now ready to be applied to either arm. Two tapes, passing through the first two staples on the bar and tied under the opposite axilla, serve to keep the shoulder curve in place. Extension of the lower fragment is effected by tapes, attached to a circular band, tied under the extension bar. The forearm is supported by a sling, and lies across the chest as shown in fig. 2.

In conclusion, I wish to point out again the ease with which the splint may be obtained, and the comfort given to the patient. My excuse for describing this splint is that, having failed to make these patients comfortable by any other splint at present in vogue, it has seemed worth while to induce other surgeons to make use of the "basket" splint.

Note by Colonel Cuthbert Wallace.—I have seen several cases treated by this splint. It is easy to apply, efficient and comfortable.

RADIOGRAPHY IN GUNSHOT WOUNDS OF THE SKULL.

By Captain Geo. Villandré.
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Head wounds in which the cranium is involved may be divided into two classes: those in which the foreign body penetrates the skull and lodges in the brain, and those in which the foreign body damages only the outer or inner table, but either glances off the bone or perforates the skull from side to side, the outlook being darkened in proportion to the damage done by the missile in its track.

From the many cases one has seen, the prognosis must be worse when the foreign body lodges in the brain. Firstly, because of the sepsis entailed and its sequela of deep-seated abscess; secondly, because of the irritating presence of the missile; and thirdly, because of the trauma necessarily caused by the surgeon in his search for its removal, besides the primary disintegration of nerve cells and fibres in its path.

The undertaking of the operation of trephining should not be lightly done, and only the experienced surgeon has a right to do so. Much more care and skill are required when opening of the dura is necessary, and here I would emphasize the point that when within reach of an X-ray apparatus and competent radiographer, no operation should take place on a skull which has not been previously radiographed to ascertain the presence or absence of a foreign body, and its careful localization.

To trephine a skull for a depressed fracture the clinical signs of which are obvious or even urgent, without first ascertaining the presence or absence of a missile (again where the case is within reasonable reach of the X-rays), does not seem to be rational. The relief of decompression may be sought and had within a few hours; but if the patient still has a bullet or a piece of shrapnel in his brain, is the future prognosis really
improved? I think not, and even if it were, I maintain that the patient should be radiographed first, so as to avoid a second operation.

We must all recognize the seriousness of trephining in war surgery. To my mind it is often like opening the portals of death. Therefore to have to reopen a skull for the removal of the missile is courting death a second time.

We must all come to the conclusion that in all cases—with perhaps a few remote exceptions—a patient with a bullet or shrapnel in his brain will die of cerebral abscess within six months. This teaching is certainly most emphatic on this side of the Channel, and I have it on eminent authority. The only exception which might be allowed is that in which the bullet is not distorted through a previous ricochet, and in all probability aseptic. The first point may be ascertained by X-rays. Who will swear to the second? Further, owing to the softness of brain matter (especially when damaged), bullets, because of their weight, have a tendency to gravitate, and their path must mean further damage.

Since writing the above the following case arrived. This patient was previously trephined at a field hospital before admission to hospital, where he was X-rayed and found to have a trephined hole in the frontal bone, a linear crack posterior to the petrous bone, and a depressed fracture with shrapnel and bony fragments. These were located at a depth of one and a half inches, and removed by Lieutenant T. Twistington Higgins.

Whilst fully convinced of the importance of radiography previous to operation in skull cases, one must not forget that even a good skiagram may be negative when the clinical symptoms point to the presence of a depressed fracture, which may be small or at the base. This apparent failure of the X-rays is still more obvious in the presence of a small linear crack or fissure, although I have often been able to show this. Although the small fracture may escape detection radiographically, the presence or absence of a foreign body will always be determined, and the clinical signs should outweigh a negative skiagram in the guidance of the surgeon.

Furthermore, as a rule the damage to the skull is more extensive than shown on the skiagram; this being probably due to the incidence of the rays on a round body. A straight pencil of rays will tend to convert a cylindrical object into an elliptical image, if striking that cylindrical laterally, and the ellipse will vary with the angle of incidence.

I may, in what follows, be jumping to too early conclusions, but I have been forcibly impressed in the operating theatre, and in the wards, following many head cases previously radiographed, by the fact that skulls with long comminuted fractures and no foreign body being present, skulls in which even depression was great, seemed to do well. Such a case is that of Captain Nash-Wortham's, which I have asked him to publish. To put it briefly: in spite of the great damage done to the vault, the extensive comminution, the depression of the
fragments and ablation of bone, this man did well, and went home to England, smoking and happy.

Another is that of Mr. T. T. Higgins's, which in spite of a depressed comminuted fracture and a long crack extending some two-thirds of the length of the vault, did well.

I know of several others, and have been impressed by the connection of extensive fracture and good recovery. Thinking over the matter, does this point to the fact that long fractures are more efficient in relieving pressure than localized small trephining of one inch or so in diameter? Is a widespread decompression of a certain degree more efficient than decompression of a greater degree in a smaller area? Some surgeons, of course, remove a large piece of the vault where others would be satisfied in making a small trephine hole, but in the first case the bone is removed over the large area decompressed.

In the cases I am thinking of, the bone remains in situ, being only lifted through intracranial pressure. The natural juxtaposition of the bone to the dura, and of the latter to the grey matter, persists to a great extent, and this must lead to success. It must tend to prevent hernia cerebri and its sequelæ of brain destruction and sepsis. The blood supply of the parts must remain nearly normal.

One wonders whether the lifting of a large area of bone and its replacing after the necessary cleaning of clot, and removal of loose bodies, whether metallic or bony, are not to be preferred to the ordinary trephining and removal of bone by rongeur. In the case first mentioned the best part of the fronto-parietal skull could be lifted up at will. One must think of future callus entailing further compression: but do not many fractured skulls do well, and go through life without further symptoms, except some slight headache—skulls untouched by the surgeon?

May I add that in most skull cases where localization was necessary we found that two plates giving respectively a lateral and an antero-posterior view were always satisfactory. But careful measurement should be taken. The rounding of the cranium may otherwise lead one into error, as I was myself in a case where the small piece of shrapnel which appeared to be lodged well into the frontal lobe was in reality lying on the bone.