After receiving this report, I asked the patient whether he had suffered from epistaxis. He remembered that in childhood "his nose used to bleed," but not since.

The rhinolith is considerably larger than any previously reported. Text-book references are scanty. De Havilland Hall and Herbert Tilley give the average weight as 4 to 5 grammes (70 to 90 grains). They state that the usual site is the inferior meatus, that the usual nucleus is a foreign body and that their occurrence is more common in females than in males. The rhinolith had evidently been *in situ* for a long period, and it is remarkable that it had not caused any symptoms.

I am greatly indebted to Dr Blaxland for letting me examine the patient, and to Dr Edwards and Dr Utz for their examination and reports.

SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY

March 17th, 1922.

President—Dr A. Logan Turner.

Cases of Functional Deafness.—Dan M'Kenzie, M.D.—Whatever hesitation may be felt in placing reliance upon the vestibular reactions in the diagnosis of functional or hysterical deafness, no dubiety can exist when absolute nerve deafness is suddenly recovered from. This absolute test is illustrated in the following cases:—

Case I.—An old lady complained that she had been stone-deaf for several weeks. Examination bore out her statement: the hearing for the voice and also for the tuning-fork by air and by bone was entirely absent. Both meatuses were blocked with impacted cerumen; this was removed by syringing. The patient said that she could now hear, and, on examination, while there still remained a certain amount of nerve deafness, probably senile, she was able to hear the moderately loud conversational voice. Obviously, the obstructive deafness superimposed upon the slight nerve deafness had induced, by suggestion, a complete loss of all sound perception.

Case II.—Male, aged 56. Operated on for sessile osteomata occluding both external meatuses and causing deafness, especially

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severe on the left side. On this side, where the meatus was completely blocked, the auricle was reflected forward after a post-aural incision, and the bony meatus was enlarged with gouge and mallet. On the right side, the operation was undertaken without displacing the auricle. Left facial paralysis, which is proving now to be transitory, followed the operation, and the reactionary swelling of both meatal walls led to a continuation of the obstructive deafness. Ten days after the operation the patient suddenly became absolutely deaf to all sound in both ears, without any spontaneous nystagmus, although a little giddiness was complained of. The caloric reactions were negative, but the swollen and occluded meatuses forbade any reliance being placed on this test. In view of all the circumstances, operative and clinical, a diagnosis of functional deafness was made, and a good prognosis hazarded. A month later the patient was able to hear the tuning-fork by bone conduction in both ears, and a few days later the hearing in the right ear suddenly returned "with a crash" which made him stagger. At the present time (six months after operation) the hearing in the right ear is normal, save that loud sounds are felt to be unpleasant. There is still deafness, but only obstructive deafness, in the left ear.

Mr STUART-LOW said he presumed that the osteoma was of the sessile and ivory type and situated far in the meatus on the posterior wall near the membrana tympani. A bony growth of such a character would necessitate very heavy hammering for its removal, and the probability was that the hammering, by giving rise to an effusion into the aqueductus Fallopii, explained the occurrence of the temporary facial paralysis. In order to obviate what he considered very dangerous brain-shaking even in an ordinary mastoid operation, he had invented lead-headed chisels and mallet, the use of which materially lessened such concussion.

Mr VLASTO asked whether the tuning-fork tests in these two cases were conclusive in favour of nerve deafness? When he was in the Navy, he was one day talking in the ward-room when he suddenly noticed he had become very deaf in one ear. He came to town and consulted three surgical colleagues. Mr Cheatle diagnosed his case as one of neurosis; there was definite absence of nerve conduction on one side, and he said the tests were not conclusive. The deafness in that ear, with a singing sound, persisted three months. Hearing gradually returned, and it was now normal. If the tests in these cases were not conclusive, the condition might be a neurosis.

