SOCIETIES' PROCEEDINGS

THE SCOTTISH OTOLOGICAL AND LARYNGOLOGICAL SOCIETY

The Fortieth Meeting of the Society, held in the Ear, Nose and Throat Department of the Royal Infirmary, Edinburgh, on Saturday, November 17th, 1934

I.—Summary of Paper read at the Meeting of the Scottish Otological and Laryngological Society on November 17th, 1934, by Dr. I. Simson Hall, Edinburgh

DR. HALL read a paper upon Orbital Infections, based upon a series of twenty-three cases collected from the records of the Ear, Nose and Throat Department and from the Eye Department of the Royal Infirmary, Edinburgh, covering an approximate period of ten years.

The symptomatology of the condition was described, and Dr. Hall went on to divide the series of cases into two groups which he found were determined by the origin of infection, those of nasal origin and those of extranasal origin. Careful analysis of each case history showed that the series of cases was almost equally divided into those two groups.

Four deaths were recorded in the twenty-three cases, and all the deaths were found to have occurred in cases of extranasal origin, and a connection was traced between the duration of illness in this particular class of case and the probability of recovery. It appeared that those cases which received early treatment showed a much higher recovery rate than those in which operative treatment was delayed.

The origin of infections varied—boils, impetigo, erysipelas, injury, etc. It was suggested that these cases could be distinguished, the one group from the other, by careful observation and careful enquiry into the preceding illness. On the early diagnosis of the case rested the choice of treatment, and the confusion of the one type of case with the other was the reason for the wide divergence of opinion on the part of various authorities.

It was submitted that cases of nasal origin offered scope for conservative measures, in particular intranasal treatment ; whereas in the group of extranasal origin immediate radical treatment was

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required to prevent calamity. An analysis of the treatment in this series of cases was made in support of these contentions.

In conclusion, the methods of drainage of the orbital space and their comparative merits were discussed.

CASES

CASE II.—**Case of Orbital Abscess.**—Dr. I. SIMSON HALL. M.G., æt. 12, 20.10.34.

History.—Has a bad habit of picking her nose; often has sores inside nose; felt cold and shivery five days ago; next day, complained of pain in left eye.

Examination.—Proptosis of left eye, incomplete fixation. No tenderness over supraorbital ridge; tender, fluctuating swelling over left side of nose; œdema of conjunctiva; lateral wall of left nasal cavity very swollen.

Operation.—Incision over supraorbital margin on to side of nose. On elevating the periosteum, pus was found coming through the lowest part of the lachrymal bone and from the back of the orbit (growth of hæmolytic streptococci). The floor of the frontal sinus was removed and the ethmoid opened—both were found healthy. Drainage was established into the nose; tube inserted. A stab incision was made in front of the inferior turbinate to drain the lower part of the abscess cavity. Supraorbital incision left freely open. Subsequent progress has been uneventful.

DISCUSSION.

Dr. LOGAN TURNER said he wished to thank Dr. Simson Hall for his interesting, brief, and clearly expressed paper, the kind of paper that the Society welcomed. He (the speaker) was interested in the number of cases in what the writer called the "extra-sinus" subdivision, four or five in number—probably first examined elsewhere than in the Ear and Throat Department—and were not cases of intra-nasal origin. The reason why this subdivision contained the larger number of fatal cases was because death occurred from cavernous sinus thrombosis. The superficial boil on the face, through the intracranial venous anastomosis, gave rise to the cavernous sinus thrombosis more readily than in the cases of paranasal air-cavity infection. As regards the treatment of the orbital complications, he had been latterly in the habit of treating those of ethmoidal origin by the intranasal route. Intranasal treatment, he thought, was more likely to fail when the complications were of frontal sinus origin.

Mr. J. D. LITHGOW said that in his experience a number of the fulminating type of cases as described by Dr. Hall were associated with caries of the lateral incisor or canine tooth. The treatment in this type should include the extraction of the offending tooth.

Dr. ADAM said the question of diagnosis was often difficult. Some years ago he showed a case in which the ophthalmic surgeon had made four or five punctures in the orbit but got no pus. He (the speaker) had to open every one of the paranasal sinuses on that side and found

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pus in them all. He thought there must also have been some thrombosis of the sphenoidal sinus but the symptoms all subsided when the sinuses were drained. He had another case in a child, in whom it was an orbital abscess, and opening through the paper plate helped to cure the case, though the periosteum was stripped off down the face. He thought that the external cases to which Dr. Hall had referred were so apt to lead to thrombosis of the cavernous sinus that one should never incise a furuncle of the lip.

The PRESIDENT said his experience had been limited to the very obvious nasal cases which, in young children, usually do very well after intranasal operation. In cases from a boil on the upper lip his experience had been unfortunate; they had all developed sinus thrombosis. He had not met with cases of extranasal origin as Dr. Hall suggested. He thought the frankly nasal cases fairly obvious but could understand the extranasal ones being very difficult and also very dangerous.

Dr. GAVIN YOUNG said that at one time he had to deal with a considerable number of these cases when he acted as rhinologist to the Glasgow Eye Infirmary and his experience quite definitely was—he had shown a series of these cases at a meeting eight or ten years ago—that each of these cases proved amenable to intranasal operation. He remembered one girl particularly in whom the abscess was actually pointing through the upper eyelid, but a radical intranasal intervention gave her free drainage through the nose and the abscess in the eyelid did not burst. The cases that he saw were all of nasal origin. Dr. Young thought that the following point was of some interest but perhaps more so to the ophthalmologist than to the rhinologist, he meant the question of visual acuity. He did not know if Dr. Hall could say anything about it in this particular case. Some of these patients could hardly tell the number of fingers held up in front of the face. Some of them could see perfectly well. He did not know exactly what the point of that was, whether the orbital periosteum had been involved or not. Dr. Ballantyne had once explained it but the explanation had slipped from his (the speaker's) mind.

Dr. SIMSON HALL (in reply) said Dr. Turner had pointed out that the majority of these external cases which died were probably those of cavernous sinus thrombosis and that undoubtedly was so. The point he (Dr. Hall) wanted to make was that these cases which died, which he reported, had definitely a history of, say, furunculosis exactly similar to other cases of the same type which recovered. The difference between the two cases is found in the history and in the duration of illness. Those cases which came up for treatment within four days recovered. All the cases definitely over that period died. It seems that if these cases are seen and operated upon rapidly, within the first few days, the majority will recover, and if they are left will almost certainly die.

Dr. Hall said it was very easy to be misled in the history. One case he had hoped to show to-day did not appear. It was a case upon which he operated by the intranasal route. There was a history of some nasal discharge and on examination of that side of the nose

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there was nasal discharge. On the other hand, he found he had to do an external operation a few days later. Afterwards he interviewed the mother and questioned her very carefully and obtained a history of impetigo followed by a boil in the nose. The organism was a staphylococcus. Dr. Hall was convinced that this case originated not from the nasal discharge but from the furunculosis, because when he opened the ethmoids they were perfectly normal. The frontal sinus was also perfectly normal so that he was completely misled by the history.

In reference to Mr. Lithgow's remarks, no case in this series appears to have had a history of dental origin.

Dr. Hall consulted many records in the preparation of this paper, but of course time would not permit him to mention the sources of his inspiration.

CASES III to XIII.—Dr. J. S. FRASER.

The following nine cases are shown to demonstrate the results obtained by external operations on the frontal sinus.

In most of the cases the conservative (Howarth) operation was performed in the first place. This operation has one obvious advantage, namely, that there is little or no deformity; on the other hand, the writer's experience is that in the majority of cases, within a short period, the opening into the nose closes up, though at the time of the operation, when the orbital periosteum is retracted, there appears to be a very large opening between the frontal sinus and the nasal cavities.

