

or region of the country to provide every member of its community with skilled service in time of illness or accident, whether that service is in the field of anaesthesia, of medicine, of pathology, of surgery, of radiology, or of obstetrics. Such an ideal can only be attained in the case of anaesthesia when three conditions have been satisfied: (a) the specialty has been recognized as one requiring postgraduate study; (b) there are schools where such study can be pursued under expert supervision; and (c) anaesthetist services have been organized in such a way that every member of the community can have as much confidence in his anaesthetist as he has in his surgeon—and, may I add, each surgeon has as much confidence in his anaesthetist as in himself!

Lord Nuffield established the first University Chair and department of anaesthetics in this country in the hope that this branch of medicine would soon receive its legitimate share of public and professional recognition. The department over which Professor Macintosh presides will continue to give admirable postgraduate training to qualified practitioners who desire to specialize in anaesthesia, but other departments of the same kind are necessary to meet the demands of the country as a whole. In Lord Nuffield's Provincial Hospitals Trust there is the seed of a regional organization under which the public may be assured of competent anaesthetization and the anaesthetist of the recognition as well as of the wage he deserves.—I am, etc.,

Oxford, Sept. 30.

E. FARQUHAR BUZZARD.

SIR.—Dr. John Elam's little satiric letter (September 14, p. 368) prompts an obvious correction. Cambridge needs no defence, but to contrast her unfavourably with Oxford in this matter is to show oneself lamentably ignorant of the facts. Oxford is so lucky as to have a wealthy benefactor, part of whose magnificent donation is earmarked for anaesthetics. Cambridge, in the absence of similar help, has to concentrate on the practical proposition of providing good anaesthetists for the patients at Addenbrooke's.—I am, etc.,

Isleworth, Middlesex, Oct. 1.

J. BLOMFIELD.

SIR.—Dr. John Elam should have known better than to use satire in a letter to a serious professional journal. Had he forgotten the fate of Samuel Butler at the hands of the Christians?

The sequel has been sad. Shades of the mandragora-root have been conjured from Cornish caves as dubious allies in his cause; while his true friends turn to rend him in fierce righteousness. What could be expected when one did not know which side he was playing for?

The curious arguments put forward by the staff at Addenbrooke's Hospital (September 28, p. 429) merit the attention of the General Medical Council. It will be agreed readily that a nurse with six months' training in the administration of anaesthetics may be more experienced in that subject than a newly qualified medical practitioner whose education has been neglected. Unfortunately the same can be made to apply to any branch of medicine.

When Cambridge again leads the way by the recognition of nurse psychologists, nurse ophthalmologists, nurse paediatricians, etc.—under qualified supervision, of course—the tedious formalities at present devoted to these subjects in the medical curriculum will have become superfluous.—I am, etc.,

London, N.W.9, Sept. 28.

A. T. RODEN.

SIR.—The art of the anaesthetist consists in the choice of the most suitable agent and the best method of its administration in each individual case, thus ensuring the greatest facilities for the surgeon's operation and the maximum degree of safety for the patient during and after operation. It seems difficult to understand how this ideal can be attained unless the anaesthetist has the medical training enabling him to examine the patient before operation, and to have some appreciation of the nature of the surgical condition calling for intervention—also of any medical complications present likely to be aggravated by the efforts of the surgeon or anaesthetist. The assessment of operation risks is the duty of the anaesthetist as well as the surgeon.

The employment of nurse anaesthetists may be a wartime necessity, but should never be a peacetime institution.—I am, etc.,

London, N.W.2, Oct. 3.

RAYMOND E. APPERLY.

Tuberculosis of the Knee-joint in Adults

SIR.—I have read with great interest Dr. L. A. Key's article (September 28, p. 408), with its careful analysis of the cases of tuberculosis of the knee-joint treated at St. Luke's Hospital, Lowestoft. His findings on a large scale correspond to those in my smaller material in the Dorset and Somerset C.C. Hospitals, and they justify the policy now adopted by most British orthopaedic surgeons—that is, to attempt to induce permanent and relatively early healing by open operation in the form of an arthrodesis, which aims at bony union between femur and tibia. What is not easy to decide is the exact moment when the patient will best stand the disturbance of an operation. Theoretically one should wait until quiescence of the local lesion has been obtained and a good state of general health, but there are no absolute tests of either of these factors, while, as Dr. Key points out, a certain number of patients fail to show much improvement in nutrition, or colour, or sedimentation rate under the best conservative treatment.

It is for such cases that I would recommend a simple procedure which in my hands has produced bony ankylosis and healing in patients whose lung complications made the tuberculosis officers condemn them as unsuitable for general anaesthesia, or in whom the presence of multiple sinuses made it undesirable to open tissues widely.