Dr M'KENZIE (in reply) said that in regard to the facial paralysis, the conclusion to which he had come, on a review of the case, was that he had probably gone a little astray. It was difficult to locate the facial nerve from the meatal aspect, and especially from a deformed meatus, without the guidance of the antrum. In doing the radical mastoid operation one found the aditus, and knew from it the position of the nerve. But in the meatus, with its curve forward and the shelving forward of the posterior wall, the facial nerve lay further forward and nearer to the chisel than one was apt to

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suppose. He thought that in the future the simplest thing in these cases would be to make an opening into the antrum first, and having thus localised the antrum and the facial nerve, one could estimate when, in the bony meatus, one came into the region of danger. Some time ago he did some measurements on the facial nerve and found that it lay only 2 or 3 mm. behind the posterior wall of the meatus, and a little deviation in an operation on the bony meatus would bring one into the facial canal. The osteoma was of the sessile variety, the whole of the posterior meatal bony wall being advanced; the growth was so near the membrane that the latter was involved. He could not see the membrane before operating, as the meatus was completely occluded.

Dr LOGAN TURNER (President) said he thought that if the facial paralysis was due to effusion into the nerve sheath from the act of chiselling as suggested by Mr Stuart-Low, there would be more cases of facial nerve paralysis after the performance of mastoid operations.

Case of Extra-dural Abscess, Meningitis and Cerebellar Abscess; Recovery—E. D. D. DAVIS, F.C.R.S.—E. C., female, aged 26. Admitted on 4th December 1921, with a diagnosis of meningitis and suppuration of the left ear. The left ear had discharged off and on for two years. On 1st December she had severe headache and vomited for ten hours, and became very noisy and restless.

When seen three days later she had attacks of severe left occipital and frontal headache, but answered questions clearly. Temperature 100.8 F., pulse 92, respirations 24. Pupils contracted with normal reactions. No nystagmus. Rigidity of neck, slight tenderness of temporal fossa; no mastoid tenderness. Left ear showed offensive, purulent discharge with granulation tissue in the roof and an attic perforation. Warm irrigation of left ear produced vertigo, but no nystagmus. Hearing: conversational voice, 6 feet; bone conduction normal; Weber to left. Turbid cerebro-spinal fluid reduced Fehling's solution; neutral reaction; numerous pus cells, no organisms.

Left radical mastoid operation. There was foul pus in the lateral sinus groove, and extending forwards between the dura mater and petrous bone to the aqueduct of the vestibule and internal auditory meatus. Lateral sinus covered with granulation tissue, but collapsed on plugging the upper end, and afterwards, when opened, was found to be patent with no thrombosis. The posterior fossa was exposed right up to the labyrinth and facial canal, and as there was a sinus in the roof of the middle ear, a large area of middle fossa dura was exposed. Both areas of dura mater appeared to be normal. The wound was left open with a view to opening the dura mater later.

Patient was relieved. Temperature normal, pulse 88, but on 12th December she complained of severe headache and vomited. Lumbar puncture; clear sterile fluid. Patient drowsy, nystagmus to left, optic discs congested, no œdema. Definite inco-ordination of left hand,

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dysdiadokokinesis, left grasp weaker than right. Left tendo Achillis and knee-jerk increased: later ankle clonus.

Posterior fossa trephined behind lateral sinus, and after repeated exploration some foul-smelling pus, suggesting the presence of *Bacillus coli*, was evacuated. Puncture of the dura in front of the lateral sinus produced no pus. Patient recovered slowly. The pus from the extra-dural abscess and the cerebro-spinal fluid withdrawn 20th December produced pneumococci and *Bacillus proteus*.

Dr LOGAN TURNER (President) asked whether Mr Davis thought the cerebellar abscess was there all the time, the symptoms being masked by the meningitic symptoms. He also inquired why the exhibitor did not in the first instance explore the cerebellum through the area of the bone internal to the sinus rather than behind it. The patient had an extra-dural abscess between the labyrinth and the sinus.

