

will be pulled down and replaced by another, let us hope always better, work. Another part will from time to time require reconstruction, and possibly some great event may happen necessitating our pulling down the whole fabric and replacing it by another, perhaps by two or three separate edifices. Yet I doubt not that, as necessity arises, there will always be found in our Association architects to plan and devise and workmen to hew and build, and from time to time it will be well if some one, abler than I, will take a survey of the whole work from his view point, and indicate what he considers good and what he thinks inferior work. Such I have tried to do to-day, and I trust my effort has not been altogether unacceptable.

### SUPPURATION IN THE LABYRINTH.

BY A. L. WHITEHEAD, M.B., B.S.LOND.,  
Aural Surgeon to the General Infirmary, Leeds.

HINSBERG'S paper on labyrinthine suppurations, published in 1902, and translated in an abridged form in the *Archives of Otolology*, vol. xxxi, Nos. 2 and 3, has not until quite recently attracted the attention it deserves.

The statistics collected in this paper are from many sources; since their publication only isolated cases seem to have been recorded, and so far as I know there are no statistics from English clinics bearing on this question.

For some years past a careful record has been kept of the cases of temporal bone suppuration which have occurred in the aural department of the General Infirmary at Leeds. During the last thirteen years, our predecessors, my colleagues and myself have operated upon 691 cases of acute and chronic mastoid disease.

Amongst these labyrinthine suppuration was present in 27, or 4 per cent. Of the 27 cases, 11 or over 40 per cent. terminated fatally, and 16 were cured or are at present under treatment with every prospect of cure.

In the 16 cured cases, facial palsy was present in 8, that is 50 per cent.; in 6 of these 8, sequestra, involving the labyrinth more or less extensively, were present. In only 2 were there any symptoms, beyond the facial palsy, indicating that the labyrinth was involved. In these 2, intense headache, vomiting, and vertigo were present.

Of the 8 cured cases in which facial palsy was not present, in 4 a fistula of the external semicircular canal only was present; in the other 4 there was extensive caries, the cochlea and semicircular canals being more or less destroyed and replaced by granulation tissue. In only 2 out of this series of 8 cases were symptoms present. In 1 with a fistula only, there had been intense vertigo and incessant vomiting for five days, these symptoms passing off entirely after operation. In the other where extensive caries was present, vertigo had been very severe for twelve days and was entirely cured by operation.

Out of these 16 cases, only 1 was acute, and occurred in a child three months old. Very extensive caries was found, and the cervical glands were enormously enlarged. No tubercle bacilli could be found, although the child's mother had died of acute phthisis one month after the child's birth.

Of the 11 fatal cases, cerebellar abscess was the cause of death in 4; and cerebellar abscess with meningitis in 2 others, that is to say, cerebellar abscess was present in 6 out of 11 fatal cases. In 2 meningitis was the cause of death, and in 1 meningitis with thrombosis of the lateral sinus. Two died of marasmus. In every case of this series the disease was chronic.

Facial palsy was present in 6 of these 11 fatal cases, that is 54 per cent. Of these 6, 3 had necrosis with formation of sequestra, and they were also cases of cerebellar abscess. In 1 there was extensive caries, and suppuration had extended through the internal auditory meatus, causing meningitis. In the remaining 2, marasmus was the cause of death, extensive caries of the labyrinth being present in both.

Of the 5 cases without facial palsy, necrosis with formation of sequestra was present in 2, and in both of these cerebellar abscess was present. In 2 the labyrinth was partially replaced by granulation tissue; in both of these meningitis was present, and in 1 there was also a cerebellar abscess; in this case the path of infection causing the meningitis could be traced through the internal auditory meatus. In the remaining 1 case an acute suppuration had apparently extended, two days before operation, through the fenestra ovalis, the labyrinth, and the internal auditory meatus, causing a general meningitis. There was no caries of the labyrinth itself, although the mastoid was extensively diseased.

