patient turned his head to the right and downwards, a large quantity of liquid flowed from the nose spontaneously. It was difficult to arrive at a conclusion about the case at that stage, it would be necessary to continue the investigation in order to detect the reason of the rhinorrhœa: but I am of the same opinion as Sir St Clair Thomson that in all cases of rhinorrhœa it is necessary to study all parts of the sinuses and the skull for more apparent rhinorrhœa without a lesion.

THE SCOTTISH OTOLOGICAL AND LARYNGOLOGICAL SOCIETY

(The Forty-fourth Meeting of the Society was held in the Ear, Nose and Throat Department of the Royal Infirmary, Edinburgh)

November 14th, 1936

President—Dr. Gavin Young

I.—Discussion on the Operation of Attico-Antrotomy

A. BROWNLIE SMITH (Edinburgh)

In opening this discussion on the operation of attico-antrotomy, I think it is wise to define exactly what is meant by this term. It would simplify our ideas of the surgery of the temporal bone if we classified mastoid operations into four groups:

(1) The Schwartze or Conservative Mastoid, in which the tympanic antrum and mastoid cells are opened but the bony meatus and the membranous meatus are left intact.

(2) The Modified Radical Mastoid, in which the antrum and mastoid cells, if any, are opened but a part of the bony meatal wall is removed and a flap is cut from the membranous meatus. The bridge in this operation is left intact.

(3) The Attico-Antrotomy, a further stage of the modified radical in which the bridge is removed along with the outer wall of the attic but the ossicles and the contents of the tympanum are left intact.

(4) The Radical Mastoid, in which the contents of the tympanum are removed.

In some cases the incus is removed in performing the operation of attico-antrotomy but the essential difference between this operation and the radical mastoid is that in the former, as far as possible, the contents of the tympanum and especially the windows are not disturbed.

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The Attico-Antrotomy is indicated in those cases of chronic middle-ear suppuration which are liable to produce intracranial complications but in which there is still fair or good hearing in the affected ear.

The aims of the operation in order of importance are :

(1) To place the patient in a position of safety ;

(2) To preserve the hearing ;

(3) To cure the suppuration, i.e. to produce a dry ear.

I do not intend to make any comment on the site of the perforation of the tympanic membrane as an indication for operation as I think this question is included in the statement that the operation is performed in those cases which are liable to produce intracranial complications.

From my own very limited experience I am of the opinion that the operation should not be performed where there is already a possibility of any intracranial complication in the middle fossa. I think that in a case of that nature no consideration should be given to the preservation of hearing at the possible expense of the patient's life. The complete radical mastoid operation is then indicated.

With regard to the three aims of the operation which I have already mentioned, I think. (1) That in practically all cases, if careful after-treatment is carried out, the patient can be placed in a position of safety. (2) That in a large proportion of cases the hearing will be preserved and in many cases improved. (3) That many cases will ultimately obtain a dry ear.

To my mind the ideal type of case for this operation is the cholesteatoma with good hearing but practically no discharge. I do not think that the operation is nearly so successful in the very purulent types of otitis media with granulations and polypi.

BERNARD CARTER (Newcastle).

The late Dr. Fraser, and Dr. Stewart, in an article published in the *Journal of Laryngology and Otology*, 1930, have described their investigations into the radical and modified radical operations performed in their Department up to 1929.

An analysis of the cases of modified radical operations since then, i.e. during the last seven years, shows that two main types of operation are performed :

(1) " The Modified Radical," which resembles Heath's operation, but is not identical with it, as Heath's operation was done for acute mastoiditis. In this operation the antrum is widely opened, the outer part of the posterior meatal wall removed, and a meatal flap cut and stitched back ; the bridge is not removed.

The indications for this " modified radical " have been various, and include unsuccessful Schwartze operations, cases of chronic suppurative otitis media with perforations in varying sites, and acute

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exacerbations of chronic suppurative otitis media, especially in children. The chief criterion seems to have been the presence of good hearing.

(2) The so-called "Attico-Antrotomy" where, in addition to the above, the bridge and outer attic wall are also removed, but the drum-head and ossicles are left *in situ*. This appears to be a definite operation with, I think, definite indications.

