due to the fact that the urine receptacles are placed *on the floor and in the dark*.

This method is, I submit, worthy of trial, as it has the following advantages:—

(1) It is inexpensive; (2) it requires no elaborate apparatus; (3) the resulting mixture of urine and pine needles can readily be burnt; (4) the management of the troughs is quite within the comprehension of the native mind; and (5) the absorbent material is harmless and deodorant.

A CASE OF DISLOCATION OF THE SPINE; LAMINECTOMY; RECOVERY.

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PRIVATE M., 1st The Queen's (R. W. S.) Regiment, was admitted to hospital on November 25th, 1905, with the following history: About half an hour previously to admission he was engaged in building a bomb-proof shelter, and while crouching underneath undercutting the earth,