lumbar segments of the cord. Major Jones states that this distribution of hyperesthesia is found in malaria and trench fever, and in no other disease. If these findings are confirmed it may be of great help in the diagnosis of these chronic conditions. A friend of mine often converses with some of these patients and apt sometimes to be considered as "lead swingers" or, at least, exaggerators, when they are really suffering from a definite and disabling condition.

The question of how long this chronic trench fever may last cannot yet be settled. The longest duration that I have yet noticed is a little over one year, but it is probable that it may go on for much longer than this. Patients are usually not very ill—only in low general health, with various pains—and they are soon transferrable to convalescent camps. The report of my sister. In the other ward each patient received a portion of germinated beans. In five days definite marked swelling and tendency to bleed, but there was no dental sepsis to delay healing. The hair follicles on the gums became aplastic with leucocytes; the gingival margins were friable, and marked swelling and tendency to bleed, but there was no dental sepsis to delay healing. The hair follicles on the gums became aplastic with leucocytes; the gingival margins were friable, and in many local lesions were limited to the gums and the dental caries and previous pyorrhoea alveolaris.

In the special wards 30 patients were treated throughout with lemon juice, and 27 with beans. Comparing them as regards severity of disease at the commencement of treatment, those treated with beans were, on the whole, slightly worse. The difference would be too small to mention, save that it justifies the definite statement that the bean cases were certainly as severe as the lemon cases. Comparing the results of treatment, 70-4 per cent. were cured within four weeks, as against 53-4 per cent. of those treated with lemon juice. These figures show the bean cases unduly, the slight difference being better expressed by the time taken for the gums to return to normal, which was 3-1 weeks for bean cases and 3-4 weeks for lemon cases.

In another series of 21 cases beans were not given until the patients had failed to make satisfactory progress after an average of four weeks' treatment in hospital by other means. These, although they had shown themselves rather refractory to ordinary treatment, all showed acceleration of progress when put on the beans, and in some the difference was very marked. For example:

II. Deductions from Consideration of the Rations upon which our Patients became Scurvy.

(a) Meat.—Of 125 cases of scurvy whose previous diet was investigated last year all had received a ration of frozen fresh meat practically every day. This year very few had received it less than three times a week. Fresh raw meat is known to contain a small amount of antiscorbutic vitamine. To what extent freezing and subsequent cooking are respectively responsible for the destruction of this vitamine remains uncertain, but it is obvious that between them they render meat practically useless as a source of antiscorbutic vitamine.
an antiscorbutic. In the case of tinned meat the vitamine seems to be completely destroyed by the temperature needed in the process of cooking. Hence meat-supplies of troops in the field must be regarded as totally devoid of antiscorbutic properties.

(b) Lime juice.—In the past lime juice had a well-deserved reputation as an antiscorbutic. The vast majority of the patients admitted to this hospital had never received a single dose. Three, however, were exceptions, having developed scurvy after taking a small quantity every day for a month. These become significant in conjunction with the fact that Dr. Chick and Miss Hume found by experiment that modern processes for destroying antiscorbutic properties in the lime juice even suggest that it would be unwise to place too much reliance upon modern supplies for prophylaxis. Probably, as suggested by Dr. Chick and Miss Hume, the lime vitamines are destroyed by modern methods of manufacture.

(c) Fresh fruit.—According to their own statements, not one of the patients admitted to this hospital had received any fresh fruit previous to admission to hospital. Oranges and lemons become available in the early spring, but even when a sufficient quantity can be obtained they are difficult to store and transport, owing to their bulk and perishable nature. This difficulty seems to have prevented them from reaching the troops at the front last year, and would operate to a like extent upon modern supplies for prophylaxis. Probably, as suggested by Dr. Chick and Miss Hume, the lime vitamines are destroyed by modern methods of manufacture.

(d) Vegetables.—In the last two winters the vitamins received by scorbutic patients before admission to hospital had been destroyed when the juice is made N/20, or N/50, alkaline and some of our patients mentioned above had received a small dose of lime juice every day, and the remaining three had received spinach every day. Now, onions, potatoes, and presumably spinach are very rich in antiscorbutic vitamine in the raw state. Granted that these men may have reached a serious stage of the disease before admission should have contained sufficient vitamine not merely to prevent scurvy but actually to cure it. Eleven of these had received "plenty" of onions daily, most of them having also had potatoes with rice twice a week and spinach twice a week. Two, in addition to the above, had also received a small dose of lime juice every day, and the remaining three had received spinach every day. Now, onions, potatoes, and presumably spinach are very rich in antiscorbutic vitamine in the raw state. The fact that they did develop scurvy on the above diets is difficult to explain except on the assumption that nearly all the antiscorbutic vitamine of the vegetables must have been destroyed in the process of cooking. This point is referred to later.

