Dr. MACKLIN.—"When I said 10 per cent. I was thinking more of the little swabs you mentioned which you placed in the nose, in which you mixed 10 per cent. cocain with 1/100 adrenalin. I was not really referring to injection. I may say that I had my own septum removed under a general anæsthetic, and I remember when these swabs were put into my nose before the anæsthetic the discomfort I had from the blockage of my nostrils, and as the result of the swabs not being sufficiently wrung out a certain amount of the stuff passed down my nasopharynx into my stomach. This is a point which from my experience I would like to commend to your notice—I think it should have your personal care, as nurses in training are apt to be not particular enough. I remember very vividly the nausea and vomiting which persisted, due to a mixture of cocain, adrenalin, ether, and swallowed blood."

Dr. LEITCH, in reply, said he did not think there was anything further he need add.

ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY.

March 6, 1931.

President—Mr. A. R. TWEEDIE, F.R.C.S.

ILLUSTRATIVE SPECIMENS.

(I) **Base of Skull from a Case of Fracture.**

(II) **Left Temporal Bone from a Case of Fracture of the Skull.**

The patient fell from a fourth-floor window. A fracture of the squamous temporal bone splintered the roof of the middle ear, mastoid, drum, and canal for the tensor tympani. The upper half of the drum had been torn across. The stapes remained in its normal position. The auditory meatus is divided longitudinally by the fracture, which passes through the Glaserian fissure.

The inner surface of the mastoid is stained a bluish colour by the extravasation of blood into the mastoid air cells.

(III) **Right Temporal Bone from a Case of Fracture of the Base of the Skull.**

A bus conductor when standing on the top of his bus, struck the back of his head against a railway bridge as the bus passed beneath it. A fracture of the skull with bleeding from the ear and facial paralysis resulted. The specimen shows a fracture which passed along the roof of the canal of the tensor tympani and middle ear, then across the petrous temporal bone behind the internal auditory meatus to the jugular foramen. The facial nerve was torn across near the geniculate ganglion and the vestibule was opened by the fracture. The drum shows a small perforation in Shrapnell's membrane. A piece of fuse-wire is inserted into the facial canal. The auditory meatus escaped injury.

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(IV) **Extensive Fracture of the Right Temporal Bone involving the Ear.**

J. J. Fell off the top of a bus; was deeply unconscious, with moderate bleeding from the right ear and nose. A fracture passes through the roof of the canal for the tensor tympani and Eustachian tube and middle ear, then through the mastoid antrum across the petrous temporal bone to the jugular foramen. The fracture also passes through the roof of the auditory meatus. The middle ear is full of blood, as are also the mastoid antrum and air cells. The drum shows the characteristic bluish appearance arising from the presence of blood in the middle ear. There was bleeding from the right nostril, and blood in the sphenoidal sinus.

Discussion on Injuries of the Ear arising from Fractures of the Skull.—E. D. D. DAVIS. The paper is published in the *Journal of Laryngology and Otology*, Vol. xlvi., p. 536, August 1931.

DISCUSSION.

The PRESIDENT (Mr. A. R. Tweedie) said that his colleagues in other departments did not refer these cases to the otologist soon enough. Often patients admitted to hospital on account of "concussion" were not referred to otologists for treatment of the consequent deafness until after they had been discharged as out-patients.

The question of the presence of blood in the tympanum was interesting, and the fact that the middle ear could be so far filled as even to cause considerable distension of the membrane, and yet the hearing be completely restored later, raised many problems as to prognosis and treatment. Some time ago he had been called in to see a young man who had been "concussed" three times during the previous ten days, the last concussion being accompanied by bleeding from the ear. Both middle ears were filled with blood and on one side the meatus contained a recent blood-clot, whilst there was a definite rupture of the membrane. Even with this history and evidence, however, he (the President) had had great difficulty in keeping the patient in bed for about three days, but, so far as he knew, there had been complete recovery. What was the lesion in these cases? Presumably the fracture, if any, was trivial and the lesion could really only amount to a laceration of the blood vessels. As to the question of operation, he recalled a discussion held by this Section in February 1926,* in which a consensus of opinion was that in cases of fracture following a pre-existing suppurative rhinitis, the best procedure for the patient was to avoid operation, whilst if a fracture involved a pre-existing suppurative otitis media, this latter condition should be dealt with in accordance with the usual procedure in these cases, irrespective of the recent injury.