I have collected thirty-seven cases in which "attico-antrotomy" was performed, and it is these cases only which are investigated in this report. Cases of "modified radical operations" as in (1) are not included, as they were in the paper by Dr. Fraser mentioned above.

ANALYSIS OF THIRTY-SEVEN CASES:

A. Age: The average was 27, the youngest patient being 8 and the eldest 58.

B. Site of perforation:

In twenty-eight cases an attic perforation was found, accompanied in a great number of the cases by a polypus and/or cholesteatoma.

In one case a polypus was present, described as probably attic, but the site of the perforation was not stated.

In six cases the perforation was posterior or posterior marginal.

In one case there was almost complete loss of the tympanic membrane, with granulations along the posterior rim.

In one case there was an attic perforation combined with a central perforation. This case is interesting as regards its subsequent course, which will be mentioned later.

C. Hearing:

Severe deafness,	i.e. W.V. at less than 6 inches	= 5 cases.
Moderate deafness	i.e. W.V. at 6 to 18 inches	= 12 cases.
Fair hearing,	i.e. W.V. at 2 feet to 4 feet	= 13 cases.
Good hearing,	i.e. W.V. at more than 4 feet	= 5 cases.
"Hears well," but no actual distance given		= 2 cases.

D. "Other ear":

The opposite ear showed some degree of deafness in ten cases, and in four of these there was very severe deafness, including one case of a dead labyrinth.

E. Operation performed:

In the majority the operation as described above was performed, and the ossicles left untouched. In one case a small part of the bridge was left to cover the incus.

In four cases the incus was removed. This does not seem to have any bad effect on the subsequent hearing.

F. Hearing after operation:

This has been tested in twenty-three cases. (Many of the patients came from considerable distances, and it is not feasible for them to attend here for regular after-care and observation of progress.)

	Improved.	*Unchanged.*	*Worse.*
Severe deafness before operation	4	0	1
Moderate deafness ,, ,,	2	4	2
Fair hearing ,, ,,	4	3	1
Good hearing ,, ,,	—	1	1

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To summarize, in five cases (22 per cent.) there was some loss of hearing following operation: in none was this loss great. The case with the best pre-operative hearing—a whisper at 12 feet—retained this completely.

G. Effect on discharge.

This has been noted in twenty-seven cases, of which seven are not satisfactory. An analysis of these seven cases is as follows:

In two there were intermittent attacks of discharge, which soon cleared up on cleaning by the ordinary methods. These were therefore probably due mostly to neglect.

In two cases polypi recurred.

In two cases the radical operation had to be completed.

In one case there was a slight mucoid discharge. This gives 65 per cent. of dry ears, which is not too good a figure. If, however, the twenty-seven cases are investigated from a point of view of the site of perforation, it is found that there are six cases in which a perforation other than an attic one was present, and that these six cases account for four of the failures.

In this respect, the case mentioned before, in which an attic and a central perforation were present, is a good example. Examination of this patient shows that the upper part of the cavity is well epithelialized and dry: there is still, of course, a central perforation and from this at times there is a slight mucoid discharge. This case, although not actually a dry ear, must surely be counted as a successful attico-antrotomy.

If now the twenty-one remaining cases are examined, in which an attic perforation alone was present, only three cases were unsatisfactory, viz. one case of "neglect"; one case of polypi formation; one case in which the radical operation was done later.

This gives 86 per cent. of dry ears.

H. Conclusions:

Although the number of cases is too small to draw valid conclusions from, it does appear that the operation of attico-antrotomy is an excellent one for cases with an attic perforation.

Such cases will show a dry ear in a high proportion of patients, and will retain their hearing in the great majority. They will, moreover, be safe from the danger of intracranial complications.

As to whether the operation should be reserved for such cases, or should include others, I have not the experience to say.

J. FRED BIRRELL (Edinburgh).

I am indebted to Dr. Hall for permission to give figures relating to a series of fifty-eight consecutive modified radical mastoid operations performed by him during the years 1933-6 in the department under the charge of Mr. J. D. Lithgow. This series has been carried out on experimental lines calculated to yield definite information on certain points regarding which some doubt existed.

