account of difficulties arising under these headings argues a lack of prearrangement and practice. There are two common causes of failure to get the screws to hold well, and I mention them because they are not as well known as the others. One is that the hole in the plate is not strictly concentric with the hole in the bone; in this case the screw enters with difficulty, and if much strain is thrown on it it may break off. The other common cause is that the screw is tightened too much; in this case it acts as a cutter, and removes the thread in the bone. This makes it loose just as if the hole had been too large from the start, and though the hold may be useful against movements in the plane of the plate, it is useless against movements in the direction of the axis of the screw. In these ways useful positions may be sacrificed, and in a difficult case no others may be obtainable. Again, if the screw is over-tightened much strain is thrown on the bone, pressure atrophy occurs and the screw quickly works loose. This probably in part explains those cases in which, apart from sepsis, the screws, though tight at the conclusion of the operation, are found to be loose when the plate is removed. To estimate by the feel of the screwdriver that the correct position has been attained and the correct degree of tightening ensured is an art that comes most readily to those who are used to working in hard wood, bone, and ivory. Hey Groves¹ mentions that Lambotte pointed out that the hold obtained in the bone by the thread of a screw used for metal work has a distinct advantage over the hold obtained by the thread of a screw used for wood. The tap-screw suggested by O'Neill Sherman² is a simple way of employing the metal work screw. I show to-night a section through each kind of screw cut from a bone after inserting the screws, and you see the advantage of the metal work thread as regards the hold obtained. One small point may be mentioned as its use is not generally known. To steady the shaft of a bone lying fully exposed in the wound one can place it under a broad band made of flexible sheet metal. This sometimes enables drilling and screwing to be done with great ease in an otherwise difficult case. For the sake of speed and accuracy some kind of geared drill is used. Some of those on the market do not allow of the point being kept steady while the handle is turned. By massing the chief weight one-third of the distance along from the handle to the point and by having the handle relatively heavy and arranged vertically, the instrument can be made to conform to the laws of dynamics and the point of the drill is steadied. Most will agree that the small fly-screw so often present in these instruments may catch in the tissues in a difficult case and so prevent the drill from revolving.

As to the use of splints. It seems to be agreed that external splints are necessary, certainly in difficult cases or where the screws do not hold well. They impede massage and movement, and their removal and reapplication twice a day is apt to be tedious. It seems to me that a better result is obtained by using a moulded splint thinly padded than by using a straight splint thickly padded. In the case of the leg, diminution of pain and muscular spasm, and greater ease in nursing are obtained by swinging the splint, which is shaped so that the leg is slightly flexed at the knee. In the case of a compound fracture the dressing is done without letting down the limb, so that any movements due to pain are at once taken up by the swing, and the site of fracture is not jarred. The patient can also turn partly on his side to sleep without risk of the thigh rotating relatively to the leg in the sleeve of strapping or bandage. There seems to be less after-stiffness of the knee when the joint is kept bent than when it is kept on a straight splint. In an aseptic case, after the stitches have been removed, the "Croft" or "Bavarian" splint has so many advantages that its use is becoming general. The ease with which it is made and the simplicity of its removal and reapplication make its use ideal in these cases when massage is employed or x-ray photographs have to be taken.

In conclusion, I must thank you for having given me such a patient hearing during the reading of a somewhat technical paper.

REFERENCES.

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NOTE ON HAEMOSTASIS BY APPLICATION OF LIVING TISSUE.

BY

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MANY years ago, acting on a hint obtained from Magendie's *Physiologie*, I showed that it is very easy to arrest bleeding from bone by the use of an aseptic plastic wax which can adhere to the cancellous spaces and to their walls. This method is now, I believe, in general use.

On the other hand, it is difficult to stop bleeding and haemorrhagic oozing from soft tissues except by the employment of a ligature, or pressure with a gauze tampon, or by irrigation with hot liquid (110° F. to 115° F.). For a long time I employed amadou for this purpose in experimental investigations where a sepsis was not required, and with good results, as it adhered well to the bleeding point. To obtain, however, the same result in aseptic operations is not so simple. The factors which had to be obtained were:

1. Asepticity.
2. Adhesiveness.
3. Thrombokinesis.

In view of my personal experience of the work of the late Dr. Wooldridge, it occurred to me that probably the best material would be living vascular tissue—that from the (injured) surface of a cut fragment of muscle, in all probability, thrombokinetical processes would most readily start; not merely on account of the plasma and plasmatic corpuscles of the tissue, but also the thrombokinetical by-products in the effused blood and the development of so-called blood platelets.

Such a fragment of the animal's own muscle offered all these advantages, and also asepticity. I was rather surprised to find that the necessary factor of adherence was also satisfied in a very remarkable degree.

If the bleeding point—for example, from the cut surface of the brain, liver, or any soft tissue—be gently pressed with gauze, and this instantly replaced by a piece of living muscle, and pressure again applied from fifteen to twenty seconds, it will be found that the muscle fragment closely adheres to the tissue it is applied to.

Such adhesion is necessarily limited by the pressure at which the blood is escaping from the bleeding point. By direct experiment on divided arteries (including the aorta) in the cat and dog, I found that a muscle haemostasis would resist as much as 60 to 80 mm. Hg blood pressure.

Further histological investigation of the exceedingly thin viscous layer occupying the plane of contact of the two masses of tissue shows that it contains blood platelets, fibrin fibrils, etc., in a considerable degree, and within a short space of time (five to ten minutes) of commencing the preparation.

To estimate the degree of active thrombokinesis I also tested the utility of the muscle after it had been boiled for five minutes at 100° C. Such boiled tissue had a very poor haemostatic effect. It seemed as if this was partly owing to the great loss of adhesiveness which is caused by the heat coagulation completely altering the physical surface of the muscle tissue.

Of other tissues I have only exhaustively tried fascia fully, and with the result that it has not proved satisfactory. It has not the factor of adhesiveness sufficiently well marked, though it can be employed where it is not convenient to take a piece of muscle. When experimental research had shown the remarkably rapid haemostatic effect of living tissue I used it freely in operations—above all, where it was necessary and convenient to leave a resting plug or tampon in a wound. Where an operation has been performed in two stages, I have occasionally had the opportunity of examining the isolated muscle tissue, and found it firmly attached and "organized." In no instance has any ill effect followed its employment.

At a meeting of the Society for the Study of Inebriety, to be held in the rooms of the Medical Society of London, Chandos Street, Cavendish Square, on Tuesday, July 14th, at 4 p.m., a discussion on "Proposed Legislation for Inebriates" will be opened by Dr. J. W. Astley Cooper, Resident Physician of the Ghyllwood Sanatorium and Retreat for Inebriate Patients.