Mr G. J. JENKINS recognised the difficulty of making a complete examination in these conditions. Mr Davis spoke of pus cells being found in the cerebro-spinal fluid; he (Mr Jenkins) supposed that polymorpho-nuclears were meant. This was a very important finding, because in cases of cerebellar abscess in which there was no definite meningitis, he had usually found the cell count showed lymphocytes in greater proportion. He now had a case with 97 per cent. lymphocytes, 3 per cent. plasma cells, and protein in the fluid 0·04 per cent., and no change in the chlorides. In this case the count was that of purulent meningitis—a large pus-cell count. He would like to know the sugar estimate, the proteid content, etc. The case raised a very important point in regard to cerebellar abscess. There were two kinds of abscesses in the posterior fossa: those involving mainly the meninges, and those involving the cerebellum itself. Was the pus in close relation to the anterior wall of the fossa, in relation to the lateral sinus, or in the substance of the cerebellum?

Mr J. F. O'MALLEY said that Mr Davis's case was one of great interest. Did he consider that the route of the infection was directly into the posterior fossa, along the lateral sinus? Or did he think it was translabyrinthine? Mr O'Malley thought it probably was not trans-labyrinthine, as the bone conduction was evidently good. In this case, however, there appeared to have been two intracranial complications. At the first operation there were pus cells, and on the second occasion the cerebro-spinal fluid was clear and sterile, and from that, one was inclined to assume that the meningitis was not dependent on the abscess, the latter being probably the antecedent condition, the meningitis being the acute manifestation which brought the patient for advice.

Sir WILLIAM MILLIGAN agreed with Mr O'Malley that the abscess had probably been present all the time, and that it was the lateral sinus condition which brought the patient immediately under observation. In his experience, the majority of cases of cerebellar abscess had a certain amount of meningitis, though it was a question as to what was meant by meningitis. No organisms were found in this case, and it was important to know whether the cells found were pus cells. He did not regard a case as purulent meningitis unless organisms were found in the fluid.

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In the present case there had been much localised irritation, and some lymphocytosis in the theca. He would raise the question whether, in the case of an extensive cerebellar lesion such as this, it was not advisable to make a counter-opening for drainage. When there was a septic process spreading along the petrous to the internal auditory meatus, and the cerebellar abscess was opened through that route, was it not safer to make an opening behind the lateral sinus and do counter-drainage? In many cases drainage was often very imperfect, therefore recently he had carefully followed the counter-drainage plan, and felt sure his results had been better. He did not think it added to the risks. The anatomy of the cerebellum was so peculiar, as also was the way in which the tentorium acted, that drainage of these cases was even more difficult than in the case of cerebral abscess. The result in Mr Davis's case was a surgical triumph. He (Sir William Milligan) had had a very similar case a year ago, but with the addition of an extra-dural abscess, a cerebellar abscess with thrombosis, and also, at any rate clinically, septic "cerebellaritis." For days the patient hovered between life and death, but finally recovered. Much bone was taken away, and counter-drainage was employed; a large cerebellar hernia resulted, which had now disappeared, and the patient's mental condition was now good.

Sir JAMES DUNDAS-GRANT endorsed Sir William Milligan's contention as to the value in these cases of making a counter-opening to secure good drainage. In a case which he showed before the Section many years ago, there was thrombosis of the lateral sinus in which ligature was done, but symptoms of cerebellar abscess soon supervened, the arm on that side becoming quite flaccid. He opened the abscess in front of the sinus, but pus poured out continuously until he made a counter-opening behind it. After that it dried up with extraordinary rapidity, and the patient went through the war as a driver in the Artillery. In the present case the subdural abscess seemed to have originated in the saccus endolymphaticus.

Mr CLEMINSON said the question asked as to why Mr Davis did not explore in front of the lateral sinus, reminded him of an unfortunate experience in the case of a girl upon whom he operated for cerebellar abscess, the dura being opened in front of the lateral sinus by the removal of a triangle of bone. A drachm of pus was in that way evacuated, but the patient almost immediately stopped breathing, though the heart continued to beat. Artificial attempts made for two or three hours to restart respiration failed, although the heart still continued to beat during this time. In trying to find an explanation of this, he had wondered whether the œdema of the opposite side of the cerebellum, when the pus had been evacuated, had pushed the medulla against the edge of the foramen magnum and so interfered with the respiratory tract; and whether, therefore, in a similar case, it might not be wise to do a decompression operation on the opposite side first. At the post-mortem examination nothing more was found.