There were, in all, fifty-five cases, three having a double operation performed. Sex incidence shows a slight preponderance of males and the majority were under thirty years of age. Statistics show that

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both sides were equally affected. In half the cases the disease was bilateral and in four a radical mastoid operation had previously been carried out on the other ear.

Pre-operative examination shows that in twenty-five of the cases there was an attic perforation. In twenty-four the perforation was posterior or posterior marginal. In three cases the posterior perforation involved the attic, while in four most of the drum was destroyed. In one case a polypus filled the meatus. An analysis of the hearing reveals the fact that only six cases could not hear a whisper.

It is not my intention to deal with the operative technique beyond mentioning two modifications of the "standard" operation. In seventeen cases the incision was made farther back than usual so that a periosteal flap might be raised. This flap had its pedicle at the upper end of the incision and was applied as a graft to the attic cavity and antrum at the end of the operation. This is the first point to which I would like to draw your attention. The object of this procedure was to aid the obliteration of that cavity which sometimes seems to hinder the growth of epithelium.

The second modification is, that in the four cases in which the incus was found to be eroded and detached from the floor of the aditus, the ossicle was removed, leaving behind the malleus and drum.

The wounds were closed with drainage through the meatus and were not dressed until the fifth day. The after-treatment offers the next contrast in method. Two separate lines of treatment have been followed. In twenty-three cases the cavity was syringed daily and scarlet red drops instilled. In the remaining thirty-five cases the cavity was packed every day with iodoform worsted wrung dry in 10 per cent. argyrol.

In considering the results of this series I am limited to forty-four cases, as eight have never reported following discharge from the ward, while six have been operated upon in the last two months and are thus too recent for inclusion. Of these, thirty-six show dry ears with a well-epithelialized cavity in from one to six months after operation, the average time being two and a half months. This is a percentage of 81·8. A further two cases became dry in the usual time, but have broken down again at intervals. Such a breakdown has yielded quickly to mopping and powdering with boric and iodine powder.

Two cases have never dried up since operation and three others have required a subsequent radical operation on account of the reappearance of pus and granulations. One death has been recorded from meningitis which had, apparently, been latent and had been lit up by the operation. Another case did not report after transfer to the City Hospital with erysipelas and, it is feared, died there.

The hearing, recorded at the time when the ear first became dry, in the vast majority of cases showed definite improvement, remaining unaltered in only five cases.

Before discussing the cases in which the operation has failed to cure the condition may I briefly mention the results of the seventeen periosteal grafts. Of these, two have failed to report, and two are too recently operated upon to be considered. Eleven (or 84·6 per cent.)

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dried up completely in a maximum time of four months, one remains moist and one has required a radical operation. Finally, of the four cases in which the incus was removed, three are dry and the other one was operated upon only three weeks ago. The hearing was not tested in one case but showed remarkable improvement in the other two. Indeed, one man who heard a whisper at only three inches before operation was completely dry in three months and heard a whisper at ten feet !

Let me now consider some of the facts concerning the cases which still remain moist and those in which a radical mastoid operation has been found necessary. Their case records show that in every instance proper after-care has not been carried out. One girl was a maid whose mistress would not let her attend for daily treatment. She attempted to keep her ear clean at home with peroxide, but confessed that she had no idea how this should be done. She has now changed her employment and is attending the out-patient department regularly.

A second case reported twice in nine months, while a third did not report at all for two years following his operation, when a radical operation was required.

Another case attended regularly for some time during which the ear was syringed and granulations were removed at intervals. Eventually, the parents found the expense of a daily journey from Leith too great and the ear was neglected. When he reported some months later it was found necessary to perform a radical mastoid.

In the two partially successful cases—those in which the ear dried up but has become moist again at intervals—it has been found that the discharge was tubal in origin and persisted for short periods. The cavity remained well healed.

These facts have convinced me of the success of this operation in selected cases. A patient who gives a long history of aural discharge with the presence of an attic or a posterior marginal perforation is specially suitable. In those whose hearing should be conserved on account of youth, poor hearing in the other ear, or because the hearing is still sufficiently good to retain, this operation should receive serious consideration even in the presence of extensive disease.