Dr. DAN MCKENZIE said that a fracture which went through the middle ear, and perhaps the membrana tympani, converted a simple into a compound fracture. No doubt many cases had a fatal termination because of the severity of the brain damage, but a large number of patients

* *Proceedings*, 1926, xix., Sect. Otol., 9.

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died from meningitis, because infection had come from outside through the external meatus. If, therefore, that side of the subject were particularly attended to at the time the injury was sustained, some of the otherwise fatal cases might be saved. Speaking of Mr. Davis's quotation from Mr. J. S. Fraser's paper, of a case in which meningitis supervened twelve months after fracture of the skull, he (the speaker) had seen a case of meningitis six months after the accident. The lesson of these cases was that the after-care should be prolonged, the friends and the patient being warned of the possible supervention of meningitis, if acute otitis media occurred. In cases such as that, the right course was to operate as early as possible, so as to prevent the extension of the infection to the meninges. Otherwise he agreed with Mr. Davis that one should not interfere with the ear, for if operation were done unnecessarily one might be precipitating the danger one was trying to avoid.

Mr. L. GRAHAM BROWN said his experience of these cases could be placed under two categories: (1) those seen in hospital; (2) those seen in private practice. In hospital cases, after the casualty officer had dealt with them, or after they had been admitted, perhaps a week elapsed before he saw them. This was wrong; the aural surgeon ought to see such cases earlier. He agreed with Mr. Davis that the best way to treat the meatus was with spirit, failing which he used stronger measures. Drainage was essential, because fatal results were due to meningitis. If the aural surgeon were habitually called in earlier, more of these cases could be saved, as operation could more hopefully be undertaken.

In private practice such cases were usually brought for an opinion on the question of compensation. It was difficult, in the stage at which the case was seen, to give that opinion. Often these cases were complicated by suppurative otitis media, and then it was difficult to say whether the accident had caused the suppurative otitis media or whether the condition had been present before.

Mr. BROUGHTON BARNES said that he had had a case, the patient being a young man whom he saw on the eighth day after an accident. He had been unconscious for twenty-four hours, and had very free bleeding from the ear. Two days before he (the speaker) saw him suppuration occurred, and when seen his temperature was 101° F.; there was tenderness over the mastoid, and the meatus was reduced to a horizontal slit by the swelling above and below. He thought there was a split of the meatus longitudinally. There was increased bone conduction in the ear, and but for the injury he would have opened the mastoid. In this case, however, he was afraid to use a chisel when there was a fracture of such severity. He therefore contented himself with removing the pus with carbolised glycerine; the patient rested in bed and antiphlogistine was applied.

What did Mr. Davis advise as to the method of opening the mastoid. If he (the speaker) had hammered and chiselled in this case he might have opened the way for suppuration to invade the meninges. It was a difficult point to decide.

Mr. HAROLD KISCH said he was surprised that no reference had been made to the value of X-ray examination in diagnosing difficult cases.

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Otologists were usually requested to give an opinion on three points: (1) If there was bleeding from the ear, was it due to a fractured base? (2) Was the damage to the hearing likely to be permanent? (3) What was the prognosis as to life?

Occasionally bleeding from the ear might be due to injury to the external auditory meatus alone, and in such a case it was important to try to ascertain whether there was a fracture of the bony part of the external auditory meatus, such as Mr. Davis had indicated, or whether it was a case of damage to the soft parts. Some years ago he had had a case in which that problem had arisen. He cleared out the external meatus and stopped the bleeding from the soft parts by means of adrenalin. He then found some blood still oozing from a chink in the meatus, and thought that probably it was fractured. A skiagram showed this to be the case.

He had seen a number of cases of deafness following injury to the head without there being any other sign of a fractured base. One patient, in a lift accident, fell 20 or 30 feet, and sustained various injuries to the scalp and fractured ribs. A few days after the accident the patient was stone-deaf on one side, and he, the speaker, was consulted as to the cause of the deafness. There was complete nerve deafness on that side, but no other sign of a fractured base. A skiagram told nothing. The man was kept at rest for a considerable time, and he never developed any other symptoms, but deafness had remained complete ever since.

Mr. Davis's figures with regard to prognosis—*i.e.*, as to life after a fracture of the base—corresponded, more or less, with his own.

Mr. Davis had spoken of irritation caused by cerebrospinal fluid. He, Mr. Kisch, had encountered a number of cases in which there was a discharge of cerebrospinal fluid from the ear, and he had not noticed that it had any irritating property.

