wide-mouthed stoppered bottles properly sealed, which forms an ideal method of using it.

It is inaccurate to speak of the sterilization of the skin with tincture of iodine as the Continental method or to describe Grossich's solution as tincture of iodine, because his is a 10 per cent. solution of iodine in rectified spirit. It is almost identical in strength with our liquor iodi fort., which was formerly known as liniment of iodine. There is a very wide difference between that and the tincture. I would not use such a solution myself, and I do not believe any British surgeon would. I do not know if the skins of our countrymen are more tender than those of Continental inhabitants, but I am aware that a single painting with a strong solution (liq. iodi fort.) will produce acute dermatitis in many people. This is a condition no one would welcome in the region of a surgical wound, and for this reason, I expect, the method was not adopted in this country. It was not until after I had made my experiments with tincture of iodine and published my results that the method was adopted.

One surgeon wrote to me advocating a colourless solution because "it isn't so dirty." Surely stains are not dirty. As a matter of fact, I regard this staining as one of the important advantages of my method, because it defines the exact area of skin which has been sterilized. Previously we were at the mercy of a third person, and even if the duty was thoroughly performed—which I feel sure was mostly the case—we were unable to be certain where the boundaries were situated. If the surgeon's fingers become stained, the stain can easily be removed by washing them in a 3 per cent. solution of carbolic acid, or a $\frac{1}{2}$ per cent. solution of cyllin.

I have never seen any dermatitis result from the use of tincture of iodine. There is sometimes a limited amount of desquamation. My experience is in entire disagreement with an observer who states that it is unsafe to use it in young children. I have many times applied it to babies, some only a day old, and I have never seen any irritation from it.

A question has been raised as to the pain caused by its application. Applied to the unbroken skin there is no pain at all, but when it is painted on a cut surface it produces a smarting or burning sensation, which rapidly passes away. It is so slight that some young children submit to it without complaint. I have made very careful observations on this point, and I have also tried the effects upon myself.

It has been suggested that it is dangerous to use it over the abdomen for fear of damaging the viscera if they escape and come in contact with it. I have no such fear; indeed, it is my custom to allow coils of intestine, etc., to rest on the skin which has been sterilized with tincture of iodine, and I have never seen any ill effect. I regard it as superior to sterile towels or gauze, because there is always a possibility that the process of their preparation may not have been perfect.

I understand that some surgeons still insist upon a preliminary scrubbing and washing. This is not only unnecessary but positively harmful, and the same applies to a wet compress applied before the operation. They both cause swelling of the epithelial cells and prevent the tincture of iodine penetrating to the deeper layers of the skin. It causes the germs to be shut up in snug little nests, and as the skin dries they are able to infect the wound. It does not signify how dirty people's skins appear. They come in from the works begrimed with dirt, sometimes positively black, but surely we need not fear a little carbon. Skins which look clean may be far more dangerous from a surgical point of view. If a bath is desired it should be given twenty-four hours before the operation. It is not necessary, and in some instances it is a source of additional discomfort and anxiety.

Some think this method of sterilizing the skin is of little use, and it is true that, so far, there is little bacteriological proof to support it; but the clinical evidence is so overwhelming that it cannot be ignored.

Carbolic acid may be stronger, but it would hardly do to paint it on the skin; to use it in the wounds must cause a considerable amount of destruction and sloughing. I do not think many men would care to use pure carbolic acid on an ordinary lacerated wound of the forearm and I in 20 carbolic outside. It would be difficult to prevent the acid getting on to the skin and burning it, and although I to 50

carbolic may be as strong as tincture of iodine, it lacks the penetrating virtue of the iodine, while it possesses the disadvantage of swelling the epithelial cells and shutting in the germs.

Most surgeons continue to shave their patients; this, too, is quite unnecessary. If it is done it should be done dry, or the swelling of the epithelial cells already referred to will be produced. In head cases there is so much hair, and it so hampers procedure, that it is best to dry-shave it; but in other situations it is quite sufficient to clip the hair away with scissors along the line of proposed incision. This is done when the patient is under the anaesthetic. The preparation as a whole is repulsive, especially to women, and shaving the privates is more objected to than all the rest put together. In addition to this, when the hair is growing again it causes irritation which is at times intense. To avoid shaving is another great advantage of my method—perhaps far more important than some surgeons realize.