At operation a periosteal graft may aid recovery and is used chiefly in children in whom there is poor muscular development over the mastoid bone. The state of the ossicles is the determining factor. If the incus be eroded or detached from the lip of the aditus it may be removed without, apparently, any ill effect. The malleus is left *in situ*. The most important point would appear to be the after-care. Either syringing and drops or packing may be used, but the patient must be under the personal supervision of the surgeon.

If a series such as this can show 81·8 per cent. of cures under ordinary hospital conditions, there seems to be no reason why, with more rigorous supervision of after-treatment, 90 per cent. of cases should not be cured.

Cases shown by Dr. A. Brownlie Smith

Case I.—A.G., male, aged 9 years. Admitted to Leith Hospital with an acute exacerbation of a chronic middle-ear suppuration.

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Right ear had discharged since he was three months old : began to have pain in the ear five days previously and when admitted to hospital had marked tenderness and swelling over the mastoid process—swelling extending to the zygomatic region. Patient could hear the conversational voice at six inches with the noise box in the opposite ear.

Immediate operation.—Pus found under the periosteum, with a fistula in the cortex : antrum and most of the mastoid process full of cholesteatoma. Flap cut and bridge removed, but middle ear left intact : packed : stitched.

The boy did well for about a week after this operation, but then developed meningitis, for which Neumann's meningitis operation was performed. In spite of this he died a few days later. This case was entirely unsuitable for the operation of Attico-Antrotomy.

CASE II.—A.A., male, aged 23 years. Admitted to Leith Hospital as his left ear had been discharging for years. Left tympanic membrane showed a small attic perforation, with thin purulent discharge. Whisper heard at three inches by left ear.

18.7.35.—*Left Attico-Antrotomy.*—Large and deep antrum, with pus but no cholesteatoma found : bridge removed, also outer attic wall : incus left *in situ* : flap cut, cavity packed and wound stitched.

29.7.35.—Wound healed, cavity healing.

A few days later patient rejoined his ship and returned to Norway. He has not reported at the hospital since then.

CASE III.—E.M., female, aged 41 years. Has been deaf all her life and has had trouble with her ears for many years. The left ear is now giving her pain.

Right ear—complete atresia of the meatus.

Left ear—very narrow opening deep in the meatus. Patient can hear a loud voice with the (?) left ear : Weber to left : hears by bone conduction.

X-ray shows both mastoid processes to be cellular.

Some weeks later, some cholesteatoma squeezed out of left meatus. Name put on waiting list for a radical mastoid operation.

10.3.36.—Patient reported that some weeks ago something burst in her ear and the pain was relieved.

Left Attico-Antrotomy.—Dense mastoid : deep antrum, without pus : bridge removed : incus present and left *in situ* : difficult to know if there was a tympanic membrane. Flap cut, meatus packed and stitched.

The following day the patient developed a facial paralysis, but this has now almost recovered.

17.10.36.—Meatus has closed up again and is discharging. Patient hears conversational voice at two inches with left ear.

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Suggestions are invited as to the future treatment of this case.

CASE IV.—R.C., aged 44. Has attended Leith Hospital since 1930, with discharge from the left ear. 23.7.34.—Polypus removed from left ear. 10.12.34.—Left ear still discharging. Patient hears C.V. at six inches with left ear.

1.2.35.—*Left Attico-Antrotomy.*—Much necrotic material in the antrum: bridge removed; ossicles left intact. Cavity packed: wound stitched.

17.10.36.—Very little discharge now. Patient hears whisper at six feet with the left ear.

CASE V.—N.W., female, aged 24. Left ear has been discharging for six months. Left drumhead shows an attic perforation with foul-smelling discharge. Whisper heard at two feet with left ear.

26.2.36.—*Left Attico-Antrotomy.*—Very difficult case: low dura: sinus far forward: very small antrum. Flap cut: bridge removed: incus, malleus and membrane left *in situ* as far as possible: packed: stitched.

17.10.36.—A little discharge: hears whisper at seven feet.

CASE VI.—P.M., female, aged 23. Has attended Leith Hospital since 1930 with discharge from the left ear.

26.11.34.—Left ear still discharging, blood-stained secretion. Unfortunately there is no note of the hearing distance. Left tympanic membrane shows small attic perforation with cholesteatoma.