Mr SMALLEY said he had had a case in which a boy was brought in comatose with a lesion on the right side; evidently he had an intracranial abscess. Ether was given, and he (Mr Smalley) had just begun the operation—no bone had been removed—when the breathing stopped, and for that reason he thought it was a cerebellar abscess. Artificial respiration

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could not be carried on, and he therefore did a rapid operation, so that in five minutes he had opened the cerebellum and let out over an ounce of pus. Breathing then recommenced. The patient lived for three or four days and then died of "cerebellaritis." The stoppage of respiration in that case was due to pressure on the medulla.

Dr LOGAN TURNER (President) referred to the fact that Sir William Milligan some years ago drew his attention to the value of doing lumbar puncture when confronted with such difficulties as had just been alluded to. When breathing ceased, lumbar puncture could be done more quickly than the completion of the cerebellar operation.

Mr E. D. D. DAVIS (in reply) said he did not know why this patient recovered, unless it was because it was a pneumococcal and not a more virulent streptococcal infection. There was a perisinus abscess which tracked forwards to the internal auditory meatus. The wall of the sinus was covered with granulation tissue and the cerebellar abscess was discovered near the bulb of the lateral sinus. He believed that infection arose from the perisinus abscess and not through the labyrinth, because the hearing of the affected ear was good, and warm irrigation produced vertigo but no nystagmus. At the time of the first operation there was no clinical sign of cerebellar abscess, and the neurologist, Dr Adie, at his second examination, eight days after the first operation, discovered definite signs of a posterior fossa or cerebellar abscess. He (Mr Davis) said it was presumed that the abscess had developed later and was not present at the time of the first operation. The dura was punctured and explored in front of the lateral sinus with a negative result, but repeated exploration through a large opening in the posterior fossa behind the lateral sinus produced a quantity of foul pus. The posterior fossa was opened behind the lateral sinus, because a more thorough exposure of the brain was obtained and, in a case where the diagnosis was doubtful, exploration and access were much easier. In his experience, the cerebro-spinal fluid of obvious cases of meningitis confirmed by autopsies was frequently sterile and contained no organisms in spite of the presence of pus.

Lateral Sinus Suppuration, with an Unusual History—NORMAN PATTERSON, F.R.C.S. — Boy, aged 11. Admitted 23rd November 1921, with a history of watery discharge from the left ear since 9th September 1921.

Left tympanic membrane inflamed, Shrapnell's membrane bulging and small perforation in attic region; auricle projecting and slight tenderness over mastoid. Incomplete mastoidectomy by Mr W. Morris. Pus found in mastoid cells.

Re-admitted 16th January 1922. History of a swinging temperature for a fortnight, but no rigors.

Tympanic membranes and mastoid region normal. A very tender spot, size of a sixpence, was situated over the lateral sinus, 2 inches behind left external auditory meatus. Left wrist-joint painful on movement, and slightly swollen. Widal reaction negative.

Operation by exhibitor. Mastoid opened up, healthy; sinus

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exposed, pink in colour; followed backwards as far as the tender area, previously mapped out with chisel. Sinus was opened in usual position and contained dark blood-clot. Clot followed backwards. Exactly opposite the tender area sinus contained about half a drachm of pus. Clot, which extended backwards nearly to the torcular, was cleared out until free hæmorrhage occurred from the proximal end. Internal jugular ligatured in neck. Temperature remained irregular until 1st February. Boy made a good recovery.

Examination of the pus showed streptococci to be present. The case seemed to be a very unusual one, in that an abscess had formed in the sinus at a great distance from the mastoid cells.

Very Extensive Infection of Lateral Sinus and Jugular Vein, followed by Recovery—NORMAN PATTERSON, F.R.C.S.—Girl, aged 17. With right otorrhœa since scarlet fever six years previously. Admitted 19th November 1921, suffering frontal headache, vomiting, rigors, and constipation.