Method.—Killian incision through the unshaved eyebrow, curving down the side of the nose; periosteum retracted from floor of frontal sinus and frontal process of superior maxilla; lachrymal bone and paper plate of ethmoid exposed. Floor of frontal sinus removed along with a considerable piece of the frontal process of the lachrymal bone and lateral mass of the ethmoid. (In most cases the lower border of the middle turbinate had previously been removed.) Mucosa of the frontal sinus left in position, except of course when it covered the floor. Iodoform gauze packing was introduced into the frontal sinus and ethmoidal region, the end being brought down to within half an inch of the anterior nares. (A rubber drainage tube was not introduced and no attempt was made to apply a skin graft.) The packing was usually removed forty-eight hours after the operation and the stitches at the same time.

Note.—The writer has had to perform the radical (obliteration) operation on one case which was operated on by another surgeon, in which a drainage tube had been introduced from the frontal sinus into the nose and a skin graft had been applied. In spite of this when the frontal sinus was opened, it was found to be full of pus.

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CASE III.—**Multiple Sinusitis with recurrent nasal polypi: multiple operations including bilateral radical frontal sinus operation.**

M.C., male, aged 22, seen 11.2.25, complaining of nasal obstruction and discharge. 21.5.25.—Polypi and lower border of middle turbinates removed. 18.1.26.—Recurrence of polypi: second intranasal operation. 15.2.26.—Polypi again present, radical operation on left maxillary sinus: polypoid mucosa. 16.6.33.—Both nasal cavities again full of polypi which are coming through the choanae. 5.10.33.—Radical external frontal sinus operation (obliteration), left side. Ethmoidal cells cleared out. 8.10.33.—Radical frontal sinus operation on right side. Diplopia present for five days, but disappeared. 17.11.34.—No recurrence of polypi.

CASE IV.—**Chronic right fronto-ethmoidal suppuration: conservative external operation a failure; radical (obliteration) operation.**

Mrs. J. A., aged 44, seen 15.5.31. History of pain around right eye for thirteen years. Patient has had many operations at other hospitals. Pus and polypi on right side. Transillumination—only left frontal and antrum illuminate. 4.6.31.—Howarth operation on right frontal sinus. 27.7.31.—Mucopus washed out of right antrum. Intranasal operation. 25.9.33.—Opening from nasal cavity to right frontal sinus has closed, attempt to open it by intranasal route not successful. 8.5.34.—In view of the patient's persistent complaint of headaches, "obliteration" performed. On retracting orbital periosteum, pus at once escaped. The opening into the nose had completely closed. 29.6.34.—Local condition satisfactory though there is some diplopia. 17.11.34.—No pus, but patient still complains of headache.

CASE V.—**Acute Frontal Sinusitis; conservative treatment, intranasal operation and Howarth operation failed; obliteration of sinus; cure.**

W.B., male, aged 36, seen 8.4.32, complaining of headache of five days' duration; pain has gradually got worse. On examination, swelling of right middle turbinate; tenderness over right frontal sinus. Right frontal sinus dull on transillumination. Patient admitted for head-light baths. 12.4.32.—Intranasal operation. 16.5.32.—Still pain above right eye. Patient has developed an abscess round the knee. Howarth operation, right frontal sinus, cavity full of very thick yellow pus. 26.5.32.—Evening fever: friction at left base. Patient transferred to medical ward with

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pneumonia. 10.6.32.—Patient insisted on going home. 11.2.34.—Patient sent back with pain over right frontal region. Temperature 99° F. Attempt made to open up frontal sinus under local anæsthesia by intranasal route unsuccessful. 15.2.34.—Obliteration of frontal sinus. Communication between the sinus and nose had closed up entirely. The inner or medial surface of the orbital periosteum had become adherent to the posterior wall of the frontal sinus at the margin of the cribriform plate. 17.11.34.—Obliteration satisfactory. Nose clean and dry; no pain.

CASE VI.—**Subacute fronto-ethmoidal sinusitis in neurotic patient; failure of intranasal and conservative external operations; radical obliteration operations cured his complaints of headache but resulted in unilateral blindness.**

J.F., male, aged 44, seen 14.4.32 with pain over left eye for two weeks; small polypus in middle meatus of left side. Left antrum illuminates well, left frontal sinus dark. Head-light baths. 16.4.32.—Patient no better. Left middle turbinate removed and naso-frontal duct opened up. On proof puncture, mucopus washed out of left antrum; patient continues to complain. 3.5.32.—Howarth operation; left sphenoidal sinus also opened. 4.5.32.—Great swelling of eyelids, due to blood extravasation. 26.5.32.—Still swelling of eyelids; patient continues to complain. 5.7.32.—Radical operation. It was found that the opening made by the Howarth operation between frontal sinus and nose had become very narrow indeed. 19.7.32.—Swelling on lower part of forehead on left side. Incision opened up: space between skin and posterior wall of sinus blocked by old blood clot. Cavity packed with iodoform gauze. 7.12.32.—Patient still complains of headache, but now on the *right* side! He says that he is inclined to be drowsy and that there is morning sickness. His memory is said to be defective. Left frontal sinus is obliterated and left nasal cavity looks satisfactory. Patient said to be neurotic and sent to a neurologist, who found no evidence of intracranial trouble. 3.2.33.—Submucous resection of septum and intranasal operation on right frontal sinus; sound passed easily into sinus. 24.7.33.—Patient still complains of right-sided frontal headache. Opening made into right frontal sinus is patent. Opinion of those in ward who have to do with patient is that he "swings the lead". 9.2.34.—Patient sent back by his doctor complaining of pain above right eye, aggravated by stooping; also loss of sleep. 29.3.34.—Radical operation, right frontal sinus (much against operator's wish); no pus in sinus; mucous membrane perfectly normal except for floor of cavity, where it was slightly œdematous. 1.4.34.—Much hæmorrhage between skin and posterior wall of sinus; patient

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cannot see with his right eye and on examination, right pupil does not *contract* to light. Ophthalmoscopy shows œdema of right retina and right optic disc pale. 17.11.34.—Patient says that he now has no headache at all; nasal cavity satisfactory; blindness of right eye continues.

CASE VII.—**Chronic Frontal Sinus suppuration; several previous operations including Howarth operation; latter repeated at patient's request but again failed; obliteration of sinus.**

H.K., male, aged 61, seen 14.10.32, with history of several previous operations in Singapore and other towns. Patient complains of severe pain over right eye, which is closed by œdema. Examination shows marks of incision beneath the eyebrow on each side; large perforation of nasal septum with adhesions; tenderness over right frontal sinus; right sinuses dark on trans-illumination. 18.10.32.—Frontal sinus operation (right). Evidently only the Howarth operation had been done previously and the sinus contained a lot of pus; no communication was present in the nose. Patient anxious to avoid external deformity and therefore, an apparently free opening was made from the sinus into the nose. Cavity packed as usual and skin wound closed. 21.10.32.—Swelling of upper eyelid; stitches removed; no double vision. 15.2.33.—Patient complains of tight feeling across forehead and pain at back of eyes. Scar looks very satisfactory. 17.1.34.—Patient returns complaining of severe pain over right eye. 1.3.34.—Obliteration operation; sinus contained yellowish mucoid material which came away as a cast. 12.3.34.—Erysipelas developed. 3.4.34.—Patient returns from Fever Hospital; wound quite healed; nasal condition satisfactory.