THE PRESIDENT said he presumed that skiagrams were taken as a routine measure in all these cases; in the case he had quoted, however, no fracture could thus be demonstrated.

Mr. F. W. WATKYN-THOMAS said that in some cases there might occur the development of late meningitis. In a number of instances in which the labyrinth was fractured, the labyrinth did not heal by bone, but by scar tissue. That had been worked out by Nager, who had published his results in a paper before the Collegium two years ago. In such a case, any succeeding infection, even a year or two years afterwards, would be apt to set up meningitis, as there was only a labyrinth ill-guarded by fibrous tissue at the line of fracture.

Another point was as to late changes in hearing. In a certain number of cases in which blood was reported in the tympanum, the first signs were those of middle-ear deafness, but at the same time there was some blood in the peri-lymphatic spaces, and it was the fact that this blood had become organised as fibrous tissue which was responsible for the nerve deafness that occasionally followed, even as long as eighteen months after the fracture.

Mr. W. J. HARRISON said Mr. Davis had referred to a case which he (the speaker) had reported some time ago, in which the fracture had involved both ears. He had had to do a mastoid operation on the right

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ear. When he had retracted the soft tissues, he found a crack in the mastoid into which it was possible to insert the back of the knife. The use of gouges and hammer was out of the question, so he made a hole in the bone by means of a trocar, till it was large and deep enough to take a burr. After this the operation was easily completed by using burrs and bone-nibbling forceps. The hearing of the left ear, in which an incision of the membrane had been necessary, was now normal, that of the right being only momentarily impaired for the lower tones. The patient's only trouble now was that when many people were talking she felt confused. He did not know whether this was due to the ear or to a mental effect of the concussion. After the accident she had been completely unconscious for nearly a day and more or less unconscious for about twelve days. Just before coming to this meeting Mr. Wilson had shown him an interesting case. A woman had had a bicycle accident and sustained a fracture of the skull, involving the right ear. A decompression operation had been necessary in the right temporo-parietal region, and subsequently a mastoid operation had to be performed. The patient had now recovered. There was no tinnitus, and the hearing was only moderately impaired.

Mr. T. A. CLARKE said that five months ago he had had a case of a boy who previously had had normal healthy ears, but met with a motor-cycle accident and was admitted to hospital with a fracture of the occipital bone and hæmatoma over the mastoid. There was a free escape of cerebro-spinal fluid and blood from the ear, and this continued for ten days, and then became purulent. He, the speaker, was not asked to see the boy until the fourteenth day after the accident. There was then a profuse discharge of purulent fluid from the ear, a suppurating hæmatoma over the mastoid and occipital region, and a high temperature. The cochlea was still functioning. He considered operation essential, and made the usual mastoid incision. There was great thickening of the tissues, and he found a fracture running from the plate of the occipital bone across the mastoid to the meatus. He opened the mastoid with a fine gouge and completed the bone operation with bone-forceps. There was an extensive collection of pus in the muscles, and the cellular mastoid was full of pus, which continued along the line of fracture. He carried out a wide Schwartze operation and removed the edges of the fracture in its backward extension. He expected a poor prognosis, because of the free escape of cerebrospinal fluid and the presence of suppuration. The patient, however, made an uncomplicated recovery, and at present had an apparently soundly-healed scar behind the ear and a healed drum. His hearing was not very good, as he could hear, in the affected ear, a 30 ft. whisper only at 3 ft.

Mr. C. HAMBLEN THOMAS said he wished to ask Mr. Davis about two points in these compensation cases. (1) The case was not seen by the otologists until some time afterwards. There was a history of bleeding from the ear, the patient was unconscious and did not know where he had been hit on the head. He had middle-ear deafness and there was a history of blood running from the ear. He would like to know from Mr. Davis whether it could be attributed to a simple concussion damage of the middle ear, due to a blow on the external meatus, or whether it was significant of a fractured base.

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The other point was as to whether there was any value in X-ray examination in cases of "?fractured base." Some people said that if one did not get a positive X-ray finding it did not mean that there had been no fracture at the base. What was the true value of X-rays in these cases, whether positive or negative?

Dr. W. T. GARDINER (Edinburgh) mentioned a case of fractured skull in which there had been previously existing chronic middle-ear suppuration. Some years after the fracture the patient came up for radical operation on account of the chronic suppuration. Meningitis developed as a sequela and the patient died. At the post-mortem examination a fracture was discovered and the route of spread of infection determined. He believed that Mr. J. S. Fraser had uttered a warning as to the question of operation in cases such as these.

