

THE "ALLIES" OF ENTERIC FEVER IN INDIA.

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ALTHOUGH it will become sufficiently apparent during the course of this paper what I mean by the "allies" of enteric fever, it may nevertheless be useful to indicate at the outset in what sense the term is here employed.

Definition.—By the "allies" of enteric fever I mean all agents—whether animate or inanimate—through whom, or by means of which, the importation, existence, multiplication and conveyance from man to man of the specific germ is, or is capable of being, facilitated, fostered or favoured. I am, no doubt, taking a certain amount of liberty with our language in applying this term to agents whose assistance is neither voluntarily nor consciously given, and which are not, indeed, in any sense friends or well-wishers of the power whose strength, nevertheless, they constitute. It is this last-mentioned fact, however, that has led me to select the word "allies" as an appropriate designation, inasmuch as it emphasises the importance of the relationship that exists between enteric fever and certain agents of infection. Indeed, if we but think, it will be evident to us that the whole power of the disease and the real difficulty of solving the enteric fever problem that faces us to-day lies in the fact that certain potential "allies" of the disease are in existence to a greater or lesser extent in all our military cantonments. "Allies" they are, in point of fact, although not so consciously or by intention. Indispensable "allies," moreover, as deprived of their services, the *Bacillus typhosus* would be scarcely more formidable than is the hay bacillus, dependent as it is on them, not only for the means of reaching its victims, but for its very existence. In one way this is fortunate, as, were this not the case, enteric fever would not be classed as a preventable disease. Being so, however, it follows that the whole "art of sanitation" (as regards disease prevention) consists, *firstly*, in detecting the nature of these potential "allies"; and *secondly*, by this means or that, making it impossible for the disease to avail itself of their services in the future. It is no doubt true that among the number are some (chiefly connected with climatic conditions) which are

beyond our control. But they are neither numerous nor important, so need not detain us here. The great majority are quite within our power to remove or control, which is but natural, seeing that they are of our own providing, or the natural result of our methods of sanitation, or our mode of life.

It is not my intention to attempt to give a full list of these agents of infection; even were I in a position to do so, the detail would prove long and wearisome. I only propose to consider a few of the most important "allies" which have come within the range of my own experience. Although numbering but seven in all, they seem to me quite sufficient in themselves to account for the small measure of success with which the efforts to stamp out enteric fever have been rewarded—at any rate, so far as the Punjab is concerned. The "allies" of enteric fever which I have particularly in my mind are, as I have said, seven in number, and for descriptive purposes I shall designate them:—

First "ally."—The unsuspected germ-carriers.

Second "ally."—The hill battalions and batteries.

Third "ally."—The standing camp.

Fourth "ally."—The common fly (various species).

Fifth "ally."—The multiple small cookhouses.

Sixth "ally."—The bazaar-town within cantonments.

Seventh "ally."—The dry-earth latrine, plus night removal of excreta and shallow trenching.

First "ally"—*Unsuspected Germ-carriers.*—I have given this class of "ally" the first place, as the very fact that they are so generally overlooked as possible sources of infection makes them all the more important. We are now quite alive to the fact that enteric fever convalescents may remain sources of danger to others for a long time after perfect recovery from the symptoms of the disease. Segregation camps for such patients—first installed, I believe, by Lieutenant-Colonel T. P. Woodhouse, R.A.M.C., at Ambala—are now general. We appear, however, to have overlooked another important fact, equally well established, viz., that those who have been in attendance on enteric fever cases may become infected with the specific germ without even having, or ever having had, the disease themselves. This is an especially important point to bear in mind in India, because the rank and file of the Royal Army Medical Corps do not serve here, and the male nurses in the military hospitals are men selected from the various regiments and batteries of the garrison. These men are not permanently employed as hospital orderlies, but return to duty from