CASE VIII.—**Chronic Sinusitis—Orbital complication; conservative external frontal sinus operation; suppuration continues.**

Mrs. I.M., aged 31, seen 15.10.33, complaining of headache and watering of the right eye for ten months. Two months previously an abscess was opened on the inner side of the right orbit. Patient was pregnant at this time and nothing further was done. Anterior rhinoscopy shows adhesion between inferior turbinate and septum, which is markedly deviated, much pus in the nose, frontal sinuses illuminate well, antra opaque. 19.10.33.—Howarth operation right frontal sinus; large abscess evacuated. 23.10.33.—Evening fever, temperature 101° F. Patient complains of pain in kidney region; patient has nephritis. 31.10.33.—Submucous resection of septum; adhesions cut through and inferior turbinotomy performed. 17.11.33.—Good passage on

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both sides of nose. 22.11.33.—Polypi present on right side of nose, far back. Patient asked to report later. 17.11.34.—Still pus in right nose, high up, anteriorly.

CASE IX.—**Acute Frontal Sinusitis ; failure of intranasal operation ; conservative operation (external) ; satisfactory result.**

R.B., male, aged 22, seen 13.11.33 with pain above right eye for ten days, following a cold and tonsillitis. Swelling above right eye for several days. Temperature 101° F. ; œdema of right eyelid. Anterior rhinoscopy—pus on left side of nose. Pus on back of soft palate on both sides ; right antrum opaque. Radiogram showed right frontal, ethmoid and maxillary sinuses affected ; sphenoids healthy. Proof puncture on right antrum—practically negative. Intranasal operation on right frontal sinus and ethmoid ; rasp entered the frontal sinus. 14.11.33.—Patient better ; temperature normal, no headache, no tenderness. 20.11.33.—Again frontal headache ; radiogram as before. 21.11.33.—Howarth operation. 24.12.33.—Still some crusting in middle meatus. 17.11.34.—Nose quite satisfactory.

CASE X.—**Acute Suppuration in Left Frontal, Ethmoid and Antrum ; conservative external operation ; suppuration continues.**

G.B., male, aged 37, had acute left frontal sinusitis in *October*, 1933. Intranasal operation in another hospital. Left frontal sinus also operated on ; headaches, however, continued. 6.2.34.—Howarth operation on left frontal sinus ; pus under pressure (hæmolytic streptococci). 14.2.34.—Frontal sinus washed out with cannula. 29.9.34.—Frontal sinus being washed out by rhinologist in another town. 17.11.34.—No pain but still pus from left frontal sinus.

CASE XI.—**Pansinusitis with multiple recurrence of polypi ; conservative external operation on frontal sinus ; meningitis ; death.**

Mrs. L. McC., aged 48, seen 2.11.21 with history of previous removal of nasal polypi. Polypi removed on both sides. 8.7.26.—Recurrence of polypi. Sluder operation performed by another surgeon. 7.12.27.—Patient returns with left side of nose blocked with polypi, surrounded by pus. Radiograms show all sinuses cloudy. Proof puncture of right antrum washed out pus. 16.2.28.—General anæsthesia ; radical operation on both maxillary antra ; mucosa swollen but not polypoid. 16.4.29.—Patient returns with both nasal cavities full of polypi. 13.3.30.—Polypi removed with Blakesley forceps. 31.10.31.—Polypi again removed. 22.3.33.—Further recurrence of polypi ; patient anxious to have external

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operation in the hope of avoiding recurrence. 7.9.33.—External operation on left frontal sinus, ethmoid and sphenoid (Howarth operation on frontal sinus). 10.9.33.—Temperature elevated, 102° F.; all stitches removed. Patient complains of stiffness of neck. On lumbar puncture, cerebrospinal fluid cloudy and under pressure (pneumococcus Group IV). Intravenous saline given. 12.9.33.—On lumbar puncture, air injected in addition to saline according to method of Otto Mayer. 15.4.33.—In spite of frequent lumbar punctures, patient died. Permission for *post mortem* refused.

DISCUSSION.

The PRESIDENT said that in reading over Dr. Fraser's account of his technique he thought that most of the members would be struck by the fact that Dr. Fraser makes his drainage with gauze rather than with the tube which Mr. Howarth recommends, in his classical operation. Also, the gauze was removed in forty-eight hours, whereas he (the President) was quite sure that Mr. Howarth's practice is to leave the tube in position from ten to twelve or fourteen days. The President wondered if that would make any possible difference to the result in Dr. Fraser's cases.

Dr. GAVIN YOUNG was sure that this subject must touch all members in a very tender place because all have had these failures. Dr. Young thought that one line of Dr. Fraser's remarks were illuminating. Dr. Fraser had said " floor of frontal sinus removed ". He (Dr. Young) did not know what Howarth's original technique was, whether he removed the floor or left it, but he (Dr. Young) was quite sure that that is where a great deal of the trouble that occurs comes from. If the floor of the frontal sinus is removed, the orbital fat surges into the opening and blocks it up. He (Dr. Young) had done the conservative operation and used this technique a fair amount and of course had had his failures, mostly in the cases in which there was very little development of the ethmoid and very little drainage room left after the operation. The Howarth operation had this advantage, that when it has been carried out first, in the unsuccessful cases one has left a beautiful field for the obliteration operation because the nose has been successfully sealed off and all one had to do was to clear out the disease and allow Nature to take its course. Dr. Young was quite sure that a good deal of the success obtained from the conservative operation was by leaving the floor of the frontal sinus severely alone and making as small an opening as possible in the anterior wall.

Dr. ADAM said it was an odd thing that of all the nasal sinuses the deepest one, the sphenoid, was perhaps the easiest to operate upon, and the most superficial one, the frontal, still affords a problem. He thought the difference was that in the case of the frontal sinus there is a long bony canal to deal with as compared with the sphenoid. He had been very much interested in Dr. Fraser's series of cases because he had had similar experience. Ever since Howarth brought forth his operation all the external operations he (the speaker) had done

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had been of the Howarth type and some of them succeeded and some failed. The difficulty was how to prevent that failure; even leaving in a tube for ten days, as he had done in his last case, had failed. The cavity in this case had been operated upon by someone else and was closed. He (the speaker) made what he considered excellent drainage and left the tube in for ten days and again it had closed. Dr. Adam remarked that members of the Society would see from this month's *Journal of Laryngology* that what Hajek does is to do a Howarth operation but keep the external wound open by packing for months till he sees that the opening into the interior of the nose is epithelialized. In that way he can make sure that there is no occlusion. Dr. Adam thought that the objection in Dr. Fraser's cases was the deformity and he wondered if Dr. Fraser could not do some plastic operation in the way of inserting cartilage.

Dr. DOUGLAS GUTHRIE asked if Dr. Fraser was dissatisfied in general with the intranasal operation or if he still favoured it for the majority of his cases.

Dr. DONALD WATSON said he had been over these cases very carefully and he thought that Dr. Fraser had not paid quite enough attention to the antrum. He had washed out the antrum, found mucopus and left it alone. Mr. Watson thought that such an antrum was infected and should be drained. Even if the antrum is not infected permanently before the operation its drainage is bound to be interfered with at operation and he (Mr. Watson) makes a practice of doing the antrum at the same time as he does the Howarth operation. He had had very good results with the Howarth operation. One particular case was a frontal sinus that had been opened up in Lancaster and the patient came to him after eighteen months with a tube in. This sinus had been discharging all the time. There were polypi in the nose. Mr. Watson did a Howarth operation and removed the floor but he did not get any orbital fat because he did not touch the periosteum. He closed this externally and had primary union of the wound. He left the tube in for about a week. The ethmoid clearance must be as complete as possible.

