MEMORANDUM REGARDING ANTI-TYPHOID INOCULATION.

By CAPTAIN W. S. HARRISON.

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The vaccine which is used now is one modified according to the results of experiments made during the last year and a half, which aimed at finding out the cause of some of the irregular results recorded in the past, and at obtaining a more effective vaccine. This vaccine was used for the 17th Lancers. The results of the epidemic at Meerut among this regiment have all the force of a laboratory experiment, since the men who formed the test were all under the same conditions throughout. The statistics of this outbreak are already known, and they demonstrate conclusively that the vaccine as at present prepared does give a very large measure of protection against typhoid fever to those inoculated with it. The dose which is recommended at present is a quantity containing 500 million bacteria for the first dose and 1,000 million for the second dose; these are generally contained in 1 cc. and 2 cc. of fluid respectively (18 and 36 minims). It is absolutely essential that both doses be given, the second after an interval of ten clear days. (The only case among the inoculated in the Meerut epidemic occurred in a man who had refused the second dose.)

The clinical effects of the inoculation are much milder than was the case with the old vaccine. The site of inoculation becomes tender about three hours after the dose (which is best given about 4 p.m.); about seven hours after inoculation, the temperature will be found to be 100° to 101° F., but the corresponding malaise is not more marked than one gets with a moderately severe cold. The whole of the following day there is tenderness at the site of inoculation and some pain on walking, the local symptoms being much aggravated if the subject takes the very smallest quantities of alcohol. The day after, i.e., about thirty hours after inoculation, all symptoms have disappeared as a rule, except, perhaps, some tenderness on pressure over the site of puncture. Appetite is slightly impaired during the early part of the reaction, but there is no vomiting or diarrhoea, and headache, if present, is not severe. After the second dose the local reaction comes on more quickly and disappears more quickly also; as a rule there is but little general reaction with the second dose. In malarial subjects, at times, the inoculation has seemed to
induce an attack of ague, and it might be a useful thing in such cases to give a preliminary dose of quinine the day before to obviate this accident.

With regard to reducing the dose, the results of the observations made at Aldershot on inoculated men of the Royal Fusiliers, which were published in the *Journal of the Royal Army Medical Corps* (Leishman, Harrison, Smallman and Tulloch), showed that the dose which we recommend at present cannot be reduced without a corresponding reduction in the amount of protection afforded, and apart from this, the local symptoms which are chiefly complained of, are not appreciably less with even a quarter of the present dose.

As regards the duration of protection, I have found evidences of an increased quantity of protective substances in the blood up to six years after inoculation, but whether they would be in sufficient quantity at that period to actually protect a man against infection is not known as yet, so that for the present we recommend re-inoculation from time to time—say once in two years.

A sufficient quantity of antiseptic is added to the vaccine to prevent the growth of contaminating organisms, so that with reasonable care in use, a bottle need not be thrown away after taking out a dose or two. Any attempt, however, to sterilise a bottle of vaccine by boiling, as is done with fluids for ordinary hypodermic injection, would at once destroy its efficacy as a vaccine. I mention this because I have heard of a case where it was done. We do not know as yet how long after preparation a vaccine remains efficacious. It is effective for a year certainly, so that it would be desirable to get at one time no more than would suffice for a year's consumption, and it is also to be desired that some arrangements be made for preventing waste; on our part we are at present putting up the vaccine in bottles of various sizes with this end in view.

As regards syringes, the most convenient form is one holding 5 cc.; the Roux pattern syringe is, I think, the best for the purpose; the all-glass syringes are good, but the absence of the little wheel on the piston rod for regulating the dose is a great drawback, especially when one is inoculating a large number of men. In the matter of the usual explanatory lecture to the men, Colonel Leishman is at present revising his pamphlet containing suggestions and facts for these lectures. It is found that the number of volunteers depends very largely indeed on the officer
who gives the lecture: if he is personally prejudiced against inoculation there are no volunteers, and if he is half-hearted about it, there are very few indeed, which is what one would expect. On the other hand, under favourable circumstances, as many as 50 per cent. or more of the men have volunteered. So far we have sent no vaccine to India, except that supplied to Lieutenant Smallman and Lieutenant Luxmoore, and some which was put on board transports for use during the voyage.

We have already prepared a fair quantity of vaccine for India and will be able to supply an instalment, at any rate, of that required at once.

DOSAGE OF METALLIC MERCURY IN INTRAMUSCULAR TREATMENT OF SYPHILIS.

By BREVET-COLONEL F. J. LAMBKIN.
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In the "Final Report of the Advisory Board for Army Medical Services in the Treatment of Venereal Disease in the Army," reference is made to the standardised mercurial cream as suggested by me for use in intramuscular treatment of syphilis. In this Report the dose of the cream is laid down as \( \frac{1}{110} \) gr. (gr. 1/12 of mercury) per week.

With regard to the composition of this cream, I may say that I arrived at it as the result of experiments with various other preparations made by myself and the chemical examiner, Bombay, in 1903, and as to its dose, twenty years' experience of treating syphilis by intramuscular injections of mercury (metallic), taught me that for a long time I had been giving quite unconsciously large doses of the metal out of all proportion of what was actually required, and that with very much reduced doses I obtained as good, if not better, results, and, of course, with far less risk to the patient of salivation, &c. Hence, during later years, I have been gradually reducing the dose until I arrived at what I consider to be the maximum which is required, under most circumstances, to bring about the necessary reaction, viz., \( \frac{1}{110} \) gr. of the cream (gr. 1/12 of mercury) per week. I consider that this dose should seldom, or never, be exceeded, and I may add that, if anything, my tendency is to reduce this even lower. As it is outside patients, who are attending hospital for continuous treatment, receive only \( \frac{1}{110} \) gr. (gr. 1/12) per week.