I am pleased to see that the method is being used to a large extent on the battlefields, and I feel confident that it will be of great value. In emergencies of all kinds it is most useful. There is no looking up of basins or bowls which may or may not be septic, no crying out for sterile water which, if procurable, may contain germs, no mixing of carbolic acid, no nailbrush, no scrubbing. The simple application of tincture of iodine gives far more security. The surgeon's hands can be sterilized in the same way. I do not advocate it as a routine because the skin might not stand an unlimited use of it, but when it is necessary to use the hands so soon that there is not time to prepare them properly, it can be adopted with confidence.

That tincture of iodine is an efficient application for sterilizing the skin I am confident, and I wish that those who use it would adopt the measures I have indicated. This would add to the efficiency of their technique and save their patients a considerable amount of discomfort.

TYPHUS FEVER IN PALESTINE, 1913-14.

BY

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OWING to the havoc now wrought by typhus fever in Serbia it cannot fail to be of interest to report the salient points of an epidemic of this disease in Palestine, 1913-14.

Typhus is a rare affection in Palestine, and occurs in smaller or larger epidemics in certain localities about every ten years, and many physicians in the European or American hospitals in Palestine and Syria have never seen the disease. It is, indeed, highly probable that the epidemic of 1913-14 was the most widespread that has occurred in recent years.

In the spring of 1913, at the English Mission Hospital, Jerusalem, we were astonished at the virulence of the affection which was revealed to us by an infected family admitted to our wards.

This group of patients demonstrated the comparative mildness of the disease in childhood and early youth, whilst the severer type was witnessed in the mother. From these cases a nurse and a middle-aged ward woman became infected; the former recovered after a veritable fight for life, while the latter died—our only death in a series of not fewer than 20 cases.

Subsequently children and adults, individuals from various large families in congested and uncongested districts, received treatment; in all cases of adult infection a critical and anxious period was passed.

After we had attended to about 15 cases there was a lull in the storm, till Hebron was swept with the disease, and the exodus from Abraham's city reminded one of Lot's flight from Sodom.

Again there was a decrease in the number of cases while the coast towns received their spell of the pest, till, in the spring of 1914, I saw a Nubian boy in his house suffering from a continuous fever which I could only then diagnose as typhoid (his skin was too black to see a rash). He was admitted to our hospital on the ninth day of the illness, and was put on sodium sulpho-carbolates, grs. xx, every four hours. On the twelfth or thirteenth day he had the crisis, and I fondly imagined that a typhoid fever had been aborted. A few days later, however, his nurse

was suddenly taken ill (the abrupt onset is a fact of great importance in the diagnosis of typhus fever). Her blood was negative on examination for malaria, and the profuse rash confirmed the diagnosis of typhus. As a test case, sodium sulpho-carbolates were given, and a most remarkably gradual lysis occurred, and, taking into account the nurse's age, the disease ran a comparatively mild course; the rash was fainter (another important matter in prognosis), the deafness was less, the typhus state was diminished, and the cardiac condition gave not the slightest anxiety. The patient was also given quinine, as an American observer had suggested.

The next two cases were equally instructive. Both had an accompanying bronchitis; both were over 40, one being about 65, and, remembering these conditions, we imagined that in all probability we would be unable to save these patients. Here, however, with quinine and sulpho-carbolates and, of course, other general and symptomatic treatment, we met with much less difficulty than the nature of the epidemic had suggested. In both cases the rash was non-haemorrhagic (in severer cases this was the rule), the temperature was lowered, and, particularly in the older patient, there was a lysis, the typhus state was not so severe as usual, and, in fact, in spite of severe bronchitis in the elder patient and an added pleurisy in the younger, both recovered; this was due to, in my opinion, the specific as well as the general treatment they had received. Of the last two cases one developed a lung abscess, which I operated upon with resultant cure, while the other contracted chronic bronchiectasis, which I was still treating when recalled from Turkey in September last.

From this epidemic the following are my conclusions:

1. The severity of the disease depends upon the age of the patient. Over 20 years of age the affection is much more severe, and is particularly dangerous over 30 or 35.

2. The severity of the disease depends also upon the hygienic surroundings of the patient. When the criminals in the Jerusalem prison took the disease the symptoms were especially pronounced. This was partially explained by the age of the men, but the feeding and nursing of such patients left everything to be desired, there being a lack of adequate air space (an exceedingly noteworthy aid to recovery), of stimulants, proper feeding, and a sufficient nursing staff. In America, on the other hand, the mild type of the disease seen is, according to American authors, largely to be attributed to hygienic surroundings.