Dr. J. S. FRASER (in reply) said he brought forward this series of cases because he wanted to find out the experience of other operators. In reply to Dr. Guthrie he said that he liked the intranasal operation on the ethmoid and frontal sinus and would always perform it first, if possible. The advantage is that the outer bony wall of the ethmoid is left so that one did not get the narrowing of the passage from the frontal sinus to the nose. After the tube or packing had been removed following the Howarth operation, the orbital periosteum became attached to the lateral edge of the cribriform plate, where it joins the posterior wall of the frontal sinus and shuts off the sinus from the nasal cavity.

With regard to operation on the antrum, in these cases there was mucopus present on proof puncture, but there was so little that he (Dr. Fraser) did not think it worth while to operate on the antrum in every case. Certainly operation on the antrum would not have prevented the frontal sinus becoming a closed cavity.

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CASE XIV.—**Bilateral Otosclerosis ; radical mastoid operation on worse hearing ear ; bony cap of lateral canal removed and skin graft applied. Hearing result seventeen years later.**—Dr. J. S. FRASER.

Miss G., first seen 5.3.17 complaining of deafness in both ears (left worse) of four years' duration. Right ear only began to become deaf about one year ago. Patient's mother, one sister, and one brother are also deaf. Patient suffers from tinnitus. Drum-heads show slight opacity ; watch heard on forehead and both mastoids ; watch on contact left ear ; 1½ in. right ear ; raised voice 6 in. left ear (finger closure) ; C.V. 2 ft. right ear ; C. 32, C. 64, not heard by either ear ; C. 128 heard by right ear, not by left ; C. 256 heard by both ears. Rinne negative both ears. Upper tone limit, 12,000. Diagnosis : otosclerosis. Prescription given for tri-glandin tablets. Question of operation put to the patient who was to think it over. 28.6.17.—Patient returns and has decided to have operation at Royal Infirmary. *June 17th.*—*Operation*—general anæsthesia ; radical mastoid operation left ear ; bony cap of lateral canal removed and skin graft applied. Unfortunately patient developed surgical scarlet fever five days after operation and was transferred to Fever Hospital, where she remained for eleven weeks, as she developed rheumatic fever. 8.11.17.—Patient reports that the hearing in the left ear is much better. Operation cavity on left side rather moist with desquamated epithelium, but no pus. Watch now heard by left ear at 3 in. C. 64 now heard by left ear, not by right. C.V. heard by left ear at 3 ft. Right ear practically the same as before the operation. 24.11.19.—Patient reports with discharge from operation cavity. She does not have the cavity syringed as she is afraid of giddiness. C.V., left ear now 4 ft., right ear only 2 ft. 11.7.24.—C.V. 5 ft. left ear. 30.10.34.—Some discharge from left ear. Patient notes that she gets giddy if she turns in bed. Operation cavity syringed out, desquamated epithelium and a little pus came away. Watch heard about 3 in. left ear ; just off contact right ear ; C. 32 not heard by either ear ; C. 64 heard by left ear only ; raised voice 2 ft. right ear ; C.V., 6 ft. to 7 ft. left ear. Fistula symptoms present on left side.

DISCUSSION.

Dr. J. S. FRASER said he thought this case was of some interest. A somewhat similar operation was being done by Sourdille of Nantes. His method, however, involved three operations spread over a period of six months. Now otosclerosis is a very common disease and if we are to find any operative treatment to relieve the deafness, it must be something simpler than Sourdille's method. In the present case the ear operated on was the worse hearing ear before operation. It became and is still the better ear. The patient had sent the speaker

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several other otosclerotic friends of hers, with a view to operation. However, shortly after operating upon this patient, Dr. Fraser stated, he had dealt with another case which was not so successful. The second case got a diffuse labyrinthitis and became totally deaf in the operated ear. (In both cases, of course, he operated on the worse hearing ear.) Fortunately infection did not spread deeper but he (the speaker) knew that the operation might have resulted in meningitis and death. The patient informed him that these friends asked her "Why is not your deafness progressive like ours is?" On testing the patient a few days ago, he got a well-marked fistula symptom. Sourdille, as members knew, stated that in his successful cases the fistula symptom was present. The idea of this operation is to make a movable window on the inner wall of the middle ear, to replace the ankylosed oval one. Dr. Fraser said that on the whole he felt disposed to take up the operation again.

Dr. ADAM asked if the operation had affected the tinnitus in any way.

Dr. FRASER replied that the patient stated that it made the tinnitus less.

Dr. GUTHRIE said that no one could say that Dr. Fraser had not waited to make sure that the result was permanent before showing this case. He (Dr. Guthrie) happened to have seen a similar case in which the operation was performed in Stockholm by Professor Holmgren, who stated that at first the hearing is greatly improved but it gradually deteriorates as the bone regenerates. Dr. Fraser seems to have been successful with the use of a skin graft. Holmgren used a skin graft but in spite of that new bone closed the aperture. When visited a year ago, Holmgren was trying to discover some method whereby the fistula could be kept open, or rather whereby the new window could be kept sufficiently mobile to transmit sound waves. Dr. Guthrie asked whether Dr. Fraser had any other cases besides the two he mentioned.

Dr. FRASER (in reply) said he had only had the two.

CASE XV.—**Case of Rhinolithiasis.**—Dr. J. P. STEWART.

Mrs. T., aged 50 years. Complained of complete obstruction on right side of nose which was accompanied by foul smelling discharge. The condition had been present for some time.

On examination, some fœtid pus was present on the right side of the nose and, after cleaning it away, a very hard mass was come upon, which gave the sensation of touching stone when felt with the probe.

The X-ray examination showed a very dense shadow suggestive of calcification.

Patient admitted to Cambridge Street Ear, Nose and Throat Infirmary and, under general anæsthesia, the rhinolith was removed piece-meal because it was quite impossible to remove the mass as a whole through the anterior nares. Patient made an uneventful recovery.

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CASE XVI.—**Series of cases to illustrate the end-results of ivory grafting to the nose.**—Dr. J. P. STEWART.

These cases have had a fallen bridge to the nose, following injury or operation for submucous resection of the septum.

They were all operated upon under general anæsthesia. An incision was made over the root of the nose, and a tunnel made in the soft tissue under the depressed bridge. The ivory graft, after suitable sterilization, was inserted so that one end rested on the columella, and the other on the nasal bones. A silk-worm stitch closed the incision and a collodion dressing was applied.

The PRESIDENT said he would like to congratulate Dr. Stewart on the very excellent end results in these cases. In one or two of them it had been difficult to see the incision in the skin.

CASE XVII.—**Case of Tuberculous Infection of Nose; positive Wassermann.**—Dr. R. B. LUMSDEN.

Mrs. A. D., æt. 24. Royal Infirmary, Edinburgh, 31.7.34. History of lump on right side of neck for four or five months, painless; no sore throats; no nasal trouble.

Examination.—Palpable gland on right side of neck; no tenderness; ulceration on both sides of the septum anteriorly, on right inferior turbinate and in nasopharynx. Slight thickening of epiglottis and edge shows a "nibbled" appearance.

Wassermann reaction negative 7.8.34; weak positive 9.8.34.

Biopsy of right inferior turbinate—"marked tuberculous infection with considerable caseation and formation of large giant cells" (slide shown).

X-ray of nasal sinuses shown.

14.8.34.—Sent to Dr. Liston for preliminary course of anti-syphilitic treatment.

Patient did not turn up but Dr. Lumsden informed the meeting that the V.D. people had investigated the family history and had come to the conclusion that the case was congenital.