Mr. A. D. SHARP said that on the previous afternoon he had seen a schoolboy, aged 15, who, a week before, had slipped and struck his right mastoid against another boy's knee. The boy thought little of the accident, but because of a crackling noise in his head and a bloody discharge from his ear he reported sick, and the matron found that his temperature was raised. A profuse sanguineous discharge continued for two days, after which the blood ceased but the watery discharge—evidently cerebrospinal fluid—continued unabated. At the time he (the speaker) examined the ear the discharge was subsiding. Hearing was practically normal and there was no other symptom. Along the posterior meatal wall a red line was visible, running obliquely towards the posterior and upper part of the membrane.

In the surrounding skin there was no sign of irritation due to the cerebrospinal fluid.

Mr. H. V. FORSTER said he noted the stress Mr. Davis laid on the presence of middle-ear deafness alone, in cases of severe head injury. He, the speaker, had expected to find internal ear deafness the rule in such cases, until he began to see cases of middle-ear deafness which made a good recovery in cases diagnosed as fractured base of the skull.

In marked contrast to such cases of direct injury was an observation he had made at an artillery camp last summer, in two cases of gun concussion deafness seen twenty-four hours afterwards. There was ecchymosis of the drumhead and there were dried blood-flakes on the external meatal wall, but there was marked nerve deafness.

Occasionally, too, one saw cases of nerve deafness from slight injury only. There was the case of a musician who suffered a comparatively slight "blow" on the mastoid in a taxi accident, and a considerable degree of nerve-deafness followed. He (Mr. Forster) had seen in a case of severe head injury the development, behind unbroken drumheads, of an acute suppurative otitis media, first on one side and then on the other, calling for the operation of paracentesis. Some Continental writers urged that these cases of severe head injury should be brought to the aural wards at once.

With regard to the loss of cerebrospinal fluid, he recalled that once at a frontal sinus operation he had seen the escape of cerebrospinal fluid. As this continued to drip, he expected a fatal termination, but the patient

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recovered ; he had since then undergone a Killian operation, and was still well. Such a case showed that deaths after the escape of cerebrospinal fluid, following accidents to the head, might be explained by the great severity of the injury, and perhaps, in the case of delayed deaths from meningitis, by the particular way in which such fractures healed. Those who had done pension work would remember the difficulty in placing the blame for ear injuries, but the benefit of the doubt would be given more leniently to the ex-soldier. Probably compensation cases would always present a similar difficulty unless these accident cases were seen early by the otologist.

Mr. HERBERT TILLEY said that whether cerebrospinal fluid escaping from the meatus would cause irritation probably depended on whether the patient had a hypersensitive skin or not. Two of his (the speaker's) friends had discovered that they had diabetes from no other symptom than irritation of prepuce and glans, which led them to have their urine tested, and a high degree of glycosuria was found. After the examination they recalled other symptoms which, but for the irritation caused by the urine, might have been disregarded. In such cases sugar was the cause of the irritation, and as it was one of the constituents of the cerebrospinal fluid, it was highly probable that it had caused the soreness of the external meatus in the case which had been recorded.

With regard to the tinnitus from which patients in cases of fractured skull suffered, he often thought that it might be of cerebral origin. There was reason for thinking that tinnitus associated with internal ear deafness was sometimes due to the same cause because in extreme instances the auditory nerve had been divided inside the skull, without any relief from the symptoms.

Mr. J. F. O'MALLEY said that though in these cases the escape of cerebrospinal fluid was indicative of a severe lesion, the mere escape of that fluid did not in itself justify a bad prognosis. In 1917 he had shown at a meeting of this Section a patient who came under his care at Woolwich.* He had had a previous mastoid operation, and when he (the speaker) saw him there was a cystic condition in the cavity of the old mastoid. He undertook to open the cyst, but did not realise the trouble he was letting himself in for. The patient began to lose cerebrospinal fluid, and continued to do so for four or five months. By having the dressings squeezed, etc., he tried to estimate the total loss of the fluid, and the figure amounted to several gallons. Yet the patient had never seemed to be any the worse for it all through the period. Finally the ear was kept constantly plugged, and then satisfactory healing took place.

