DENGUE FEVER AMONG THE TROOPS IN CALCUTTA; ITS IDENTITY WITH SEVEN-DAY FEVER AND THREE-DAY FEVER.

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Year after year the troops in Calcutta are attacked by a short fever which is productive of much inefficiency but no mortality. It has been returned as pyrexia of undetermined origin. This year it has been my good fortune to have to deal with the disease and to experience an attack in my own person. Last year (1911) very careful notes of the disorder were taken under the direction of my predecessor, Lieutenant-Colonel T. McCulloch, R.A.M.C. From reading these notes and seeing the temperature charts, I have no doubt that the fever of last year was the same as the fever of this year. I am confirmed in this view by officers who have seen the fever both years. The conclusion is arrived at that the fever of 1912 is the same fever as that of many previous years. This year the fever, I am sure, is dengue; if so the fever of previous years must have been dengue. But the same fever has previously been called seven-day fever and three-day fever. Therefore seven-day fever and three-day fever are in reality dengue.

The fever always comes in the hot weather. In 1910 there were 113 cases admitted to hospital from this small garrison, the diagnosis being pyrexia of undetermined origin. In 1911 124 cases were admitted. This year (1912) no less than 227 European soldiers have been admitted to hospital for the disorder, and 234 more have been treated in barracks, making altogether 461 cases up to date (October 27).

The disease has also run through a regiment composed of Indians from the Punjab side and north-west frontier. A regiment of Indians from the Madras side has been affected, but in a much lighter degree. Evidently then the disease has been more prevalent than usual this year among the troops. Calcutta has also been heavily attacked, so much so that startling headlines about the "New Disease" appeared in the lay press. Civil medical men discussed the question of diagnosis, and the majority decided that the disease really was dengue, while one or two held that it was the usual seven-day fever and not dengue. Some who admitted this year's epidemic to be dengue thought that it differed from the endemic seven-day fever. The military cases, exclusive of officers, women and children, were distributed over the months as follows, counting together both the admissions to hospital and the cases treated in barracks: April, 28; May, 37; June, 40; July, 62; August, 154; September, 105; October, 35 (to October 27 inclusive); total, 461.

The disease prevailed among officers, men and women alike.

The temperature curves vary a good deal, though the type is a saddle-back. Some of the men were admitted while in hospital for other diseases,
therefore their temperatures are fairly accurately recorded. Two indeed, convalescents from typhoid fever, were having their temperatures taken morning and evening up to the time when the fever began, so we are sure that we have accounted for all their days of fever.

The signs and symptoms are as laid down by Manson and Daniels. If there be any differences they are that the pains were rarely so bad as one would expect them to be from Manson's description, and that the secondary rash was not so universal.

But the pains are definite enough. In several cases, as in my own, they were almost the first of all the symptoms noted; they were thought to be due to sprains or to rheumatism, and were crippling in effect.

It may be objected that the shorter fevers are really sandfly fever. This is, of course, a possibility, inasmuch as we have sandflies. The short fevers and the longer fevers, however, are so much alike in symptoms and season of occurrence that it seems possible that they are one and the same disease. Sandfly fever is common in the north-west in certain areas (Attock, Nowshera, Peshawar, &c.). It is worthy of note that the regiment of Pathans who come from the sandfly fever part of India were much more heavily infected than the South Indian regiment. This fact suggests that the sandfly fever which the Pathans may be assumed to have gone through in their own country confers no immunity against Calcutta fever. One officer patient—a medical officer—stated that he had not long before had sandfly fever in the Punjab, and he thought the two diseases—sandfly fever and dengue, were distinct. Colonel Robinson and Major Blackham, on the other hand, in the October number of our Journal, include seven-day fever in their account of sandfly fever. The truth may be that the two diseases, sandfly fever and dengue, occur at the same time and place, and that it is not easy by clinical observation alone to distinguish three-day dengue from three-day sandfly fever.

The commonest biting insects during the period of greatest prevalence of the disease were Anophelines: Anopheles rossi. Culicines: Culex impellens, C. fatigans, Stegomyia scutellaris, S. fasciata. Other mosquitoes found were Desvvoidea obturans, Culex concolor, Toxorhynchites immisericus, Leucomyia gelida, Culex microannulatus, Mansonioides annulifera, Mucidus scaptaptagoides.