CASES XVIII TO XX.

Cases in which the patient has had symptoms of a Serous Labyrinthitis with spontaneous nystagmus and some cases with a fistula symptom, and at the time of operation the fistula into the lateral semi-circular canal has been demonstrated, but in which no labyrinthine operation has been performed.—Dr. G. EWART MARTIN.

CASE XVIII.—H.L., aged 24. Patient first seen on 13.4.29. Five weeks previously patient complained of deafness in his left ear which is not increasing; buzzing noises in ear but no pain. No history of vomiting or vertigo.

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Examination.—Right ear normal with normal hearing. Left ear showed pus with a polypus blocking the meatus; hearing a whisper at 2 in.

Admitted on 19.4.29 with a history of one day's vomiting and vertigo made worse by turning to the right; spontaneous nystagmus to the left.

29.4.29.—Radical mastoid operation; cholesteatoma present in the antrum; fistula present in the left semi-circular canal; facial nerve exposed; wound closed with drainage through the meatus. Nystagmus and giddiness continued for eight days.

21.5.29.—Hearing left ear a whisper at contact. 28.5.29.—Rotation tests clockwise 20 seconds; anti-clockwise 27 seconds.

Patient was last seen on 13.4.32; has had only one attack which he said was due to smoking.

Case XIX.—A.L., aged 26. Discharge from left ear for five weeks; previous history of discharge from ear in childhood.

Examination.—Eczematous condition of the auricle; foul discharge from the ear; large kidney-shaped perforation. Rotation tests; anti-clockwise 24 seconds, clockwise 10 seconds. Patient very deaf.

6.10.34.—Operation: radical mastoid was performed; peri-sinus abscess present; large sequestrum involving the tegmen; no cholesteatoma present; fistula into the semi-circular canal present. Packed for twenty-four hours with a view of opening the labyrinth. 9.8.34.—Still a definite fistula present, but patient was so well it was decided not to open the labyrinth.

29.10.34.—Posterior wound healing and very little discharge; sent to Convalescent Home.

Case XX.—F.B., aged 51. History of otorrhœa (right) since childhood following scarlet fever; severe pain for ten days; slight giddiness when he blows his nose; no vomiting or shivering.

Examination.—Polypus in right meatus; retracted scar over right mastoid; ? sequestrum in childhood. Weber to the right; distinct voice heard in right ear with Bárány box in left. Spontaneous nystagmus to the left; no Rombergism or dysdiadokokinesia. No fistula symptom could be obtained but he has giddiness on stooping.

13.10.34.—Radical mastoid operation; mass of cholesteatoma; small fistula into the lateral semi-circular canal; bipped and packed with iodoform. The following day patient had still a slight nystagmus but no vomiting. 17.10.34.—Mild facial paresis present; still some nystagmus. 19.10.34.—Paresis still marked but otherwise very well.

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CASES XXI and XXII.

CASE XXI.—**Case of A.S.O.M.(R.), Mastoiditis, Facial paresis, Schwartze operation.**—Dr. R. B. LUMSDEN.

Mary T., æt. 25, admitted to Hospital 24.3.34.

History.—Pain in right ear for two weeks, followed by discharge; discharge less yesterday; facial weakness noted last night.

Examination.—Slight facial paresis; œdema and tenderness over right mastoid. Right ear—otitis externa; right tympanic membrane not seen properly, sagging of meatal wall, pulsating pus. Hears whisper at a few inches. Left tympanic membrane normal.

Schwartze operation (right) (R.B.L.); very cellular mastoid; pus under pressure.

10.4.34.—Face has completely recovered; wound healed; ear dry; hearing good.

CASE XXII.—**Case of A.S.O.M.(L.), Mastoiditis, Facial paresis, Schwartze operation.**

Tom A., æt. 15 (private case), 1.3.34.

History.—Acute rheumatism six weeks ago, then developed a rash (? scarlet). Pain in left ear for three weeks, getting worse. Complained of loss of taste and sensation of left side of tongue yesterday and facial weakness was noted.

Examination.—Definite facial paresis; œdema and tenderness over left mastoid; left tympanic membrane—pulsating pus, postero-inferior perforation, drum bulging superiorly; sagging of meatal roof. Hears whisper at 18 in.

Schwartze operation (R.B.L.); pus under pressure; very cellular mastoid; extensive retrofacial cells.

6.3.34.—Dressed. 15.3.34.—Facial paresis shows definite improvement. 19.3.34.—Discharged from Nursing Home. 3.5.34.—Ear dry; hearing good; facial paresis completely recovered.

DISCUSSION.

Dr. J. P. STEWART supposed that in this case the pneumatic cells around the facial canal were well developed.

Dr. A. B. SMITH said that in one or two cases of acute mastoiditis in which he had operated he had noted afterwards not a definite paralysis but a loss of "blinking" on the one side. The patient "winked" but did not "blink". He (Dr. Smith) had looked up one or two books to see if he could find any reference to this unilateral wink but did not find any. The involuntary movement of the upper eyelid would appear to be the first one to be paralysed.

The PRESIDENT thought the importance of these cases was to bring up the question of facial paralysis in acute suppurative otitis media. Often these cases will clear up with a simple paracentesis without any operation on the mastoid. The President said it should be recognized that unless there is evidence of mastoiditis the facial

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paralysis is not an indication for opening the mastoid in acute suppurative otitis media. It was quite a different story when one came to chronic suppurative otitis media—there facial paralysis was a definite and direct evidence for a radical mastoid operation. He (the President) stated that on the previous night he had seen a girl who had facial paralysis and acute suppurative otitis media, with spontaneous perforation of the drum. She had practically no fever—temperature 98·8° F. and no pain over the mastoid. The perforation in the anterior part of the drum was clearly cut, with a little mucoid discharge. He did not propose in the meantime, without further evidence of trouble, to touch that patient's mastoid.

Dr. LOGAN TURNER said he wished to support the President's remarks. He had seen this complication in children and the paralysis had disappeared with better drainage established through the tympanic membrane. In these cases there was probably a defect in the wall of the facial canal and the nerve became temporarily affected; unless there was a mastoid complication, it was not necessary to interfere further.

Dr. LUMSDEN (in reply) said that with regard to Dr. Smith's question concerning the blinking of the eye, these cases had very definite paresis; the whole side of the face was affected. The mastoid operation was carried out in both of them, entirely on account of other indications for operation. He did not consider the facial paralysis at all in deciding that operation was necessary.

CASE XXIII.—**Case of C.O.M.S.(R.), B. Mucosus infection ; Attico-antrotomy ; perisinus abscess ; exploration of temporal lobe.**—Dr. R. B. LUMSDEN.

James F., æt. 15, 11.12.30.

History.—Pain in right ear for four days.

Examination.—Preauricular glands swollen and tender, also tender gland over tip of mastoid. Right meatus full of débris, furuncles; right tympanic membrane red, bulging mass in region of membrana flaccida—? furuncle up against drum or bulging of membrane. Temperature 99·4°. Pulse 104. Looks ill.

Condition recurred at intervals with slight discharge at times.

28.6.34.—Pain in right ear for four days; vomited yesterday; looks ill; temperature 99·2° F.; pulse 80. Right tympanic membrane congested, attic perforation; hears whisper at 3 ft.; Rinne negative right; Weber to right. Tenderness and some œdema over mastoid. Left tympanic membrane normal. No spontaneous nystagmus; no spontaneous pointing error; no fistula symptom; no swaying on Romberg's test; finger-nose test satisfactory (he is right-handed). Cold caloric—vigorous reaction in 1½ minutes. Optic discs normal (Dr. Cameron). Admitted to Royal Infirmary, Edinburgh.