The matter might be different when one was dealing with an acute case. With regard to operation in these cases, he had been asking himself what operation he ought to perform if a patient complained of hæmorrhage from the ear and the escape of cerebrospinal fluid. He did not think he would be justified in doing any, unless there was a local lesion such as a mastoid abscess. Otherwise with hæmorrhage from the external ear, even if X-rays revealed a fracture of the base of the skull, he would think it unwise to operate.

* *Proceedings*, 1917, x., Sect. Otol., 125.

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Sir JAMES DUNDAS-GRANT said that in seeking to ascertain whether the suppuration in a case was the result of a recent injury, or of old-standing suppuration which had been succeeded by injury, the condition of the Eustachian tube was often a good guide. If that tube was narrow, it was probably an old-standing suppuration, but if it was wide—often very wide—one could correctly assume the suppuration to be due to the injury and not to old-standing suppurative disease.

Tinnitus and vertigo were, he thought, as much due to the concussion as to the local damage to the ear. In cases of concussion the vertigo was extraordinary, and might last for years afterwards. He had at present a case of extreme vertigo with a tendency to fall forwards. Dr. Yelland elicited that the patient previously had some damage to the head, and attributed the vertigo to that, not to the various aural and nasal conditions for which she had been under his (the speaker's) care. Erichsen, in the treatment of cases of spinal concussion, found that perchloride of mercury had an extraordinarily good effect. In this patient's case, while she was taking perchloride of mercury, the vertigo was kept in abeyance. The effect might be partly psychological, but he, Sir James, strongly recommended it on the strength of his experience.

Mr. E. D. D. DAVIS (in reply) said that he always regarded hæmorrhage into the middle ear as a serious lesion, and did his best in such cases to keep the patients in bed. There was a risk of suppuration arising.

With regard to nerve deafness and middle-ear deafness, it would be difficult to make an accurate generalisation; he could only say that the cases he had tested had been middle-ear cases. Admittedly there might be exceptional cases, like the one mentioned by Mr. Kisch, in which a patient had fallen 30 feet. Probably that patient had a severe injury of the internal ear, and was lucky to survive. He had been guarded in saying that he considered that the nerve deafness cases were due to injuries to the internal ear, and that the survival of such cases was exceptional.

He had had a number of cases skiagraphed, but the results had been disappointing. He had had only one case in which he could be reasonably sure, from the skiagram, that there was fracture, and in that there was a crack across the squamous portion of the temporal bone which was continued into the roof of the middle ear. In that case there was hæmorrhage in the middle ear only.

Mr. Barnes had raised the question of the difficulty of doing a mastoid operation in these cases. It was easier to do it with chisel and mallet, but one should avoid that method. Mr. Waggett used to carry out his mastoid operations with a motor drill or burr, and the operation was accomplished quickly and neatly. Lake's gouges and nibbling forceps could be used. If there were indications of mastoid suppuration he thought the mastoid operation should be performed.

He had had only two cases in which the skin was irritated by the passage of the cerebrospinal fluid. Mr. Bathe Rawling had emphasised the possibility of a skin infection resulting. The skin became sodden and infection was thus rendered easier. That infection should therefore be controlled and avoided as far as possible.

The tinnitus question was a difficult one, and he would like more information about it. He had not tried perchloride of mercury.

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Mr. O'Malley had hit the nail on the head when he said that the escape of cerebrospinal fluid meant a very serious lesion. In a fracture of the skull it meant that there was quite a considerable fracture, often one involving the subarachnoid space. Some patients recovered notwithstanding a profuse discharge of cerebrospinal fluid, but in these cases he still thought the prognosis was bad, though it had been maintained that this free discharge of fluid washed infection away from the brain.

Specimen: Cutaneous Horn of the Auricle.—W. A. MILL, F.R.C.S.

The horn was removed from the auricle of a man, aged 86. Microscopical examination of a section of the base showed it to have the structure of a papilloma.

It is extraordinary that the man allowed it to grow to the length of $4\frac{1}{2}$ in. without having had it taken off. He said he had had it about a year, but his daughter said it had been growing for two years. He said further that he had had another on the other ear, and as that had fallen off he had been waiting for this to fall off also.

The base of such a horn is often a very slow-growing epithelioma. Dr. Scott-Williamson reported in this case: "A simple warty papilloma, with extreme hyperkeratinisation. No evidence of malignant change in the base of the papilloma."

