¹⁷ Bratmann, *Deut. med. Woch.*, October 7th, 1909, S. 1738. ¹⁸ Lannelongue, *Sem. méd.*, 1890, p. 85. ¹⁹ Kocher, *Arch. f. klin. Chir.*, 1908, vol. lxxxvii, p. 1; Ueber Schilddrüsen-Transplantation, *Langenbeck's Arch.*, Bd. 82. ²⁰ Chava Sermann, Ueber eine neue Methode der Transplantation des Schilddrüsen-Gewebes, *Deut. Zeit. f. Chir.*, 1908, Bd. 96. ²¹ Garre, Transplantation in der Chirurgie, *Vers. deutsch Naturf. u. Aerzte*, Stuttgart, 1906. ²² Steel and Bakkas, *Beiträge zur klin. Chir.*, 1908, vol. ix, p. 431. ²³ Carrel and Guthrie, *Surg., Gyn., and Obstet.*, 1906; *Science*, 1906.

COMMON CAUSES OF DISCHARGE FROM THE EARS, AND ITS TREATMENT.*

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DISCHARGE from the ears is a subject of considerable importance, particularly now, when the inspection of school children is rigorously carried out, and hundreds of children suffering from otorrhoea are to be treated. A complete list of causes of aural discharge I shall not attempt, but intend only to deal with those that may be met with daily.

Cases of discharge from the ears may be simply divided into two classes: (1) *Non-purulent*; (2) *Purulent*. Of these the former is small compared to the latter, and will be briefly dealt with first.

1. *Non-purulent*.

Discharge may come from the pinna, the meatus, the middle ear, or the cranium.

(a) *The pinna*. A common condition met with here is an eczema, seen often in children and often passing to an impetigo; it is either a primary infection or secondary to a suppurative discharge from the middle ear. This condition is best treated by the daily application of a 5 per cent. solution of silver nitrate combined with some ointment for home use—either boracic or yellow oxide of mercury; under this it is remarkable how quickly improvement follows.

(b) *The meatus*. Wax is a common cause of discharge, especially when it has been present some time. Removal by syringing is the obvious treatment. Should difficulty be experienced in this removal, a few drops of hydrogen peroxide, 5 or 10 volumes per cent., will facilitate matters.

Meatitis.—There are many causes of meatitis, but the commonest are an eczema and suppuration of the middle ear. An eczema may be localized to the ear, or may be part of a general eczema. It gives rise to a scaling of the meatal wall and a thin serous discharge. In many cases this discharge does not come out from the ear, but forms a collection of debris, consisting mainly of desquamated epithelium, in the deep parts of the meatus, very irritating, and causing deafness. This collection of debris often occurs in the groove formed by the floor of the meatus and the anterior inferior part of the membrane, which meet at an acute angle. Painting the meatus with the 5 per cent. solution of silver nitrate two or three times a week gives good results. In the cases where the debris collects, this must be carefully and thoroughly removed with the aid of a fine probe armed with small pieces of cotton-wool. It may be a tedious performance but the results are most gratifying, and well repay the time spent. For the patient's own use, a few drops of the following, used every night, will be found most useful in allaying irritation and preventing the scaling:

R Ung. hydr. nitr. dil.... .. ʒi
Ol. amygdalae ad ʒj.

Should this not be satisfactory, perhaps ung. picis carbonis will sometimes prove useful. Meatitis in adults and children often causes great narrowing of the meatus, making a view of the membrane very hard or, indeed, impossible to obtain. Very frequently this marked narrowing without any obvious otorrhoea is due to a perforation in Shrapnell's membrane. In these cases as well as painting with silver nitrate, packing the meatus tightly with strips of gauze will soon cause dilatation. This should be done every day until finally a good view is obtained of the Shrapnell membrane fistula, which can then be treated.

Blood from the meatus is unusual and perhaps should not be included in my list, but the condition is so inter-

esting that I include it. It is the result of self-inflicted injuries, and is seen, as a rule, in girls of a neurotic disposition. The following case is an example:

A girl of 17 had suffered from almost daily haemorrhage from the ears for nine months. For six of these months she also had frequent epistaxis. Her medical man had her under constant observation, suspecting self-inflicted injuries, but never was able to detect her. She was a healthy-looking girl—described as a tomboy when at school—but her look was somewhat furtive. Examination of the ears revealed nothing abnormal and she heard perfectly; in the nose were seen soabs on either side of the septum. She was put under observation, and during the first two days her ears bled twice, on both occasions while the nurse was absent from the room. One ear was then covered with wool and gauze and sealed with collodion; she bled from the opposite ear; this was then covered in a similar way and no bleeding occurred at all. Her mother was told, and some weeks after sent the report that the attacks of bleeding had practically stopped and the girl was much better and brighter.