Operation (R.B.L.).—pus under pressure (*pure growth of B. Mucosus*); cholesteatoma; perisinus abscess; granulations on

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middle fossa dura; bridge taken away but bony operation not completed; flap not cut; wound left open.

Lumbar puncture: cerebrospinal fluid cloudy, no increase of pressure (*scanty growth of B. Mucosus*).

30.6.34.—Dressed; cavity looks healthy. Cistern puncture; cerebrospinal fluid clear (a few lymphocytes, no growth on culture). 1.7.34.—Drowsy; right pupil dilated; no sickness; no headache; all reflexes sluggish. Plantar; flexor response right, extensor response left. No paresis of limbs; no ocular paresis.

5.7.34.—Pulse 54; temperature subnormal; vomiting; optic discs normal (Dr. Cameron). *Operation* (R.B.L.): temporal lobe explored—no abscess found.

10.7.34.—Much improved; pulse 64. 20.7.34.—Attico-antrotomy completed; flap cut; wound sutured. 26.7.34.—Dressed. 12.8.34.—Progress has been satisfactory but patient has become very difficult; it is impossible to carry out proper treatment of cavity. 17.8.34.—Sent to Convalescent Home.

DISCUSSION.

Dr. OTTY asked Dr. Lumsden on what indications he explored the temporal lobe.

Dr. LUMSDEN (in reply) said that the case was watched for a considerable time and it was only after investigation by the eye specialist that it was decided to explore, in spite of the absence of papillœdema. The child's condition was getting worse and it was felt that something had to be done in the matter.

CASE XXIV.—**Case of Fracture of Larynx and Trachea.**
—Dr. KEITH ROBERTSON.

A.T., aged 29 years, mill-worker.

Accident 30.9.33: machinery belt came off and wound itself round neck. First aid. Great dyspnœa, darkly cyanosed, face and neck swollen. Tracheotomy; *in articulo mortis;* no time nor need for anæsthetic; tissues of neck œdematous, extravasated blood, tracheal rings crunched flat, veins engorged, difficult to tell when one had entered lumen of wind-pipe, mucous membrane torn and detached from walls. Patient had a fit and seemed dead when a few bubbles of air were seen at the lower end of the wound; hook inserted and life saved; rubber tube put in as an emergency.

Subsequent problem.—Fed by stomach tube as all liquids passed at once into wind-pipe and set up coughing. Examination under general anæsthetic revealed complete fracture of the thyroid cartilage and rupture of the posterior commissure, so that the examining finger from the wound passed freely into the pharynx experiencing no sensation of a posterior boundary to the larynx. An intubation tube was tried but there was nothing for the butt

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to rest on. Therefore, to maintain as wide an air-way as possible, a rubber tube was inserted, the upper end in the pharynx and the lower in the undamaged trachea, with a fenestra at the tracheal opening. Two difficulties arose: (1) The upper end of tube could not lie in the pharynx because of irritation and because food ran down into trachea. Therefore the tube had either to pass right up into the back of the nose or end below the level of the upper border of the trachea. (2) A spur formed on the posterior tracheal wall opposite to the tracheal opening which kinked the tube forward and frustrated the effort to maintain an air-way in a straight line. Various ruses had to be resorted to to overcome these difficulties.

27.2.34.—When the tracheal opening is closed he can breathe out, but not in. 27.4.34.—Voice only forced whisper; larynx very congested; little air can pass either up or down. Through tracheotomy opening, lower trachea wide, upper narrow.

1.6.34.—An inverted Cubley's Improved Tracheotomy Tube was introduced. This has a hole in the convexity of the bend. It is hoped that in this way respiration will be possible through the nose and through the wound. This did not lead to any improvement in the voice, nor to independence of the tracheal opening. 14.9.34.—Hole in knee of tube had to be much enlarged and the proximal end of the tube was shortened.

Can respiration per *vias naturales* be established? Can it be established enough to permit of closing of the tracheotomy wound?

CASES XXV and XXVI.—**Cases for diagnosis.**

—Dr. I. SIMSON HALL.

CASE XXV.—W.P., æt. 27.

30.7.34.—Patient came complaining of swelling of both alae of thyroid cartilage, most marked over left ala; there was some tenderness.

Laryngoscopy showed thickening of the anterior and lateral wall of the hypopharynx. Laryngeal movements were normal; there was no difficulty in swallowing.

1.8.34.—Patient reported with acute pain and increased swelling. 10.8.34.—Swelling had spread over a very large area; neck was brawny, and finally an abscess pointed, which was opened. No growth was obtained from the pus.

On several following occasions, abscesses pointed in different positions in the neck.

DISCUSSION.

Dr. SIMSON HALL said he hoped to show two exactly similar cases but one was omitted. The fact that he could show two exactly similar cases showed, he thought, that the one case was not a coincidence and that the fact that no growths were obtained was not incidental to one

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case, because not even special investigation in the Bacteriological Department revealed an organism of any kind. He had hoped that someone present had had similar cases and could give him the explanation.

Dr. OTTY asked Dr. Hall whether he had a direct smear of the pus examined. The presence of the fungus of actinomycosis might explain why no *growth* was obtained on culture. Dr. Otty said he had seen two somewhat similar cases. In each actinomycosis was found on direct examination. He (Dr. Otty) asked this man's occupation and was told that he is a music hall artist. The two cases seen in Aberdeen had both been connected with farm work.

Mr. DONALD WATSON said he had seen three cases of this kind and they all started with tonsillitis and acute œdema of the larynx and severe infection of the neck. In two of them he had to puncture the œdema glottidis but in the other one it was not necessary. Several days after dealing with the larynx the neck started to swell and there was a most alarming brawny swelling in front of the neck. He gave them serum and waited and two of them pointed low down just in front of the sterno-mastoid and one was incised and yielded pus. They were streptococcal infections. In the other one the swelling disappeared.

Dr. SIMSON HALL (in reply) said the pus was examined, he thought in every conceivable way, by Dr. Logan.

He thought these cases were definitely different to those Mr. Watson had mentioned. On the first examination the larynx in each case was perfectly normal and the condition definitely started in the thyroid cartilage, because at the first examination the thyroid cartilage was perfectly outlined to the finger, except that the left ala was very much enlarged and there was an inflammation which afterwards spread into the neck tissues. Also the course was rather different to that of Mr. Watson's cases because the abscess seemed to take a subacute course, for it wandered all over the neck, in fact in this man it spread to the axilla and appeared to involve the mediastinal glands. The condition is characterized by a recrudescence of this suppurative condition which affords no growth of any kind.

With regard to occupation, Dr. Hall thought the man was working in the slaughter house, which linked him up with the possible agricultural origin of the trouble.

CASE XXVI.—J.M., æt. 48.

19.5.34.—*History* of sudden choking sensation while at work; patient cannot give any definite origin for the trouble but says that he had a similar condition about eleven years ago. Was gassed during the war. *Tracheotomy* performed—Dr. Lumsden.

Examination of the urine showed the presence of some albumen; no glucose. There was no chest or cardiac lesion to be observed. Examination of the nervous system was negative. The Wassermann reaction was negative.

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1.6.34.—Some air-way now through the larynx. *Direct examination* of the œsophagus and hypopharynx was negative.

11.6.34.—Larynx still shows some œdema of the cords and redness and swelling of the left arytenoid. The left arytenoid appears to be fixed in adduction. Tracheotomy tube was removed. 13.6.34.—Recurrence of stridor necessitated reintroduction of the tracheotomy tube. Wassermann reaction still negative after provocative injection. General examination negative.