Incomplete Perforation of the Tympanic Membranes in a Case of Acute Otitis Media.—C. HAMBLEN THOMAS, F.R.C.S.

J. G., male, aged 30. Three weeks ago had an illness, diagnosed clinically as influenza and followed by hæmorrhagic otitis media. He now has partial perforation of both tympanic membranes anteriorly, not involving their outer layer. This is probably the result of the infective breaking down of hæmorrhages, seen at a previous examination. The middle ears contain retained mucous secretion due to Eustachian obstruction. Mucopurulent infection of the nose still exists, and is being treated.

Mr. HAROLD KISCH said he wondered how Mr. Hamblen Thomas knew it was the inner layer which was divided; the outer layer could be seen flapping by means of Siegel's speculum. How did hæmorrhagic otitis media begin? The earliest case he had had was that of a doctor who came complaining of intense pain in his ear, with hyperacusis. There were seen to be a few vessels on the malleus, and just behind the umbo was a small patch of a strawberry-and-cream colour. He advised the patient to wear wool in his ear and await events. Two days later the patient's wife said he was very ill, with a temperature of 102° F., and great pain in his ear. There was now a large hæmorrhagic bulla at the site of the patch mentioned, and another bulla was at the bottom of the meatus. He also had a very tender mastoid. Subsequently the bulla on the drum burst and the mastoid cleared up without operation.

The PRESIDENT said he did not, of course, know what the condition looked like in the initial stages, but at present the picture on the right side

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Fig. 1.—Cutaneous horn—lateral aspect.

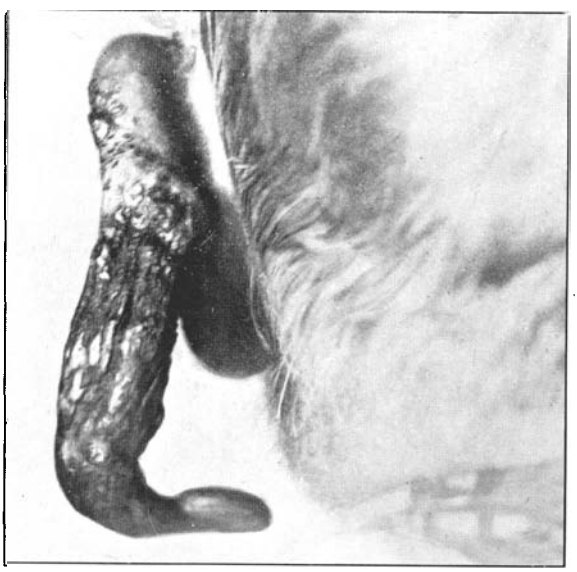


Fig. 2.—Cutaneous horn—posterior aspect.

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suggested a much indrawn membrane, with a defect in the antero-superior quadrant, the margins of which were apparently adherent to the inner tympanic walls. In the left ear the membrane was intact, though much indrawn, and the appearance of the antero-superior quadrant also gave the suggestion that there had once been a small lesion there.

The condition, in his opinion, was referable to a chronic "obstructive" rhinitis, involving both tubes. He would suggest an intranasal operation when the nose was sufficiently healthy, and would expect thereby that the defect in the right tympanic membrane would heal and the mobility of both membranes and the hearing be much improved, either with or without subsequent catheterisation.

Mr. W. A. MILL said that in cases with blebs on the meatal wall or membrane, if infection extended to the mastoid, it was found practically invariably to contain hæmolytic streptococci. This had been the experience at Guy's Hospital with cases of mastoiditis under Mr. T. B. Layton's care. In two cases, however, in the influenza epidemic just over a year ago cultivation of bone removed at operation showed pneumococci in pure culture; both these cases showed typical influenzal hæmorrhagic blebs. All other similar cases during the same epidemic were found on cultivation to be due to hæmolytic streptococci.

Mr. HAMBLEN THOMAS also demonstrated an aural microscope, giving magnifications from × 65, for the study of the middle ear in its normal state and in disease.

May 1, 1931.

President—Mr. A. R. TWEEDIE.

Eruptions involving the External Auditory Meatus—H. W. BARBER, M.B., F.R.C.P.—The paper is published in the *Journal of Laryngology and Otology*, Vol. xlvi., p. 589, September 1931.

DISCUSSION.