The operation was described before the Section of Orthopaedics of the Royal Society of Medicine in December, 1939 (*Proc. roy. Soc. Med.*, 1940, **33**, 149), but seems not widely known yet. It consists in making drill-holes in the bones of the knee-joint. This is done through a small skin puncture over the inner condyle of the tibia, passing first an awl and then a very narrow gouge across the joint interval in as many directions as is convenient, rotating the instrument so as to chew up small sections of bone. The principle is to release osteoblasts into the articular cartilage and synovia at a number of points, so that ossification may occur in the joint, as it does in the late stages of osteo-arthritis but so seldom does spontaneously in tuberculosis. Usually the operation is done with the limb lying in a plaster shell, prepared some time previously, so as to disturb the limb as little as possible during and after operation. If a small degree of deformity is present, this can be corrected about three weeks later, when soft callus has bridged the bones, and a close-fitting plaster can be applied for walking, provided no signs of active tuberculosis remain. If bony union should fail to occur one still has the possibility of carrying out the classical erosion operation; but one has tested the patient's liability to "flare-up" on a small scale, and usually his general health improves markedly after this simple operation, while local pain subsides.—I am, etc.,

Bath, Sept. 30.

M. FORRESTER-BROWN, M.S., M.D.

SIR.—In regard to the operative treatment of this condition described in Dr. L. A. Key's instructive paper (September 28, p. 408), I think that the operation of excision and arthrodesis of the knee for tuberculosis requires considerable attention to detail if success is to be assured. The operation of arthrodesis of the knee-joint need not be difficult when it is performed for a condition such as osteo-arthritis or injury, because in these cases the removal of the articular surfaces can be done without dividing the collateral or cruciate ligaments. Coaptation of the ends of the bone presents no difficulty, therefore, in these cases. In excision and arthrodesis of the knee-joint for tuberculosis, however, the restraining ligaments are divided, the bone-ends are sawn across, and it is not a matter of ease and certainty to obtain coaptation, in my opinion, unless precise methods are employed to do so.

A horse-shoe-shaped incision is used which begins over the most prominent part of one condyle of the femur and sweeps distally and then across the lower part of the infrapatellar tendon, curving upwards again to reach the prominence of the opposite femoral condyle. The incision is deepened to divide the quadriceps expansions and infrapatellar tendon. The joint is opened freely, the flap retracted upwards, and the knee flexed, exposing the whole of the anterior compartment of the knee. The collateral ligaments and cruciate ligaments are divided. The suprapatellar pouch, all the diseased synovial membrane and diseased tissue are removed, including the menisci. The tibia is drawn forwards by an assistant and its articular

extremity sawn across parallel to the plane of the joint, removing about a quarter of an inch of bone. A narrow spatula is placed posteriorly to protect the structures at the back of the joint while the cut is being made. An additional safeguard is provided by completing the final part of the division by using the saw as a lever. The femur is now sawn across parallel to the plane of the joint, and not at right angles to the shaft of the bone. This is a part of the operation in which great care must be exercised, to avoid subsequent genu varum, genu valgum, genu recurvatum, or too much flexion. If the first saw-cut of the femur is wrong it is quite likely that a second attempt may be unsuccessful and thus needless sacrifice of bone made. It is well to practise this cut on an anatomical specimen. About a quarter of an inch of the bone is removed, and the aim is to obtain accurate fitment of the bones in the extended position of the limb. Areas of bone disease exposed by the cuts are curetted and the cartilage of the patella removed. Free access is now obtainable to the back of the joint, and it is at this stage that careful removal of the synovial membrane is effected there, the bursal connexions being followed up and curetted. The bursae may be overlooked. Pressure by a hand at the back of the knee empties them of caseous material, and thus their entrances are made visible.

The tibia and femur are now apposed by the surgeon himself, and the assistant inserts two excision pins driven obliquely into the femur through the two tuberosities of the tibia. This part of the operation is not easy to accomplish with certainty. It is of considerable assistance to apply a shaped sterilized aluminium splint, previously prepared, to the back of the limb, extending from the middle of the thigh to the middle of the calf. It is covered with sterile gauze. The splint is applied to the limb, the tibia and femur reduced upon it, and the surgeon grasps the splint and limb above and below the knee while the pins are being driven into position. All this can be done under direct vision, and it is important that the driving of the pins should not open up a gap between the ends of the bones. The heads of the nails are not driven closely up to the skin; about half an inch of the pins is left projecting and treated with bipp. The surgeon never moves his hands in his grasp of the limb and splint during these stages, nor until the finished retentive appliance has been put on. The assistant closes the wound by interrupted catgut stitches for the infrapatellar tendon and quadriceps expansions. The skin is closed by interrupted silkworm-gut sutures, and no drain is required. If sterile gauze is used as a roller bandage it must be applied by its own weight. If the turns are pulled upon to try and produce a compression effect the venous circulation is interfered with and the patient suffers considerable pain. Sterile cotton-wool is applied from the toes to the lower chest and retained with broad sterile domette bandages. These may be applied with moderately firm compression round the limb. A plaster-of-Paris casing is applied from the toes to the chest. It is advisable, therefore, to operate with the patient on a fracture table. The splint may be included if the surgeon so decides, but if one is confident as to the position and fixation it may be removed after the pins have been driven in. Post-operative x-ray photographs are taken in two planes through the completed plaster to see that proper coaptation has been obtained. As a rule, in an operation conducted along these lines, this is found to be satisfactory, but, if not, correction is possible by "wedging" the plaster at the knee. In three or four weeks small windows are cut to remove the pins. They slide out quite easily. Otherwise the main dressing need not be interfered with until it is time to remove the plaster casing, and this is done in about four months according to the evidence of bony union seen in x-ray films of the joint. I do this operation without a tourniquet. Cases of failure of union in excision and arthrodesis of the knee-joint for tuberculosis that have come under my notice have been associated with post-operative fixation that did not include the hip. I have met with cases which have been failures from, presumably, imperfect removal of the disease.