3. The usual mortality of typhus has been variously estimated, in hospital cases at 20 per cent., other cases being more mild, at a considerably lower figure. In America the mortality is reported as even less than 1 per cent. (I quote from memory). On the other hand, in the Jerusalem prison, in about 180 patients there was a 50 per cent. death-rate. In Hebron the mortality was also high. Dr. Paterson of that city treated a number of cases of a prolonged type of the affection lasting several weeks. Our percentage at the Jerusalem Hospital was 5; this was of patients of all ages and both sexes, and could, I believe, have been reduced had we had our present knowledge of the disease.

4. Infection is supposed to be carried by the *Pediculus corporis*, and for that reason in my later cases I had the floors kept wet with carbolic lotion; nurses are by reason of their skirts more liable to attract the louse than doctors. Dr. Ussher of Van, it is reported, infected a young probationer, who nobly volunteered for the test, by means of a louse which had bitten a typhus patient. An extraordinary detail in the epidemic was the infection of single individuals of families which inhabited one room. This was by no means infrequent. Another incident was that of a man and wife. The former was living in Hebron, the latter in Jerusalem, twenty miles away. They had not seen each other for several weeks (though messengers and letters had passed from one to the other) when the wife was admitted to our hospital with typhus fever; when she was recovering, the husband was brought in from Hebron, having already been ill several days with the same affection, he being one of the first cases from that city. There had possibly been some means of infection from the wife; had a messenger carried the carrier about his person? In another instance the infection was from a mattress which had been disinfected and exposed for some days to the brilliant sunshine of Palestine. This mattress was then

unpicked to be remade. The man engaged on this work was attacked by the disease; he was treated in his own home by a Turkish doctor, without suitable nursing, and died.

5. With regard to treatment, good nursing is essential. A liberal supply of air space, fresh air, and, if possible, sunlight, are almost equally needed. Continuous sleeplessness must be combated with discretion and yet determination. Stimulants in the way of brandy and strychnine were used liberally during the days preceding the crisis, but digitalis is a drug to be avoided on account of the resultant contraction of the arterioles supplying the degenerated muscle fibres of the ventricles (Whitla). Where pulmonary affections existed, injections of camphor were of great value. Finally, quinine and sodium sulpho-carbolate are bactericides. The action of the latter drug in the blood stream seems to be unknown; undoubtedly, this combination modified the severity of the attack.

- I cannot conclude this section upon treatment without reference to the Health Bureau established under the patronage of the German Government in 1912, primarily for the purpose of investigating the two most important scourges of the country (namely, malaria and tuberculosis) under Professors Mühlens and Much. To this effort was given the full moral support of the Turkish Government, with the result that this bureau of health was invited to investigate and treat the outbreak of typhus in the Government gaol at Jerusalem. This group of workers, however, could not isolate the micro-organism causing the disease. Neo-salvarsan was extensively tried, but without effect. The mortality among the criminals was, as previously stated, 50 per cent. This prison outbreak also entailed the death of a devoted French Sister of Mercy, who heroically sacrificed her life nursing murderers, cut-throats, robbers, and other villains, under circumstances more disadvantageous, more disgusting, more unsatisfactory than civilization can imagine.

6. Complications. These are generally known; I merely note those I saw—cardiac degeneration, bronchitis, and pleurisy.

7. Sequelae: Osteomalacia, lung abscess, bronchiectasis.

8. The disease spread into Asia Minor in 1914, and has evidently now crossed the Bosphorus and reached Serbia and Austria.

9. The rash is reported not to extend on to the neck; it occasionally does so, though diffusely.

10. Rubber gloves should be worn by nurses when attending to patients, and should be pulled over the sleeves of the nursing gown worn.

THE ADMISSION OF MEN WITH GLASSES INTO THE ARMY.

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THE advisability or otherwise of permitting soldiers to wear glasses is at present engaging the attention of those with whom recruiting lies. It is a complex problem on which much can be said both for and against. It is, moreover, one which is dependent upon two main factors—namely, the supply of normally sighted men and the exigencies of active service, which interfere so greatly with the employment of glasses and their replacement when broken.

Although writing from the civilian aspect, I am not totally ignorant of the service aspect of the question, as, during the late Boer war, I acted as civil surgeon in charge of the ophthalmic work in North Camp, Aldershot, for over two years. The experience there gained has led me to the opinion that the provision of glasses would in many cases certainly outweigh the drawbacks, and that the military objection is commonly closely akin to the same spirit which permeated the civilians only a few years ago, and which even nowadays occasionally crops up.

In considering this question it is necessary to bear in mind that what the military require is a man absolutely sound in every respect, not only, be it remembered, to save trouble and expense when he goes sick, but to prevent him possessing any loophole whereby he can shirk his duties. For instance, many would-be recruits who present them-