26.6.34.—Patient comfortable with tube corked. Some œdema of the post-cricoid region on the left side. Patient improving very slowly.

27.6.34.—*Direct examination.*—Dr. Lumsden: no evidence of new growth, and no obvious disease could be seen.

5.7.34.—Considerable sub-glottic œdema, especially on the right side. 17.7.34.—Sent home with tracheotomy tube, and instructed to attend daily.

8.8.34.—*Direct examination.*—There was no evidence of new growth. No. 7 bronchoscope failed to pass through the vocal cords. There appeared to be a slight thickening in the right cord as well as in the left cord. Some swelling could be seen in the anterior commissure, as if a granuloma or, possibly, a new growth was present. There was a very rapid reaction from trauma and examination had to be discontinued.

13.8.34.—Reaction has settled down; patient discharged; instructed to attend as out-patient. 1.10.34.—Tube is being corked throughout the day. There is still some thickening of the left arytenoid with complete fixation. 14.10.34.—Patient is now doing usual work, including night duty.

Discussion.

Dr. Ross Souper asked if Mr. Hall would be good enough to tell members what the first appearance of the larynx was. The first date given in the notes is May 19th, 1934. On June 1st there is a note that there is "some air-way now through the larynx" but there is no description of the laryngeal condition until June 11th.

Dr. Simson Hall (in reply) said the appearance of the larynx was that of a very marked œdema, not of the acute œdematous type but of the type one is accustomed to associate with a new growth in or around the arytenoid or pyriform sinus, with some fixation of the left side of the larynx. The provisional diagnosis was that of probable malignant growth in the pyriform sinus, though of course when we looked for these growths we did not find them. We made a tentative diagnosis of a chronic perichondritis or arthritis. As soon as the tracheotomy tube is removed there is an exacerbation as if laryngeal movement stimulated the process.

Dr. Ewart Martin then asked which number of bronchoscope passed through and if there is an actual thickening of the cords.

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Dr. SIMSON HALL said there was at that time a narrowing of the larynx due to this chronic thickening. At that time there was acute œdema formed in the larynx in spite of very gentle manipulation.

The PRESIDENT thought the laryngeal picture as seen to-day was more suggestive of paralysis of the left vocal cord than of arthritis. On phonation there was no attempt at movement in the cord such as one can usually see in an infection of the crico-arytenoid joint.

Dr. SIMSON HALL (in reply to the President) suggested an incipient condition on the opposite side. Then the larynx had been the seat of repeated inflammatory condition which might explain the appearance of fixation.

CASE XXVII.—**Case for diagnosis.**—Dr. G. EWART MARTIN.

Mrs. G., aged 44. Patient was first seen on 17.12.32 with a history that six weeks previously she had developed a lump in her neck. This was going to be explored but suddenly disappeared during the night and she coughed up a large quantity of pus. There is a previous history of swallowing a fish bone which had stuck in her throat.

Examination.—Below the post-cricoid on the right lateral wall there was a tear in the œsophageal wall opening into a large abscess cavity with some pus and full of granulations. This was cleared out. Later patient complained of difficulty in swallowing. Found to have a stricture of the œsophagus which had to be dilated on various occasions. The tissue removed from this region at the time of the first operation and on two later occasions showed no evidence of malignancy.

Patient was not seen for five months as she had moved to another town. She complained of a sore throat and went to see another doctor who treated her with gargles for some time before sending her for further examination. When examined there was a large ulcer involving the left false cord with a good deal of œdema of the left arytenoid. A piece was removed for pathological report and again no sign of malignancy or tuberculosis was found. Wassermann was negative, even after a provocative dose.

This ulceration increased, involving the whole of the ary-epiglottic fold and epiglottis, so much so, that a tracheotomy had to be done and a further piece was removed for pathological report. The opinion of the pathologists on the various pieces removed was that it might be a type of sarcoma.

Patient had glands on both sides, sub-maxillary and in the anterior and posterior chain which were thought to be malignant. No glanders or actinomycosis. Swallowing became difficult and a gastrostomy had to be done.

The patient was seen in consultation with Mr. Shaw and Mr. Jardine who were both convinced that the glands were malignant; radium bomb therapy suggested. There was no exploration of the

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glands for pathological report. Under radium therapy the glands have disappeared. Patient has now recovered her voice and is able to swallow normally. There is still slight œdema of the arytenoids. Gastrostomy tube has been removed.

DISCUSSION.

Dr. EWART MARTIN said that in this case he was certain there had been two distinct lesions. In the first place a peri-œsophageal abscess secondary to a foreign body bursting into the œsophagus with a consequent fibrous stricture; secondly, an ulceration of the larynx and hypopharynx. This latter condition had been diagnosed (after many sections had been examined by pathologists) as a type of sarcoma. The condition had yielded rapidly to radium treatment, giving the patient ease to swallow and to breathe and allowing her to live a normal life.

CASE XXVIII.—**Labyrinthitis; Operations on the Labyrinth.**—Dr. G. C. HALLIDAY. (Introduced by Dr. J. S. FRASER.)

This paper is an analysis of a consecutive series of twenty-five labyrinth cases operated upon by Dr. J. S. Fraser from *January 1st*, 1931 to *May*, 1934, and forms a continuation of the clinical part of the work of Drs. Logan Turner and J. S. Fraser, published in the *Journal of Laryngology and Otology*, xlvii., 1932, 657. During the above period (1931 to 1934) 176 radical mastoid operations were performed (102 male and 74 female).

The twenty-five labyrinth cases may be divided into three groups:—

A.—In thirteen cases, in which a circumscribed labyrinthitis was present, a Hinsberg labyrinth operation was performed at the time of the radical mastoid operation: all patients recovered.

B.—In eight cases the Hinsberg labyrinth operation was carried out at a period varying from one to six days (the average being three days) after the original radical mastoid operation, on account of the onset of diffuse labyrinthitis: all patients recovered.

C.—In four cases in which meningitis developed, translabyrinthine drainage of the cerebrospinal fluid was carried out by opening the internal acoustic meatus according to the method of West and Scott: three deaths, one recovery.

In Group A, all patients made uninterrupted recoveries without any complications other than residual giddiness, which persisted in two cases for a period of six months. There was no case of facial paresis.

Of these thirteen cases, cholesteatoma was present in ten, aural polypus in nine, absolute deafness in four (with Bárány's noise box). The fistula sign was present in four and a fistula into the lateral semi-circular canal was noted at operation in nine cases.

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Pre-operative giddiness was present in nine and pre-operative vomiting in two cases. The hearing in the affected ear in these thirteen cases was very poor. These findings are in accord with those noted in previous investigations already mentioned. There is, however, a greater discrepancy between those showing a fistula into the lateral semi-circular canal as noted at operation and those giving a positive fistula sign.

In Group B there are eight cases of "secondary" Hinsberg operation. The findings in this group were—cholesteatoma in five, aural polypus in five, absolute deafness in one, fistula sign in one, erosion of the bony wall of, or fistula into, the lateral semi-circular canal in four, pre-operative giddiness and pre-operative vomiting in two cases.

The hearing in most of these eight cases was much better than in Group A. As previously noted, the Hinsberg operation in these eight cases took place on an average three days after the radical mastoid operation. The symptoms which called for this labyrinth operation were those of "induced" labyrinthitis—nystagmus, giddiness, vomiting, complete deafness, etc. The only complication in this group was one case of facial paresis :—the paresis, however, was already present before operation.

In Group C there are four cases in which translabyrinthine drainage was carried out, one patient recovered and three patients died.

