In Group D, seeing that the exfoliation of the diseased bone must to a large extent be allowed to take its own time, it is better to establish a permanent opening in the mastoid.

E. (20) Caries and hyperostosis or exostosis proceeding side by side.

Unfortunately the detection of hyperostosis is practically impossible until operation is begun. Owing to the extreme hardness and brittleness of the bone and the sudden change to cancellous or carious bone, these cases can only be safely operated on with the dental burr.

In conclusion, I wish to submit the following question: Is it better, in a "radical operation," to completely erase the mucosa, or should as much of it as possible be preserved even though it is thickened and granular? In attempting to answer this question for myself I have examined a large number of my operation cases (about thirty) of the last three or four years with the following results: 1. Whenever a large amount of mucosa is left a certain amount of mucus continues to be secreted, so that the middle ear is rarely quite dry. On the other hand, the cavity looks healthy, there is no pus, no foetor; it is easily kept clean, and the hearing is relatively good. 2. Where the cavity is lined chiefly or in large part by skin it is apt to become choked with epithelial scales and secretion from the skin glands, is liable to attacks of eczema, and, unless there is a permanent opening behind the ear so that a forcible through current can be got in syringing, it is difficult to keep clean. I conclude, therefore, that, except in cases of tubercle (when recognised), cholesteatoma and extensive caries (in which the natural termination is sometimes a permanent mastoid opening with a lining of ingrown skin) it is better to preserve as much as possible of the natural lining, believing that perfect dryness is not a criterion of health in the middle ear any more than in the nose or mouth.

ON A NEW FORM OF SHOULDER BRACE, ON THE ACTION OF SUCH APPLIANCES, AND ON THE RIGHT METHOD OF FITTING THEM.

By C. B. KEETLEY, F.R.C.S.,

Surgeon to the West London Hospital and to its Orthopædic Department.

THE majority of cases of lateral curvature are complicated with dorsal kyphosis, and in some the latter deformity—"round shoulders," as it is commonly called—is the principal defect. The more the shoulders are carried forwards the greater is the leverage with which the weight of the arms tends to increase the curvature, as well as to interfere with the full expansion of the chest in respiration. When it is remembered that diseases which interfere with respiration—for example, bronchitis and asthma—are themselves enough to cause curvature of the dorsal spine, or round back, it will be seen that there is a double reason for keeping the shoulders well back, namely: (1) to prevent the weight of the upper extremities from acting to increase the curve of the arched dorsal spine, and (2) to permit the chest to expand and straighten out the spine. Furthermore, freedom of expansion of the chest benefits the general health, and both carriage and appearance are improved by preventing the shoulders from slouching forward.

It has been objected to shoulder braces of every kind that they weaken the muscles whose duty it is to hold the shoulders back. It is not the duty of muscles to perform any such wearisome task as would be involved in steadily, hour after hour, holding back shoulders dragged forward by the weight of upper extremities acting with the leverage lent by a kyphotic dorsal spine. The effort would, in a severe case, be greater than that required to hold the arms out horizontally hour after hour.

An essential requirement for good shoulder braces is a firm basis such as a plaster-of-paris or a poroplastic jacket fitted to the trunk as low as the hips. Another is that the braces should not pull or press downwards at all, because that action, as Sayre points out, tends, by bringing the two ends of the spinal column nearer together, to increase spinal curves.

I am recommending anterior crutches or braces only. The ordinary axillary crutch, inferior in position, is only endured by the patient when it does not act. When it does act it

is well known to paralyse the brachial plexus and obstruct the circulation in the arm.

A third requirement of the anterior crutch or shoulder brace is that its support should be elastic, and a fourth that the degree of its pressure should be adjustable by the patient, according to what experience shows can be endured with comfort.

These requirements are fulfilled by the appliance here described. A large number have been made for me by Messrs. Maw, Son, and Thompson. Many of my patients have worn them for several years. At first the crutches were fitted to Sayre's jacket of plaster-of-paris. In the last three years, except when the deformity was severe, poroplastic felt has been used. The details have been modified experimentally in various ways. The appliance here described may be relied on. A jacket of poroplastic felt or of plaster-of-paris is made, and its fit perfected.

The patient, standing erect with the jacket on, a measurement is taken from the lower border of the clavicle straight down to a clear inch above the waist of the jacket. The position when the upper edge of the jacket crosses this line should be noted. The instrument maker then fits on the pair of crutches illustrated. Above the jacket they are covered with chamois leather. Their lower extremities move on hinges attached to plates riveted to the jacket. In the case of plaster jackets there should be inner as well as outer plates with all or most of the plaster layers gripped tightly between the two. This point must be insisted on. The two crutches are united behind the back of the jacket by the elastic webbing strap S, which can be tightened or loosened by the buckle B. The hinge plates H H should be set well back, rather behind the mid-axillary line.

The final fitting must be done by the surgeon himself with a pair of simple wrenches of any description. The leather-covered parts have to be bent in until they adjust themselves

along the inner border of the deltoids. Their flat surfaces must look backwards, their points turn forwards a little, as in the sketch.

The combination of felt jacket with these crutches has proved beneficial to the anæmia from which many round-shouldered young girls suffer. It effectually prevents tight lacing, it improves respiration, and inspires the patient by giving her a feeling of health and well-being to which she has not been accustomed. But I must emphasise the importance of making both jacket and crutches fit properly. Experience teaches every inventor of surgical appliances that if too much is left to the instrument maker imperfect fit results in failure or discomfort, and then modifications are introduced inconsistent with the spirit of the original invention.