On examination: dull, speech slow, sleeps most of the time; headache mostly occipital; marked deafness in the right ear; several rigors. Lateral sinus exposed, and pus evacuated; abscess extended nearly as far as the torcular; free bleeding obtained from this end of sinus. Internal jugular exposed in neck and found thrombosed. Attempt made to get below the clot by dividing lower attachment of sternomastoid, but found impossible. Ligature passed round vein at lowest possible point, but here clot was present. The patient, however, made an excellent recovery. Streptococci in the pus.

Mr G. J. JENKINS, referring to the first case, said he had seen more of these quiet infective cases in the last two or three years than in the rest of his experience. In a recent almost identical case he advised that the patient should be kept under observation. There had been slight discharge from the ear, but when examined the tympanic membrane had healed. Mr Cheatle operated, and found the lateral sinus was thrombosed, with an extensive abscess formation in the sinus. The patient recovered. It reminded him (Mr Jenkins) of three or four cases he had seen of healing in the middle ear, with the infection persisting in some other part, causing abscess. One patient he saw with acute middle ear trouble in May, ear trouble again in August, and a further occurrence in September, and again it healed. The patient had never been quite comfortable, but always had dull, occipital pain. He explored in October and found the air cells normal and the mastoid healthy, but there was an extra-dural abscess and the lateral sinus was in relation to it. In regard to the case of infection of the lateral sinus and jugular vein, the lesion was very extensive, and reminded him of a similar case which had been in the hands of the physicians for two or three days. The patient had lateral sinus thrombosis, the sinus being affected in the lower part. The internal jugular was involved to the junction of the great vein in the thorax. In the middle of the neck no

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jugular vein could be found, but there was an abscess in the place of the internal jugular. At the time of the operation the patient had residual abscesses, one in the forehead, another in the arm. Streptococcus was found. There was complete recovery. He thought it did not matter what the particular organism was; what did matter was, what was the resistance of the patient to the bacterial infection?

Mr STUART-LOW said that it was pretty well agreed that cases such as these were almost always post-influenzal, and that there was in influenza a great tendency to the formation of clots in the blood-vessels owing to profound changes in the blood. He had often found it very helpful to give quinine for at any rate forty-eight hours before operating, and in at least two cases recently the patient had recovered without operation, the clots having resolved.

Dr LOGAN TURNER (President) said that the results in Mr Patterson's cases were excellent. Did he ligature the internal jugular in all his cases? Its necessity in the second case was obvious, but was there any bleeding from the lower end in the first case?

Mr NORMAN PATTERSON replied that there was no bleeding at the lower end of the sinus in the first case, and he fully expected to find a thrombus in the jugular. In answer to Mr Stuart-Low, he feared that if he had relied on quinine for the treatment of these patients, they would not have been here to-day.

ABSTRACTS

PHARYNX AND NASOPHARYNX

The Treatment of Peri-tonsillar Abscess. LEVINGER (Munich). (*Archiv. für. Laryngol.*, Band 34, Heft 1, p. 155.)

The writer recommends at any stage his operation of extra-capsular enucleation of the upper pole of the tonsil under local anæsthesia (2 per cent. novocain with adrenalin), as described by him in 1914 (*Münch. Med. Woch.*, No. 23) and in 1919 (*ibid.*, No. 12). He postulates for the operation in the early stage with a thorough command of the technique. One advantage of this method of treatment is that it affords protection from recurrence. JAMES DUNDAS-GRANT.

Clinical Reflexions on Peri-tonsillar Abscess. DR CANUYT, Strasbourg. (*L'Oto-Rhino-Laryngologie Internationale*, January 1922.)

The writer emphasises the following points regarding this condition. He quotes the case of the peri-tonsillar abscess left to mature. Suddenly the temperature and pulse rise, and the patient presents the classical signs of phlebitis of the cavernous sinus. The patient,

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