SOME OBSERVATIONS UPON THE WORK OF A MOBILE SURGICAL TEAM.

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These observations are based upon experience gained as a surgeon, in charge of a surgical team, sent from a Base Hospital and temporarily attached to a Casualty Clearing Station in Belgium, which carried out its work during the retreat from Flanders.

The Nature of the Cases Best Treated in a C.C.S.

These can be considered in three categories. Firstly, those cases of great urgency, e.g., severe haemorrhage, recent wounds of the chest and abdomen which require treatment to save life, and recent compound fractures which require immediate treatment to prevent infection and so to diminish the period of convalescence. Secondly, abdominal wounds of forty-eight hours standing or longer with established peritonitis, and compound fractures and wounds admitted long after they had been sustained which were obviously heavily infected. Thirdly, the comparatively minor wounds which were nearly always inflicted by high explosives and were therefore either actually or potentially infected. Cases in the first and third categories clearly needed treatment in the C.C.S., either on account of their urgency or, in the minor wounds, to enable them to be restored to their units as fighting members with the least possible delay. With regard to those cases falling in the second category, towards the latter part of our stay in Flanders it was felt that it would have been a sounder policy to have evacuated them direct to the base on the count that the abdominal wounds were already the seat of peritonitis, that reparative surgery had little place and that the only hope for them lay in the possibility of the infection becoming localized; the infected fractures being already immobilized on splints and successfully combating the infection by natural means would have been better treated at the base in order to avoid transport after proper treatment had been instituted. Wide excision of such wounds with fixation in plaster of Paris as advocated by Trueta was not used because the wounds were several days old, the infection was localized and because evacuation to the base was usually carried out on the following day or at the longest on the second day and it was thought that the use of a complete plaster cast after such a wide excision in a patient who was to be removed from a surgeon's care for an indefinite number of days was fraught with danger. At the outset much time was spent on both varieties of case in this second category (particularly on the abdominal wounds), and, as the concentration of wounded was such that many of the minor wounds could only receive treatment after a considerable wait, which unfortunately
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resulted in some of them developing gas gangrene, it was felt that if the minor cases had been given priority not only would their convalescence have been shortened but in some of them both life and limb would have been saved. The rapid evacuation of the cases was the controlling factor in deciding the line of treatment which was taken in all the patients.

The Infected Wound and the Incidence of Gas Gangrene.

In the large lacerated wound, due to high explosives, rapid infection with disintegration and a foul discharge was the rule. In some cases this condition was difficult to differentiate from gas gangrene until after the toilet of the wound: the absence of the characteristic odour of gas gangrene was notable. In one or two instances very extensive wounds of this nature had been labelled gas gangrene on admission, and in view of this diagnosis and the site of the injury precluding surgical intervention they were considered to be beyond the help of the surgeon. When the dressings in these particular cases were renewed two or three days later it was obvious that the diagnosis of gas gangrene was incorrect.

A sulphanilamide pack, after the excision of the wound, was used in one or two patients where the site of the wound was such as to make amputation impossible and in one patient with a wound of the groin, who had been retained in the C.C.S. for three days, gas gangrene did not develop although in this same patient one arm had been amputated for a condition which, clinically, was undoubtedly fully developed gas gangrene. In view, however, of the difficulty in differentiating true early gas gangrene in these grossly infected wounds, it was felt that this case could not be adduced as proof that the sulphanilamide pack had prevented the development of this complication.

It was our misfortune in the latter part of our stay in a certain hospital where the lack of water and of light, and the fact that work had to be carried out in cellars (where proper sanitation was impossible) owing to the incessant enemy air attacks, to be faced with the difficulty of dealing with several cases of gas gangrene after our supplies of serum and sulphanilamide had been exhausted and amputation was no longer feasible. Even under these conditions, however, it was interesting to note that there was apparently no cross infection from one patient to another although the stench in these underground compartments called to one's mind the descriptions of the hospital wards in the pre-Listerian era when hospital gangrene was rife.

Wounds of the Chest and Abdomen.

Without exception all wounds which had pierced the pleura that were brought in for treatment were bullet wounds and had been admitted soon after their infliction because presumably those men who were unable to be brought in early and had an open chest wound had died. The use of positive pressure oxygen followed by gas anaesthesia produced dramatic
recovery even in desperately ill patients, which recovery was maintained once the holes in the chest wall had been effectively closed. This type of case clearly requires treatment at a C.C.S.

Most of the abdominal injuries seen at the C.C.S. already exhibited peritonitis as they were of forty-eight hours standing at least and little help could be given to them. On the other hand gunshot wounds of the abdomen, principally in aviators, could be satisfactorily dealt with and again called for the presence of a C.C.S. It was particularly notable how very few of these cases required gut resection and although multiple perforations of the bowel were seen most of them could be safely invaginated and stitched. The high incidence of abdominal injury which attended wounds of the buttock was particularly striking. As in several of these cases the wounds were apparently mild ones and as the possibility of penetration of the abdomen had presumably not been foreseen, it was found that by the time they were admitted to the C.C.S. peritonitis had already established itself.

INJURIES OF THE HEAD.

It was found that injuries of the head could be divided into three categories, namely, the minor scalp wound, the penetrating wound and the depressed fracture with hernia cerebri. Beyond toilet of the wound in the last group no treatment was carried out and it was felt that these cases would have been better evacuated direct to the base. The minor scalp wound was adequately treated in the field ambulance and could also have been evacuated direct to the base. Of the remainder, in whom an operation of any extent was required, it was thought that the conditions and the equipment of a C.C.S. were hardly adequate to deal with such cases and moreover it seemed hardly justifiable to expend as much time on one case as the technique of the modern cerebral surgeon demands when so large a number of men urgently required assistance. Surely direct evacuation to the base for treatment by a neuro-surgical specialist with the resources of a base hospital would have been the best course.

THE USE OF STORED BLOOD AND PLASMA.

Too high a commendation cannot be given of the excellent work carried out in the resuscitation ward with the use of stored blood as supplied by the blood transfusion service whose apparatus proved to be most effective. It must have saved many lives and have rendered operative treatment so much less hazardous for the patient than it would otherwise have been. Stored blood was used for all cases of severe hemorrhage and for pre-operative shock. At first further transfusions were given for post-operative shock but later, except in those cases which were definitely deficient in blood, post-operative shock was combated by the use of plasma with very satisfactory results. On no occasion was any untoward reaction from the use of either stored blood or plasma noted.
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THE USE OF INTRAVENOUS ANÆSTHESIA.

For those cases with minor wounds or in whom surgical procedures were neither lengthy nor extensive pentothal proved a wholly admirable anaesthetic but its use was entirely contra-indicated in the case of shock. In these cases the lowering of the blood-pressure attendant upon its use was such that serious and most dangerous collapse supervened. The intravenous anaesthetic so widely adopted by the French surgeons was narcomunal which appeared to give as effective an anaesthesia as pentothal of perhaps a rather longer duration and, according to its advocates, was almost devoid of toxic properties. As the product was not available for use in the C.C.S. a strict comparison of the two drugs could not be carried out.

CONCLUSION.

It is urged that patients already infected, owing to the length of time elapsing before their admission and also the large majority of head injuries, would lose nothing by direct evacuation to the base whilst such a procedure would lighten the load upon the C.C.S. considerably.