

the things necessary to keep them in safety, in health, or comfort them in sickness? A thousand times, no! But their needs are colossal and must be paid for.

It is said by those who have good right to know, that if every individual in the Empire were to do their very best, the War would shortly be at an end. Our nurses have done well—let them do better. What sacrifice they can make, what self-denial they can practise, should be at once enforced. Such conduct will bring comfort and joy.

ON THE RECRUDESCENCE OF LOCAL SEPSIS IN COMPLETELY HEALED WOUNDS.

Mr. C. J. Bond, F.R.C.S., Hon. Colonel R.A.M.C. (T.), writes in the *British Medical Journal*:—

There are reasons for thinking that cases are occurring in the military hospitals in the country in which some slight surgical interference—for instance, an incision for the removal of a piece of shrapnel under strict antiseptic conditions—has re-lighted a violent local reaction in the neighbourhood of a recently healed wound. Further, I have records of several cases under different surgeons in which, after all incisions and sinuses round a compound fracture involving the elbow or hip or other joint had completely healed, even such a simple procedure as passive movement of the joint under an anæsthetic has lighted up quite a violent reaction, the reappearance of the old sepsis, and the formation of local abscesses, although no incision was made nor any solution of skin surface produced.

Struck by the frequent absence in many cases of guiding signs, either local in the condition of the tissues, or general in the condition of the patient, which can be relied on as accurate indications that the original septic process has quite died down, and that all pathogenic organisms in the neighbourhood of the fracture and along the track of the wound have been completely killed off in any given case, we have lately tested this point in some cases by dropping the piece of shrapnel or the fragment of bone removed at the time of operation directly into a culture tube, and I hope to record these results on a subsequent occasion. I wish now, however, to express the opinion that if observations on these lines were carried out by surgeons on an extended scale as a routine procedure, valuable information would probably be obtained on some points in the life-histories of pathogenic organisms in their relation to the

body tissues which are now obscure. For instance, we want to know more about the conditions under which pyogenic organisms can dig themselves into the tissues and remain quiescent in sheltered situations without causing any local or general symptoms and without losing their virulence, just as the malaria organism is supposed to bury itself in the bone marrow or the tubercle bacillus to become encapsuled in a lymph gland.

To what extent is the capacity of such organisms to remain alive and virulent the result of the formation of the barrier of fibrous or granulation tissue which surrounds them, or is it aided by the concomitant presence of a foreign body or some devitalized piece of tissue—for example, a fragment of bone—within the uneven surfaces of which the cocci can more readily defend themselves against phagocytic action?

Is the time interval of essential importance, and, if so, how long after the complete healing of a wound under ordinary conditions may we suppose that the cocci or bacteria which caused the original sepsis can retain their virulence and their capacity for renewed activity?

How does the surgical interference, the incision, or the passive movement under an anæsthetic bring about the renewed activity of the organisms and the reappearance of the local sepsis? For it is quite clear that this result is due to the lighting up of the activity of organisms already present in the tissues, and not to the introduction of a fresh infection. The fact that passive movement without skin incision can bring about the result is conclusive evidence on this point.

Does the fresh mechanical injury operate by breaking through encapsulating barriers of tissue cells or by lacerating capillaries or lymphatics plugged with the cocci or their spores? Such suggestions seem only partially adequate to explain what happens. For, although the injury may set free the organisms, it also causes a re-flushing of the local area with blood serum, and this might be expected to inhibit the growth of any organisms liberated amongst tissues which have themselves recently experienced and recently recovered from infection, and which should therefore have acquired some degree of immunity against subsequent attack.

The routine examination of the cultural characters of the re-activated organisms and a comparison between these and the characters of the original infection would probably throw light on this problem.

Meanwhile, some highly practical questions also arise. It would, for instance, seem desir-

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