(c) *Middle Ear*.—Discharge of blood occurs as a result of rupture of the tympanic membrane; the tear is usually found in the posterior part of the membrane, and follows a blow on the ear or a severe fall on the head, or, as I saw recently, a dive from a height, coming down with the side of the head on the water. The treatment must be directed towards keeping the meatus aseptic, not by syringing, but by the insertion of a strip of antiseptic gauze, or perhaps by a plug of aseptic wool.

(d) *Cranium*.—In fracture of the base of the skull across the middle fossa discharge of blood and cerebro-spinal fluid occurs through the almost invariably accompanying rupture of the tympanic membrane. Treatment here must, as far as the ears are concerned, be as for the cases of ruptured membrane—aseptic wool plugs in the ears.

2. *Purulent*.

The discharge may come from the pinna, the meatus, or the middle ear, the last being the most frequent source.

The Pinna.—The eczema previously mentioned often becomes impetiginous, and the treatment is on similar lines—silver nitrate applications and yellow oxide of mercury.

The Meatus.—Sometimes boils give rise to a discharge from the ear when the opening in the boil is small; the treatment consists in laying the boil freely open and packing with gauze.

The Middle Ear.—In the vast majority of discharging ears the middle ear is the cause. Why is this so? Here is a temporal bone cut across in such a way as to show the middle-ear cleft; and it shows very well the direct connexion between the Eustachian tube, the tympanum, and the mastoid antrum, and makes clear the ease with which infection can occur in the tympanum from the Eustachian tube.

Infection of the middle ear always, or almost always, takes place per the Eustachian tube; it is only very rarely that infection passes in from the meatus, and only in a very few cases does infection arise by the blood stream. The infection by the Eustachian tube from the naso-pharynx takes place more easily if there is any obstruction in the tube, and obstruction can easily occur by congestion of the mucous membrane, infection itself following on any inflammation about the pharynx—for example, a tonsillitis, a pharyngitis, or a naso-pharyngitis.

In children adenoids account for the greatest number of discharging ears, since infection follows from the frequent attacks of tonsillitis or pharyngitis consequent on the mouth breathing. The treatment is clear: Remove the adenoids and restore nasal breathing, not by any means an easy task in many cases, but one of great importance. Previous to removal of adenoids the patient should be made to do nasal breathing exercises for one to two weeks, unless the case is one where the patient cannot breathe at all through the nose; after removal of the adenoids the exercises are continued, and a course of arsenic and iron prescribed. It must be insisted upon that the presence of any ear symptoms, not necessarily otorrhoea, but deafness or occasional pain in the ears, gives the indication for removal of adenoids, since prevention is far better than cure.

Any other cause of nasal obstruction leading to mouth breathing may be a cause of inflammation of the ear, and so of an otorrhoea—for example, chronic nasal catarrh, hypertrophied anterior or posterior ends of the inferior turbinates, deflected septum, or the remnants of adenoids, which may persist till 25 or 30 years of age. Should any

* Read before the Lambeth Division of the British Medical Association

of these defects be present in a case of otorrhoea, they must be remedied before local ear treatment can be expected to give good results.

Apart from these causes, there is an important group of diseases which cause otitis media—specific fevers, scarlet fever, diphtheria, measles, whooping-cough, influenza, and pneumonia. The severity of the resulting otitis varies with the infecting organism, scarlet fever and diphtheria, and perhaps influenza, giving rise to the worst forms.

The inflammation in the middle ear is in the first case *acute*, the discharge from the ear being preceded by great pain for one or two days. If untreated, these cases, after a few days, may subside and the discharge cease, or they pass over into a condition of chronic otorrhoea.

The treatment in these acute cases is to encourage free drainage; should the perforation in the membrane be very small, it is best enlarged, or a fresh incision made in the posterior inferior part of the membrane; clean with hydrogen peroxide, and put in a strip of gauze, and change each day till healing occurs. Should the pus be very thick, it may be sucked out with a Siegle's speculum. It is not good to syringe, because considerable pain may be caused by the impact of the fluid on the inflamed membrane.

When treated thus many acute cases subside, but unfortunately many cases are allowed to have their acute attacks without the medical man being called in, and so drift into the next group, those suffering from *chronic otitis media*. We will suppose that all the possible nasal and naso-pharyngeal defects have been remedied, and still the discharge continues; let us inquire why this should be so.

Here are specimens of temporal bones cut across in various directions to show the tympanum and its surroundings; it will be seen at once that the tympanum is far from being one simple space bounded externally by the tympanic membrane; here is (1) the attic, the space above the main tympanum, and containing the largest parts of the malleus and incus; (2) the antrum, leading back into the substance of the mastoid process, and having its opening into the tympanum considerably above its floor; (3) the hypotympanum, a small gutter-like part on the floor of the tympanum; (4) the niche leading to the round window; (5) air cells around the Eustachian tube. After seeing the complicated structure of the middle ear one can easily understand why disease once started should continue in spite of apparently free drainage, such as is obtained by a large perforation through the membrane; and when this perforation is small or is in Shrapnell's membrane the reason for continuance of the disease is clearer still.