time to time. It is not uncommon for several of these regimental orderlies to be employed in the enteric fever ward for weeks or months. Is any precaution ever taken to guard against their returning to their various units as very efficient, though unconscious, "allies" of the enemy against which they have been battling in the hospital wards? Personally, I have never even heard the suggestion made that such a danger existed. But it appears to me that no man who has been employed in nursing enteric fever cases should be allowed to return to his regiment without it being at least ascertained that he is free from bacilluria. Whether urotropine, or some similar drug, should not be given as a precautionary measure, is a matter for individual judgment. The answer will be "yes" or "no," according to individual faith, or lack of faith, in these germicides. In addition to the orderlies there are the nursing sisters; although the danger of their becoming innocent "allies" of enteric fever, or, at any rate, propagators of infection, is not so great, yet it must not be overlooked. In what way this unconscious but possible alliance can be detected and guarded against is such a difficult and delicate question that only a very senior and experienced officer (or an extremely junior and inexperienced one) could venture to offer an answer. I, therefore, content myself with pointing out the danger, and pass to the consideration of "ally" No. 2.

Second "ally"—Hill Battalions and Batteries.—In the Punjab the sensible custom now prevails of sending as many of the British troops to the hills for the hot weather as possible. There are some battalions and batteries that actually belong to hill stations, but are always brought down to the plains for the cold months. It cannot, however, be denied that the one objection to this practice lies in the fact that enteric fever is not infrequently contracted by some individual on the march, and an epidemic started at the station to which they return. I have had occasion to review the enteric fever records at Ambala for many years past, and I have found sufficient evidence to prove that imported infection was a not infrequent cause of many outbreaks in the past. I found that there was a rise in the enteric fever curve at the commencement of each cold season, which reached its maximum in December, a second well-marked rise taking place in April, and attaining its maximum in May. The first rise was certainly due to imported infection by hill battalions and batteries; the second rise being due to other causes which I need not go into now. Regulations to guard the soldier against the risk of contracting

enteric fever on the march down from the hills have recently been introduced. The only sure safeguard to preserve the station from this danger would be the detention of all returning units in observation camps on the outskirts of cantonments for at least fourteen days. A period of quarantine should certainly be compulsory as regards any battalions or batteries which have actually suffered from the disease during the rains.

Third "ally"—The Standing Camp.—Although it is not, I believe, the rule in the Punjab to keep the hill battalions and batteries under canvas during the winter, the practice still obtains at Ambala owing to lack of accommodation. That the conditions of camp life are especially favourable to the spread of enteric fever is, I take it, generally admitted, and that our standing camps were great factors in causing the excessive prevalence of the disease at Ambala I have elsewhere given reasons for believing. I advocate the construction of winter quarters at all plain stations where the hill units are under canvas, as I feel sure it would deprive enteric fever of an important "ally."

Fourth "ally"—The Common Fly (various species).—I have placed this pest of warm climates next to the standing camp, because the camp latrines, cookhouses, &c., have always, as far as my observation goes, a stronger attraction for flies than those of the adjacent permanent lines, although the sanitary supervision is rather more strict, as a rule, in camps than in barracks. It may be that flies find it easier to gain access to the flimsily-constructed camp latrines and cookhouses than to those of the permanent lines. If so, it is another reason for abolishing these standing camps, as the dangerous alliance that often exists between enteric fever and flies cannot reasonably be questioned. When lecturing to non-commissioned officers and men of the "regimental sanitary cadres" and others, I am in the habit of impressing upon them that the really dangerous "animals" of India for the white man are the common fly and the (only too numerous) mosquito; not snakes, scorpions, &c. Indeed, I think a useful text wherewith to adorn the walls of barrack rooms, messrooms, cookhouses, &c., might run as follows :—

"The fly is more dangerous than the scorpion;
The mosquito than the cobra"—

as it would impress upon all the necessity for waging war on these great "allies" of disease.