The operation may have to be done before the epiphyses have united, but there is no interference with their growth because the ends of the bone are sawn across near the joint. I have seen cases in this category which have exhibited flexion deformity subsequently at the lower femoral epiphysis. It might be advisable, therefore, in young subjects to protect

the limb, after removal of the plaster spica, by a walking calliper. The half-inch of shortening which usually follows excision and arthrodesis of the knee need not be compensated for by raising the shoe, because in the extended position of the limb this amount of shortening allows the foot to clear the ground in walking.—I am, etc.,

Edinburgh, Oct. 4.

W. A. COCHRANE.

Small Sterile Dressing Containers

SIR,—Attention was drawn by Major Bruce Dick, R.A.M.C. (December 30, 1939, p. 1294), to the unnecessary wastage caused by the opening of large sterile dressing drums for the dressing of relatively small injuries. This has also proved true in my experience in Station sick quarters.

Major Dick's method of overcoming this was to take cigarette canisters, pierce a dozen fine holes in the lid, pack therein dressings, autoclave in the usual way, then seal by dipping in paraffin wax. This method is open to three objections: (1) the difficulty of obtaining and melting paraffin wax; (2) the soiling of the autoclave during the subsequent sterilization of the tins, due to the melting paraffin wax; (3) the accidental breakage of the wax seal during the subsequent handling.

The following experiment was therefore initiated: Two "Flat 50" and one "200" cigarette tins were obtained and both lid and floor were perforated in six places with a one-eighth-inch twist drill. The tins were packed with gauze dressings of various sizes. Cellophane envelopes to contain each tin and leave a liberal overlap were obtained. The tins and envelopes were autoclaved separately. On completion the tins were enclosed in the envelopes, and each packet held firm by four rubber bands. The packets were then kept in the pathological laboratory, Cheltenham General Hospital, under conditions closely approximating those in S.S.Q., and were opened at intervals of fourteen days, twenty-eight days, and forty-two days, with the results as shown in the following report:

Dressings were autoclaved on May 9, 1940, at 150 lb. pressure per square inch for half an hour. On May 23 cultures were made anaerobically and aerobically, and an organism which resembled the *B. subtilis* group was then recovered from the anaerobic culture; this was thought to be due to laboratory contamination. The aerobic culture remained sterile up to seven days' incubation, when it was discarded. On June 6 aerobic and anaerobic cultures were made; these remained sterile up to seven days' incubation. On June 20 aerobic and anaerobic cultures were made, these remaining sterile up to seven days' incubation.

This completed the bacteriological examinations of the three tins of dressings submitted. It is suggested that this method could with advantage be introduced for all S.S.Q. and out-patient departments as an adjunct to the present large sterile drums. I am indebted to Dr. T. B. H. Haslett, Cheltenham, for the bacteriological investigation.—I am, etc.,

E. B. RAYNER,

Flight Lieutenant, R.A.F.M.S.(V.R.).

Oct. 2.

Cause of Appendicitis

SIR,—Dr. J. Price Williams (September 14, p. 367) has raised anew the many problems connected with appendicitis. Inflammation in the appendix area is nearly always brought about by the contents of the alimentary canal. It is difficult to get any inflammation unless some septic organism is available. Septic organisms are probably always present in considerable numbers in the human body, and only await a suitable stimulus to set them into activity.

When flesh foods are present in the alimentary canal and for any reason are retained there owing to insufficient peristaltic action, then there is a focus ready for the multiplication of micro-organisms in the decomposing proteins at this point of stasis. Carnivorous animals, through the aeons of evolution, have got over the difficulty by very considerably shortening the alimentary canal. The human animal retains the greater length of intestine, which makes constipation accompanying the flesh meal a ready source for the multiplication of organisms of a pathogenic character. The caecum and the attached appendix provide a ready receptacle for the