The treatment of suppurative otitis media must vary to some extent with the character of the discharge, but in all cases the following is to be recommended in the first instance. The ear is mopped out as clean as possible with wool on a probe; and then a strip of iodoform gauze half an inch broad and about two and a half or three inches long is introduced down to the perforation. When possible this process is repeated daily or on alternate days; in cases where the patients can only be seen once or twice a week, hydrogen peroxide drops are to be used twice a day by the patient after removal of the gauze, which should take place twenty-four hours after its introduction. In many cases under this treatment the discharge diminishes or stops altogether; when it has become very slight, a powder of boracic and iodoform 4:1 blown in is useful in accelerating the healing. Syringing as practised at home, particularly among poor patients, is of very doubtful value; not only does the lotion fail to wash away the pus, but there are drawbacks to its use; some patients become very giddy and some experience pain.

When the local treatment just described fails and the otorrhoea continues, more must be done; perhaps there may be found polypi or granulations on the membrane; in the former case the polypi should be removed with the snare and gauze treatment continued, and in the case of granulations trichloroacetic acid should be painted on to cauterize them, and again gauze treatment continued. If after these simple measures have been adopted no improvement follows after three weeks' continuous treatment, the probability is that some operative treatment must be undertaken—either permeal removal of ossicles and outer attic wall, or the radical mastoid operation.

Should the discharge contain cholesterol crystals—indicative of cholesteatoma—no time should be spent in permeal treatment, but the radical operation performed, since the presence of cholesteatoma makes the prognosis as to the course of the disease gloomy, many serious complications—intracranial abscess, sinus thrombosis, and the like—often being due to cholesteatoma.

There are many indications for operative interference in chronic otitis media—acute inflammations of the mastoid process, lateral sinus thrombosis, cerebral abscess, and so on—but here I wish only to mention two conditions which call for operation: facial paralysis and evidence of labyrinth infection.

In the specimens passed round, the position of the facial canal is seen from various aspects, and it will be noted how very close is the relation of the nerve to the tympanum, the bony wall of the Fallopian aqueduct being always very thin, and in some cases actually deficient; it is, therefore, easy to see how the facial nerve may be pressed upon by granulations in the tympanum, or by an exudation into its canal. Those cases of facial paralysis due to pressure are often relieved by the radical mastoid operation.

Again, in the specimens there is to be seen a white ridge of bone at the inner part of the entrance to the antrum from the tympanum; this ridge is due to the bulge of the external semicircular canal. In some cases of chronic otitis media the disease attacks the external semicircular canal, and produces erosion of the white ridge of bone; should the inflammation spread, this erosion of the bony canal may be followed by inflammation in the membranous canal lying inside; when this is so, even in very early stages, attacks of vertigo are experienced by the patient; as a sign of this vertigo nystagmus of a rotatory character is noticed, and some signs of disturbance of equilibrium may be detected. Should a patient show constant and definite signs of this labyrinth "irritation"—it may not be worthy the name of a labyrinthitis—a radical operation should be performed. In several such cases one has found that these symptoms previously present disappeared after the radical operation, and at operation a small erosion was seen on the external bony canal.

A last cause of discharge from the ear I wish to mention—that is, tubercle of the middle ear. Lately it has been said that tubercle is a common cause of otitis media among children, especially quite young children. There are three characteristic features of a tuberculous otitis: the perforation of the membrane is not preceded by pain, the discharge is inclined to be thin and watery, and the membrane is frequently perforated in two or more places. The glands about the ears are often enlarged, and facial paralysis is apt to develop early. The treatment should be gauze strips and hydrogen peroxide as before; the radical operation should only be advised in patients who are healthy, and in whom is found no other focus of tubercle. If patients are losing weight, do not operate, as the wound may not heal. Naturally, should acute complications arise in the course of a tuberculous otitis, operation must be resorted to to save life.

THERE are at present seven medical members of the Hungarian Chamber of Deputies.

WE regret to observe that Livingstone College for Missionaries has ended up its year with a debit balance of £246. Its financial position, which, so far as capital funds are concerned is sound, would soon become quite satisfactory, however, if missionary authorities adequately recognized their duty in the matter and sent more students. If it is impossible to post a qualified medical man at every missionary station in the tropics, the laymen dispatched to work there should receive sufficient instruction in medicine and surgery to enable them to guard themselves and their native assistants against the commoner dangers of life in such localities. To send out men trained in theology, but with less knowledge of hygiene than that possessed by an average board school teacher, is quite wrong. There is some probability of reform, since the question was considered last summer at the World's Missionary Conference in Edinburgh. The report of its transactions contains a chapter devoted to it, and Livingstone College is one of the two institutions mentioned as desirable training schools; the other is at Tübingen. The medical delegates at the conference also dealt with the matter, passing a series of definite resolutions in support of the same thesis.