Mr. T. B. LAYTON said that the lesion of the meatus which the otologist most often had to deal with was an infective meatitis associated with suppurative otitis media. He said "associated with" because he thought that, in a number of cases, it was caused by the treatment which had been applied rather than by the discharge from the middle ear. Dr. Barber had taught him that the seborrhœic triad needed a moist skin on which to flourish. When he had realised that, he gave up using drops in the ear, and had replaced them by applications. He laid it down that those applications must be made up with a hygroscopic solution such as surgical spirit or glycerine, or a mixture of the two. He thought that many cases of so-called otitis media in small infants, in whom the meatus was very narrow, were the results of putting water into the external auditory meatus, and failing to get the skin dry afterwards. At the fever hospitals to which he was attached the routine treatment was that those cases with running ears should be treated with wool mops on sticks dipped in surgical spirit or in this spirit combined with glycerine. He held with others that

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otitis media passed from the acute to the chronic stage when it became secondarily infected. In most cases that secondary infection was from the external auditory meatus by an organism of the seborrhœic triad. In infectious fevers the most important part of the treatment of running ears was the care by the nurse in the first week of otitis media ; he believed that in many instances this definitely prevented cases passing on to inflammation of the mastoid. In older children and in all adults he thought the efficiency of such a treatment was much greater when the patient carried it out himself than when it was carried out by a nurse, or even by a doctor, as it depended on the amount of time which could be bestowed on it. So high was the intelligence of the average London child that at the age of six years he could be taught to mop his own ears. He therefore tried to teach the patient to mop the ears by the method used in the Egyptian Expeditionary Force, to prevent the men being sent down the Line unless there was something more the matter with them than an ear discharge.

Mr. E. WATSON-WILLIAMS said he had been much interested in Dr. Barker's remarks on the importance of keeping the meatus dry, and in Mr. Layton's support of this view. He had for years been fighting a battle against the common practices of syringing the ears, and of using peroxide of hydrogen indiscriminately in all cases of otorrhœa, and had for a long time abandoned watery applications to the meatus, except in the removal of foreign bodies. Strong peroxide could act as a very definite irritant ; and every week he saw cases of otitis externa, which were cured simply by stopping the use of these "drops." He did not, however, find that the majority of patients, even adults, were capable of cleaning their own ears effectively without any assistance.

Mr. GRAHAM BROWN said his clinical experience was that an almost equally large number of cases of external ear conditions of eczematoid character were not necessarily due to infections alone. Many patients gave a history of having noticed dullness in the ear, due to a tubal catarrh, and then having begun to irritate the meatus by means of the finger-nail, a match-stick, or some such implement. Thus a dermatitis which spread. In these cases he examined the naso-pharynx and the nose for any condition which might give rise to congestion, and dealt with what he found. He had had cases in which operation upon a deflected septum, or septic tonsils, had ameliorated the condition, and had removed the incentive to mechanical irritation.

He agreed that there was some allergic condition which subjected these patients to a ready infection of the skin ; but why did it not occur on other parts of the body? It occurred in the meatus of the ear, because the patient had the primary sensation of fullness in the ear, and he tried to remove what he regarded as the cause, viz., wax.

As to treatment, he did not altogether agree with Mr. Layton that dry cleansing of the meatus was always necessary. He had had success in a week, when the condition had lasted three years, by the following method. First, the meatus was thoroughly cleansed ; he did not object to syringing if he had to remove any débris, as this formed a nidus for the continual infection of the meatus. Then he used some form of bactericidal treatment, *e.g.* S.V.R. (up to 80 per cent.), to reach the deeper recesses, since sometimes there was an associated myringitis. Finally, he applied yellow oxide of

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mercury ointment, teaching the patient to do this for himself. This treatment he had found very successful for cases of long standing.

Sir JAMES DUNDAS-GRANT said that the subject of diseases of the external meatus could not be dealt with too frequently or too thoroughly. Among other morbid conditions, sometimes a diaphragm formed in the meatus as the result of the instillation of irritating drops, and it was important to recognise such a diaphragm and remove it. Otologists could not too seriously take to heart Dr. Barker's recommendation to attend to the scalp; it had helped the speaker out in some difficult cases in which previous advisers had overlooked the scalp condition.

Sometimes a case became worse instead of better with antiseptic ointments, and then he had found some dusting powder efficacious. He would like to know whether Dr. Barber could lay down any guiding principles..