A few sandflies were taken but these insects are not very numerous or troublesome in military areas in Calcutta. No papatasi were found, only P. minutus and P. argentipes.

Biting Chironomids which feed on man were also met with and were not uncommon during the period when the dengue was most prevalent. These insects can pass through an ordinary mosquito net, as indeed can some mosquitoes. Stegomyia scutellaris for instance.

The disease met with in Calcutta is extraordinarily local in prevalence. Stations within ten miles or so of Calcutta are said to be almost entirely free from it, though we have heard rumours of its appearance in more distant stations.
Fleet-Surgeon F. H. A. Clayton some time ago read an excellent paper on seven-day fever and dengue before the United Services Medical Society (JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, February, 1910). He produced charts identical with ours. He mentions that when his ship lay off Calcutta at Christmas no dengue cases occurred, though the crew had been attacked at other ports. If the ship had been in the river off Calcutta in September or early in October this officer might have had a different story to tell. The disease ceased in October.

In a paper entitled "Further Notes on Fevers in Malta," and published in the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS for July, 1909, Lieutenant-Colonel J. J. Gerrard gives some charts of fevers which seem to be similar to the Calcutta fever, as may be seen from the accompanying temperature charts, some of which are of cases which occurred among patients already in hospital for other diseases. The fevers vary in duration from two to eight days.

In a few cases the pyrexia only lasted for some twenty-four hours, in that it rose one day and fell to normal in the course of the following morning. These trivial attacks, however, can only be assumed to be the same disease as the more typical ones, because of their occurrence at the same time and place and at no other time.

Chart No. 1.

This chart is that of a patient, convalescent from typhoid fever, whose temperature was being recorded before and up to the time when he was attacked by dengue. The rash was very pronounced. After an interval of twenty-six days of apyrexia there was a short relapse with marked rash and a temperature of 103° F.
Clinical and other Notes

Chart 2.

Chart 3.

Chart 4.

Chart 5.

Chart 6.

Chart 7.
Clinical and other Notes

Typhoid ward. They were attacked within a short time of each other and were undoubtedly suffering from the same malady, yet the temperature curves are not much alike.

Chart No. 2.

This man had hyperæmia of the face and neck, but no mottling was noted, and no secondary rash.

Chart No. 3.

This is my own chart, and I am sure is a correct record. It is like neither No. 1 nor No. 2, but there is no doubt it was the same disease. The initial rash was in blotches of hyperæmia on the hands and face and the eruption, seen first on the hands, was mistaken for insect bites.

After eight days apyrexia there was a return of the blotchy rash for one day—the temperature, however, was only 99° F. Pains were severe and continued off and on for two months with gradually diminishing intensity.

Charts Nos. 4, 5, 6, 7 and 8.

These men were under treatment in the venereal ward, but their temperatures were not taken until they complained of sickness.
Clinical and other Notes

Charts Nos. 9, 10, 11 and 12.

These patients were admitted from barracks. The charts show the medial depression which has given rise to the term "saddle-back" as applied to temperature curves.

![Chart 12]

I have to thank Assistant-Surgeon E. S. Feegrade, I.M.S.D., and Assistant-Surgeon J. A. da Costa, I.M.S.D., for much valuable help in the study of the epidemic.

THE STERILIZATION OF SKIN AND WOUNDS.

By Captain Colin Clarke.

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The use of tincture of iodine for the preparation of the skin previous to operations is now very general. The results obtained are excellent.

In the following article I have ventured to bring to the notice of my brother officers my experience of a solution of mercury perchloride in methylated spirit, strength 1 in 500, as a skin and wound sterilizer. Both these drugs are contained in the field surgical panniers, and in many respects the spirituous solution of mercury perchloride is superior to tincture of iodine in surgical work. The perchloride of mercury is present in the form of tabloids, and the methylated spirit is provided for the sterilizer lamps.

Anyone who has worked much with tincture of iodine recognizes that there are certain inconveniences attached to its use.

Drawbacks of Iodine Solution.—(1) When the iodine solution is applied to a large area of skin, e.g., the abdomen, a very irritating vapour is given off as the solution dries, and this causes considerable annoyance to the operator and his assistant.