In only 1 of the 11 fatal cases were there any of the special symptoms of labyrinthine suppuration beyond the facial palsy present in 6. In this 1 case there was no facial palsy but intense vertigo relieved by operation; subsequently symptoms of cerebellar

abscess developed, but operation was not successful. In 2 of the cases of cerebellar abscess there were no symptoms whatever, and death occurred suddenly and unexpectedly, while the wound, after the removal of the bone disease, was apparently following a normal course.

Of the total 27 cases, facial palsy was present in 14, vertigo in 5, no special symptoms whatever in 11. It is somewhat interesting to note that facial palsy only occurred fourteen times amongst the 691 cases apart from those associated with labyrinthine suppuration, and 8 of these were fatal cases; 1 died from sarcoma, 3 from meningitis, and 4 from tubercular meningitis or general tuberculosis.

Sequestra were found in 11 cases, 5 of which were fatal, all from cerebellar abscess.

With regard to age, 23 cases were between four and thirty-four; only 3 were under twelve months, of these 2 died of marasmus and 1 got well; 1 was 62 and is now getting well.

In only 1 case out of the 27 was there any probability of tubercle being the cause of the affection. In connection with this point, it is interesting to note that out of a series of 100 fatal cases of temporal bone disease, tubercle was only certainly present in 15, and in not one of these was the labyrinth affected.

Fatal intra-cranial complications occurred in 9 cases, 33 per cent.; of these 9, 6 died from cerebellar abscess, 22 per cent., and 3 from meningitis, 11 per cent.

Associated with this it is of interest to find that out of the same series of 100 fatal cases mentioned above, meningitis was the cause of death in 17, 3 of which were due to labyrinthine suppuration; cerebellar abscess in 18, in 6 of which the infection had passed through the labyrinth, and 5 through the lateral sinus, and in 7 through the area of bone lying between the sinus and the posterior semicircular canal. The importance of disease in the bone in this area, as being a point from which infection frequently spreads into the posterior fossa, has not in my opinion been sufficiently emphasised.

From a study of these statistics it is evident that extension of suppuration from the middle ear to the labyrinth is not infrequent, and is associated with a high degree of mortality. In all the fatal cases in this series, where intra-cranial complications were the cause of death, suppuration had extended backwards into the posterior fossa; in no case was the middle fossa invaded.

The treatment of these conditions must proceed on ordinary surgical lines, carious bone must be completely removed, even if

large areas of the labyrinth are sacrificed. Sequestra should be removed if loose; if still fixed an attempt may be made to facilitate their removal by partial decalcification by the use of dilute nitric acid as suggested by Dr. Urban Pritchard.

Perhaps the most important point brought out by the study of these cases is the indication afforded of the best route for the exploration of the cerebellum when cerebellar abscess is suspected. After the radical operation has been performed the lateral sinus should be exposed, and, if found healthy, the bone between the sinus and the posterior semicircular canal should be removed, including any portions of the labyrinth which may be diseased.

After the dura mater in contact with this area has been incised, the abscess will be found in the immediate proximity, and may be readily opened and drained. It is often exceedingly difficult to find the abscess if the cerebellum is explored through a separate trephine opening posterior to the lateral sinus, and if found it can only be drained through a considerable length of healthy brain tissue, which may readily become infected and spreading œdema set up.

The very high mortality of cerebellar abscess compared with that of temporo-sphenoidal abscess is probably to some extent accounted for by the difficulty experienced in finding and draining the abscess through a separate opening posterior to the lateral sinus.

#### NOTES.

THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.—The Annual Extra-Metropolitan Meeting will be held in Glasgow on Saturday, May 21, under the presidency of Dr. Thomas Barr, President of the Society.

BRITISH MEDICAL ASSOCIATION.—At the Annual Meeting to be held at Oxford from July 26 to July 29 inclusive the following subjects have been selected for special discussion in the Section of Laryngology and Otology:

1. Wednesday, July 27.—“The Treatment of Non-Suppurative Disease of the Middle Ear.”
2. Thursday, July 28.—“The Ætiology, Treatment, and Prognosis of Innocent Growths of the Larynx.”
3. Friday, July 29.—“Intranasal Disease as a Determining Factor in the Production of Laryngeal and Pulmonary Affections (Spasmodic and Catarrhal).”