Fifth "ally"—Multiple small Cookhouses.—When making sanitary inspections of barracks or camps in India one cannot fail

to notice the extraordinary number of cookhouses belonging to each unit. Not only has each company in a battalion a cookhouse to itself, but the sergeants' mess, the coffee shop, and the Royal Army Temperance Association room also. In small units, such as mountain batteries, it is often worse, as a cookhouse for each section, a fourth for the coffee shop, and yet another for the sergeants' mess is not considered excessive. A strictly enforced company latrine system is an undoubted safeguard against the spread of enteric fever, whereas this company and section cookhouse system adds to the difficulty, especially in the hills, where space is limited, of keeping latrines and cookhouses at due distance from each other, and certainly increases the chances of food contamination. Indeed, there are so many objections to the multiplication of small cookhouses, both on sanitary and economical grounds, that I am surprised military sanitary officers in India do not set their faces against them. By doing so enteric fever would be deprived of a good many potential "allies."

Sixth "ally"—The Bazaar-Town within Cantonments.—Although we cannot get rid of native bazaars within cantonments altogether, we could, with advantage, dispense with (what I call) the bazaar-town, which is often, in fact, a native city of many thousand inhabitants masquerading under the modest name of the "Sudder Bazaar." These overgrown bazaars must offer numerous facilities for breeding the *B. typhosus*, and once they have been allowed to spring up it is almost impossible to get rid of them. As Ambala Cantonment offers a striking object lesson with regard to this particular evil, perhaps the following short sketch of its past history may not be out of place:—

The military station of Ambala, *i.e.*, Ambala Cantonment, is so generally called "Ambala," that most people suppose they are one and the same place.¹ As a matter of fact, Ambala is an ancient native city, dating back to the fourteenth century; the cantonment, (comparatively) a thing of yesterday, having been first opened in 1843. For sanitary reasons, presumably, the authorities of the day avoided the native city and selected a virgin site for the cantonment four miles to the south-east. While they thus wisely kept the soldier away from the city, they, unhappily, did nothing to prevent the city coming to the soldier; consequently, we have to-day a native town of 25,000 inhabitants existing within cantonment limits,

¹ It is a remarkable thing that even Rudyard Kipling confuses the two places together in his book, "Kim."

which offers many facilities for the cultivation of the specific germ of enteric fever. Regulations are now in force to prevent further growth of the town and population, and the strictest sanitary supervision possible is exercised, but we cannot do much now to deprive enteric fever of the services of the powerful "ally" which has been provided for it by lack of sanitary foresight. Elsewhere, however, at places where these bazaar-towns are still only in their infancy, stringent measures should be taken to keep them within due bounds.

Seventh and last "ally"—The Dry-Earth Latrine, plus Night Removal of Excreta and Shallow Trenching.—That a dangerous alliance is liable to be formed between enteric fever and our dry-earth conservancy system is now so generally admitted there is no need to do more than mention the fact here. While all are agreed as to the necessity for a change, there is considerable diversity of opinion regarding the nature of the change that should be introduced. That it must be in the nature of reform, not of a revolution, will, I think, be generally accepted by practical sanitarians. Further, the reformed conservancy system must comply with the following conditions if we are to hope for its acceptance:—

(1) It must safeguard the community from the present danger of spreading enteric fever by means of latrine infection, or by fly- or dust-borne contagion from trenching grounds; (2) it must not entail great increase of expense, either in the way of initial outlay or in its working.

Personally, I feel convinced that dangers of our present conservancy are due to:—

(1) The use of the so-called dry earth in the pan; (2) night removal of sewage; (3) the Thornhill system of trenching.

Having recently described, in a letter to this Journal,¹ a scheme embodying reforms as regards these three particulars, I shall not repeat myself here, but submit, in conclusion, that whatever drawbacks it may possess, it would at any rate sever once and for all this dangerous alliance, one of the great sources and causes of enteric fever amongst the British troops in India.

¹ Vol. vii., December, 1906, p. 633.