CASE I.—A.W., male, aged 27, boiler cleaner, seen 4.4.32, complaining of pain in right ear for seven days, worse for last three nights ; no discharge. On examination right tympanic membrane pink and bulging ; no mastoid tenderness ; paracentesis performed.

18.4.32.—Earache and sagging of meatal wall ; radiograms show left mastoid cellular, right mastoid dense ; Weber lateralized to right, but patient is apparently quite deaf with the noise box going in the left ear ; one can now see an attic perforation in addition to the perforation of the membrana tensa (right).

19.4.32.—Radical mastoid operation (right) : mastoid dense ; antrum, aditus and attic contain cholesteatoma ; only a trace of ossicles found. The operator, who had only just returned from a holiday, did not feel that he knew enough about the case to perform a labyrinth operation ; wound left unstitched.

22.4.32.—No giddiness or abnormal nystagmus ; no stiffness of neck ; mastoid wound stitched up. 6.5.32.—Patient dismissed to Convalescent Home.

14.7.32.—Patient has restarted heavy work and has had several blows on the head and complains of headache on right side. Operation cavity epithelialized except in region of Eustachian orifice.

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21.7.32.—Patient sent in by ambulance with letter from his doctor, stating that the headaches have increased in severity and have been accompanied by vomiting. Patient admitted; T. 100° F; sordes on teeth; complete deafness in right ear; neck stiff; slight facial paresis present; no spontaneous nystagmus; pointing test accurate. Second operation: prominence of lateral canal removed; it was found that the canal had been practically obliterated by new bone formation; promontory removed; vestibule contained granulations; translabyrinthine drainage carried out; pus evacuated from internal meatus. On lumbar puncture, fluid cloudy.

28.7.32.—Patient doing well; temperature normal; wound stitched up; there is now definite facial paralysis.

31.8.32.—Condition satisfactory except for facial paralysis.

Case II.—E.C., female, aged 49. C.S.O.M. (R.). On admission complained of severe pain for three weeks and had not slept for seven days! No history of giddiness, vomiting or rigors; right tympanic membrane bulging; patient was not quite deaf in the right ear; the caloric reaction was considerably delayed, there being slight nystagmus only after two minutes' syringing. Temperature 99·6° F. As the patient was also very deaf in the other ear (left), the radical mastoid operation (right) only was performed; the wound was left unstitched as there was slight fever.

On the following day the patient developed well-marked labyrinthitis with complete deafness, nystagmus, vomiting and a temperature of 102° F. The cerebrospinal fluid was turbid. Double vestibulotomy and translabyrinthine drainage were carried out, but the patient died.

It would have been safer in this case to have operated upon the labyrinth at the time of the radical mastoid operation.

Case III.—D.S., female, aged 4. C.O.M.S. History of having been treated for several years for otorrhœa. The patient was admitted as an urgent case and routine examination was impossible. Right tympanic membrane pink and bulging; mastoid tenderness present; temperature 102° F. The left ear was also very deaf.

In view of the bad hearing of the left ear, a modified radical mastoid operation was performed and pus was found in the antrum and cells. This child developed purulent labyrinthitis and meningitis and died two days later, despite translabyrinthine drainage.

Case IV.—H.B., male, aged 18. C.O.M.S.(R.). On admission complained of pain in the right ear for four weeks, worse for past

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three days, but no giddiness or vomiting. He was quite deaf with the noise box in the left ear and the cold caloric test produced only slight reaction after four minutes

A radical mastoid operation was performed and an erosion but no actual fistula was seen in the lateral canal. There was no vestibular response on syringing the cavity with cold lotion. The following day he had vomiting, nystagmus, temperature 102° F. Double vestibulotomy with translabyrinthine drainage was carried out, but the patient died of meningitis fifteen days later.

As in Case II, a Hinsberg operation at the time of the radical mastoid operation would probably have prevented meningitis.

Remarks.

The indications for the employment of the Hinsberg operation were:

(*a*) Circumscribed labyrinthitis with poor hearing. Dr. Fraser holds that in most cases of circumscribed labyrinthitis the hearing is very poor and not of much use to the patient if the "other" ear is good. The Hinsberg operation at the time of the radical mastoid operation obviates the danger of meningitis.

(*b*) Latent labyrinthitis: in cases of doubt as to the functional activity of the labyrinth it is safer to perform the Hinsberg operation.

(*c*) Induced labyrinthitis following a radical mastoid operation where the patient is quite deaf with a noise box in the "other" ear. In regard to this "secondary" Hinsberg operation, lumbar puncture should be carried out at the time and, when the cerebro-spinal fluid is cloudy or purulent, translabyrinthine drainage should also be performed.

EXTRA CASE.—**Case for Diagnosis.**—Dr. R. B. LUMSDEN.

Alex. M., æt. 24, admitted to Royal Infirmary, Edinburgh, 12.6.34 complaining of pain in and discharge from left ear for three months; severe pain for the last few days. Patient had a motor accident six months ago, when he was rendered unconscious. Parents state that he has not been right since then; eyes appear to have been "not right".

Examination.—Left ear—pulsating pus, sagging of meatal wall; œdema and tenderness over mastoid; whisper heard at a few inches; Rinne negative; Weber lateralized to left. Right tympanic membrane normal.

13.6.34.—Schwartze operation performed.

20.6.34.—Giddiness and vomiting; rotatory nystagmus to left; spontaneous pointing error; hears conversation voice at six inches with Bárány box in right ear; optic discs normal.

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Condition rapidly subsided. 29.6.34.—Ear dry; wound healed; hears whisper at three feet.

1.11.34.—Complains of occasional giddiness and occipital headaches. Right tympanic membrane normal; left tympanic membrane shows scars. Whisper heard at six feet in left ear; Rinne positive on both sides; Weber lateralized to left. Catheter passed on left side—air entry is poor. Cold caloric, left ear—reaction in 45 seconds.

10.11.34.—Became giddy in the street and was picked up unconscious; readmitted; temperature 100° F.; patient quite rational. Drumheads as before; results of hearing tests as before. No spontaneous pointing error; finger-nose test satisfactory; no neck rigidity; no Kernig; deep reflexes exaggerated, especially on right side; plantar reflex, both indefinite. Has diplopia; right oculomotor paresis; both pupils react to light and accommodation; optic discs normal. ? Slight drooping of right corner of mouth; palate and tongue movements normal; twitching of limbs at times. Reactions to cold caloric test normal both sides. Wassermann blood reaction negative. Colloid gold reaction.

Dr. LUMSDEN said he did not know if the condition had any connection with the patient's accident eleven months ago or whether it was a sequela of his ear condition. Dr. Lumsden said there appeared to be an hysterical element present.

EXHIBIT NO. 1.—**Larynx showing Multiple Papilloma.** —Dr. J. P. STEWART.

Patient brought to Out-Patient Department of Deaconess Hospital on account of choking fit. Admitted to hospital, where child remained cyanosed for some time. Examined under general anæsthesia, when papillomatous condition of both vocal cords was seen. Cautery applied and some of the growths destroyed.

One month later child again admitted with same symptoms as above. Examined under general anæsthesia, when child suddenly collapsed and died.

Very good specimen of multiple papilloma of larynx obtained and shown.

Dr. J. P. STEWART (in reply) said he always performs endoscopy under general anæsthesia and has found it more satisfactory than when performed under local anæsthesia. In the present case the child was very difficult and restless and quite unsuitable for local anæsthesia. His (Dr. Stewart's) object was to remove some of the obstructing papillomatous growth. The patient collapsed primarily from heart failure and *not* from laryngeal obstruction.

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