III.—Conclusions Regarding Preventive Measures for the Coming Winter.

(a) Preventive measures should be commenced not later than the end of November and should be continued through the whole winter. It is essential to remember that the occurrence of the first case of scurvy in an army does not necessarily mean the beginning of vitamine deficiency. There is a prescorbutic stage, comparable to the incubation period of infective disease, during which, although the troops may appear to be in excellent health, they are in reality far from physically fit. If the diet is not changed at this stage, the front line regiments were during the last two winters the duration of this stage probably varies between two and four months. Apart from the possible occurrence of clinical scurvy later on, so long as an army is in this prescorbutic stage it is necessary to ensure that every man be supplied with a daily allowance of vitamin A. This is the disadvantage is counterbalanced by the fact that the movement of troops is lessened during the winter.

In this country germinated pulses would only be required during the winter, and then only in small quantities necessitating the provision of some artificial heat to ensure germination. This disadvantage is counterbalanced by the fact that the movement of troops is lessened during the winter months.

The advantages of these dry seeds over other forms of fruit and vegetables, both for storage and transport, are obvious. Since they double in weight and bulk and require to be kept moist when germinated, this process should be carried out as near the site of consumption as possible, necessitating the provision of some artificial heat to ensure germination. This disadvantage is counterbalanced by the fact that the movement of troops is lessened during the winter months.

Should, however, a battalion be compelled to stay in the field for a month or more, it would not be difficult to supply it with pulses already germinated, since at most two hundredweight (100 kg.) per day would be needed for a thousand men, and this weight represents so much food transported as well as so much vitamine.

In the case of movements of local conditions and temporary needs and opportunities would have to be considered as they occurred, again always keeping in mind the fact that the supply need not be continuous for preventive purposes, and that these pulses provide their full value of food and vitamines, even when the supply of fresh air is limited.

As regards germination, the preliminary soaking for 24 hours can be done anywhere. For germination itself the essentials are moisture and protection against cold, but without the exclusion of air. The rate of germination varies with the temperature and the type of pulse. Seeds were not obtained here until too late to test them in cold weather, but, judging by the season at which peas and beans are sown in England, no cold short of definite freezing would arrest the action needed, though it would, of course, lengthen the time required for growth to take place. Hence, if facilities are lacking for keeping a supply in process of germination, the time taken must be shortened by the provision of artificial warmth.

The seeds and needing to be kept warm is very small. Allowing 2 oz. per man per day, a dosage which should be ample for prophylaxis, a day's supply for 1000 men could easily be accommodated in a space of 30 cubic feet. On an average of three days for soaking and germination this means that about 300 cubic feet would suffice to provide a continuous supply for 1000 men.

In Salonika during the three cold months, December (mean temperature 46° F.), January (mean temperature 42° F.), and February (mean temperature 45° F.), artificial warmth would be essential. For this a building or tent easily be a great advantage, but failing these the necessary warmth might still be obtained by means of a hotbed anywhere within reach of fresh horse or mule manure. During November, December and January (mean temperature 52° F.) and March (mean temperature 50° F.) germination could be carried out in the open without artificial warmth, provided that some protection were given at night and during spells of bad weather. A few boxes and some old sacking would provide all the protection needed.

The beans soften so much in the process of germination that ten minutes' boiling is ample to cook them fully. If crushed or pounded they can be eaten raw, but this should rarely be necessary unless the supply ran short.

Allowing for the fact that beans and food and lemons are not, the vitamines supplied by the former are really obtained almost free of cost. Even if no allowance is made for the food value of the beans, the cost of the vitamines supplied by lemons would still be only 60 per cent. of the cost when supplied by lemons.

General Conclusion.

The statement of Dr. Chick and Miss Hume that germinated pulses are richly endowed with antiscorbutic vitamines is amply confirmed by the fact that germinated beans were found quite as potent as raw lemon juice in the treatment of scurvy. Their suggestion that germinated pulses should be used for the prevention of scurvy is capable of practical application, and would be the easiest and cheapest method by which to prevent the occurrence of scurvy in an army in the field.

In the case of vegetables cooked in the Army manner the destruction of vitamine which takes place cannot be ascribed to the production of alkali.

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