Mr. Souttar described a curious case which many years ago came under his care at the London Hospital. A small child was knocked down by a light cart and the wheel passed over her head. He cleaned up the dirty lacerated wound of the scalp and noticed a fine crack vertically through the temporal region. The condition of the child precluded any further disturbance. Two days later she regained consciousness, but after two days more she became comatose, with clear signs of intracranial pressure. He trephined and found beneath the hair-like crack not blood, as he had expected, but an extradural disk of hard mud 2 in. (5 cm.) in diameter and 0.5 in. (1.25 cm.) thick in the centre, and on removal of this the child made an uninterrupted recovery. This considerable mass of mud could have got in only through the crack, and as the force applied was only momentary the crack must have opened widely. He estimated that a force of 250 lb. (113 kg.) weight must have been supported on an area of 5 sq. in. (32 sq. cm.), so that the pressure within the skull must have been 50 lb. to the square inch (3.2 kg./sq. cm.).

Touching finally on another branch of physics—radiation—he said that *x* rays and gamma rays of radium had taken their place as established instruments of surgical technique, but to understand their use something must be known of their origin and nature. Both arose within the atom, but from very different sources. *X* rays were produced by hurling at the atom a stream of electrons driven by powerful electric forces; gamma rays arose from the disturbance of the electron field of the atom owing to the explosion of the nucleus of the atom itself. The radiation was identical in kind with *x* rays, but with *x* rays produced by an energy of two million volts. "I believe that in radiation we have one of the greatest weapons of surgical progress, but it is indeed a weapon and not a tool, and only those who are prepared to devote their lives to its study have any right to use it except in very limited fields or with the close co-operation of those who understand its dangers as well as its powers."

Beyond the region of the gamma rays there were the cosmic rays—far shorter and of correspondingly greater energy—arising, it was believed, from the actual destruction of matter and having their sources in the distant nebulae. It was certain that these rays had a profound influence on the cells of the human body, perhaps indeed were essential to life itself.

TEN YEARS OF WAR SURGERY

Dr. J. Trueta lectured to the Abernethian Society at St. Bartholomew's Hospital on June 19 on "Ten Years of War Surgery." This was one of the last lectures he is giving in this country before returning to Barcelona. Dr. Trueta was chief surgeon of a big industrial institution in Catalonia in 1929, and when the Spanish war broke out he became chief surgeon to the general hospital of that province, where he developed in a larger field what he had begun to try industrially—his technique for the treatment of compound fractures. He came to Great Britain in 1939.

In his lecture he pointed out that the experience gained in war had been the main factor in surgical progress for many centuries. War was of benefit to surgery, though this was not paralleled by its benefit to surgeons, because the work had to be done in a hurry under conditions of difficulty and improvisation, and good teaching, so essential to the training of a surgeon, tended to disappear in a war. He had built up for himself a code of principles, and in 1936, when the Spanish war broke out, he had started a propaganda campaign in Spain to endeavour to convince others of those principles. The main and decisive principle was the importance of blood supply. It was no use relying only on the sulphonamides: every bit of bad tissue must be removed. Penicillin, while the greatest of gifts to the good surgeon, was not of much use to the bad. There was a great deal of difference between the surgeon who relied only on these compounds and the one who meticulously removed every trace of damaged tissue. Bacteria were only 50% of the sepsis problem, the other 50% being the condition of the tissues.

With a war wound the pessimistic conception obtained that there would always be bacteria in contact with the damaged tissues. During the Spanish war there had been no sulphonamides and no penicillin, and yet the results were very much better than they had been in 1918. In a series of 1,073 cases of compound fracture he had had only six deaths; two or three of the cases had come to him fifty minutes after bombing, but some as long as forty-eight hours after, having received no intermediate treatment at all.

The second important point was immobilization. Complete immobilization was essential; partial immobilization was worse than none at all. Plaster had two properties: it kept the limb quiet, and it protected the wound against contamination from outside. Up to that point he thought most surgeons would agree, but there was a difference of opinion among them on the drainage of wounds. He did not have pus from his wounds. He recommended the use of very close mesh dry gauze because it had absorbent powers and fulfilled the necessary duty of starving the bacteria. He had never once seen pus forming under dry gauze.

COMMONWEALTH FUND FELLOWSHIP AWARDS

The committee of award of the Commonwealth Fund Fellowships (35, Portman Square, London, W.1) has made the following appointments to Medical Fellowships offered by the Commonwealth Fund of New York, which are tenable by British graduates in American universities for one year beginning September, 1947.

J. P. Bentley, M.B., F.R.C.S., Charing Cross Hospital Medical School and King's College, University of London, to Emory University, Atlanta, Georgia (in Surgery).

R. P. Brittain, M.B., Ch.B., LL.B., University of Glasgow, to New York University College of Medicine (in Forensic Medicine).

J. Innes, M.D., F.R.C.P.Ed., University of Edinburgh, to Washington University, St. Louis (in Medicine).

A. Slessor, M.B., Ch.B., University of Glasgow, to Harvard University Medical School (in Medicine).

H. Stalker, M.D., F.R.C.P.Ed., University of Edinburgh, to Cornell University Medical School (in Medicine).

Preparations and Appliances

THE SMALLEST HEARING-AID

A demonstration was given in London recently by the Multitone Electric Co., Ltd., of a hearing-aid said to be the smallest in the world. Its length is about 8 cm., its width about 4 cm., and with the small battery pack, into which the instrument may be plugged to form a single unit, it weighs only 160 g. The upkeep costs are from one penny for thirteen hours to one penny an hour, according to the degree of deafness. The new instrument is known as M.T.3, short for "midget telesonic three-stage." The three-stage amplifier consists of a space charge double tetrode and an output pentode, used as a pentode when a magnetic miniature earpiece is plugged in. A novel feature is the volume control switch, consisting of a differential condenser used in a negative reaction circuit. This, it is claimed, cannot go wrong or become noisy with age. Another advantage is that with the inductive load of the magnetic earpiece or bone conductor the higher frequencies are emphasized as the amplification is increased. An alternative response curve can be obtained by means of the tone control screw on the back of the instrument, operated by substituting a longer screw than the one with which the instrument is normally delivered. The telesonic system, with which the instrument may be used, was developed during the war as a means of local communication. The deaf person, it seems, has only to attach this hearing-aid to a small adaptor, which automatically cuts out the microphone from the circuit and converts the instrument into a telesonic aid, to be able to use it with the telephone or in buildings where the telesonic system is installed. The M.T.3 costs 30 guineas with crystal miniature earpiece and standard mould.