Dr. Barber had referred to condylomata as being a source of errors in diagnosis. Such a case was that of a woman who had condylomata of the external meatus. He saw her in an infirmary in response to a message that a woman with a discharge from her ear was in delirium. She had discharging condylomata and delirium, resulting from her specific trouble, but no cerebral abscess or meningitis.

Could Dr. Barber suggest some form of practical routine in regard to examination of discharges? Did he think there should be a routine bacteriological examination? If so, how should it be carried out?

Dr. BARBER, in reply, said that Mr. Layton had raised the question of erysipelas, and rather reproached him, the speaker, for not having dealt with it more fully. But most of the cases of erysipelas which he saw were on the malar region and the eyelids; and, though this had been denied, he believed that in every case the portals of entry of the infection were fissures, usually at the upper angle of one or both nostrils. He had also seen cases of recurrent erysipelas due to fissures below the lobe of the ear and in the retro-auricular space. It was true that in infection of the skin secondary to true otorrhœa, the streptococcus, if present, became established in the skin, and caused fissures. The streptococcus always chose the natural folds and angles.

He agreed with what Mr. Graham Brown said as to the influence of mechanical irritation of the meatus as predisposing to invasion by micro-organisms, which might be on the surface. Anything which caused a breach on the horny layer was likely to cause an invasion, particularly by the *Streptococcus longus*.

Sir James Dundas-Grant raised the matter of ointments irritating when they were expected to do good. He (Dr. Barber) thought the explanation was as follows: Apart from the idiosyncrasy of certain skins towards given substances, such as sulphur, one had to remember that if one were dealing with a pure parasitic infection, such as ordinary dandruff, the simple form of meatitis due to the pityrosporon, or a localised staphylococcol infection, most antiseptic preparations in the form of ointment would do good. But if the epidermis became *sensitised* to one of the infecting organisms, then ointments such as ung. hydrox. flav. or those containing resorcin and sulphur, would almost certainly irritate it,

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because, once the epidermis was sensitised, no matter to what, other substances, which were usually well tolerated, were likely to aggravate the eczematoid condition. In such circumstances he used Lassar's paste, or calamine liniment, but never mercurials or sulphur.

With regard to examination of the discharge from a meatitis, bacteriological examination was not so important to the dermatologist, as he should be able to tell what organism was responsible for it. But in doubtful cases he had cultivations made. One had to remember that most cases of streptococcal infection of the skin became secondarily infected with a *Staphylococcus aureus*, but the converse did not occur. If one cultivated from a streptococcal impetigo, on ordinary media aerobically, the chances were that one would grow the *Staphylococcus aureus* only; that was why special media were used in doubtful eruptions of streptococcal origin, a medium containing crystal violet, which inhibited the *Staphylococcus aureus* being most commonly used.

An illustrative case was the following. He saw a Naval boy, who was stationed at Malta, where he contracted ordinary impetigo contagiosa, and for five months he was treated there for it, without success. Then he was sent to Plymouth, where he was treated for it for five weeks, again without success. The boy said he had been given a vaccine of staphylococcus. It did no good. In impetigo a vaccine made from the *Streptococcus longus* and the *Staphylococcus aureus* was valuable, and would often abort an attack, but using one of *Staphylococcus aureus* alone was useless. With the suitable treatment this boy's eruption cleared up in less than ten days.

Four Cases showing Movements of Tympanic Membrane on Respiration.—H. J. Banks-Davis, F.R.C.P.

(1) A. B., a woman, aged 58, with middle-ear deafness (? otosclerosis): used to have vertigo and tinnitus: part of the right tympanic membrane, which is atrophic, moves inwards and outwards on nasal respiration.

(2) C. W., a man, aged 40, a civil servant. Injury to left tympanic membrane by shell explosion. Seat of rupture replaced by fine scar tissue which flaps in and out when patient yawns and on nasal inspiration and expiration.

(3) D. M., a woman, aged 27, a civil servant. Right tympanic membrane is thinned and glistening and falls in upon the stapes on inspiration; she can elevate the membrane by expiration, the hearing power then being improved.

(4) F. R., a man, aged 33, a civil servant. A large thinned transparent area of the left tympanic membrane has been replaced by a cretaceous deposit, stiffening the membrane. Original injury was rupture of tympanic membrane by a shell explosion. A large portion of the membrane was destroyed. Case exemplifies the fact that, however large a perforation may be, Nature will repair the injury if possible.

[It should be noted that the movements of the membrane occur on nasal respiration, but are not noticeable on buccal respiration; this is a very significant fact.]

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