30.11.35.—*Left Attico-Antrotomy.*—Small antrum, full of cholesteatoma: bridge removed also outer attic wall: flap cut: ossicles left intact: packed: stitched. The flap stitch proved to be too tight and a piece of the skin behind the auricle necrosed.

17.10.36.—Ear quite dry. Hears whisper at nine feet by the left ear.

CASE VII.—T.C., aged 11, male. 11.2.35.—Right ear has been sore for two weeks. Left tympanic membrane opaque: right tympanic membrane red, bulging, (?) anterior perforation.

16.3.36.—Right ear still discharging: small granulation in lower part of the drum. Patient hears whisper at one foot with noise box in other ear.

5.5.36.—*Right Attico-Antrotomy.*—Gelatinous material in the antrum and cells: bridge removed: incus left intact: flap cut: small granulation removed from the meatus: packed: stitched.

7.9.36.—The antrum has become shut off from the meatus by thin membrane.

29.9.36.—Membrane cauterized under chloroform anæsthesia.

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17.10.36.—Still discharging. Antrum partially shut off again. Patient hears whisper at six feet, right ear. May require a radical mastoid operation.

Case VIII.—Mrs. C., female, aged 35.

5.8.35.—Right ear has been sore for two weeks. Right tympanic membrane shows attic perforation with cholesteatoma. Hears whisper at four inches with noise box in left ear.

16.8.36.—*Right Attico-Antrotomy.*—Antrum very small, containing pus: bridge removed: incus unfortunately came away with the angled forceps and I also removed the malleus, although I left the membrane: outer attic wall also removed: flap cut: packed: stitched.

19.10.36.—Cavity quite dry: membrane has become plastered to the medial wall of the tympanum. Patient hears whisper at 10 feet with the right ear.

Case IX.—Mrs. B., female, aged 40.

Previous notes not available. Left ear started to discharge when patient was in a medical ward suffering from duodenal ulcer. She had pain over the mastoid, with subacute mastoiditis. Patient had previously had trouble with this ear.

17.5.36.—*Left Attico-Antrotomy.*—Pus in antrum: bridge removed: ossicles left intact.

17.10.36.—Ear still shows a little discharge. Patient hears whisper at six feet with left ear.

Case X.—A.M.A., female, aged $5\frac{1}{2}$ years. Admitted to R.H.S.C. on 4.9.35 with discharging sinus behind the left ear and much discharge from the meatus. Left ear had discharged for a long time. Attic perforation: hearing difficult to test.

14.9.35.—*Left Attico-Antrotomy.*—Superficial tissues œdematous: fistula in the cortex: antrum full of cholesteatoma. Bridge removed: no ossicles seen: middle ear not touched: flap cut: packed: stitched.

4.8.36.—Ear is practically dry. Patient hears conversational voice at three inches with noise box in opposite ear.

Case XI.—I.G., female, aged 3 years.

23.10.34.—Left ear has discharged since patient had scarlet fever six months ago.

28.12.35.—Profuse discharge: inferior perforation. *Left Attico-Antrotomy.*—Pus and thick necrotic mucosa in antrum: bridge removed but ossicles left intact: packed: stitched.

7.5.36.—Antrum has closed off: practically all the drum has gone: only remains of the ossicles seen: will require a radical mastoid operation.

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Scottish Otological & Laryngological Society

Discussion.

Dr. Ritchie Rodger congratulated the three openers of the discussion on the very clear and modest way in which they had described the operation and its claims. He thought it was timely that the subject should be presented, because all felt that there were many cases which properly fell somewhere between the Schwartze operation and the radical and all had been dabbling more or less in modifications.

With regard to the title of the operation described, he hesitated, as a provincial, to criticize Edinburgh's use of terms, but he had now to confess to over two thousand mastoid operations of his own and one result of his experience was that he found he had no use for " otomies " at all within the limits of the mastoid process. No matter what the operation was, it should be a *mastoidectomy* every time. He knew that some people use the term mastoidotomy for the Schwartze and mastoidectomy for the radical, but that was quite wrong. He thought that mastoidectomy, or complete exenteration of the various groups of mastoid cells in a detailed and systematic manner was the only way to get a decent percentage of good results, irrespective of what it was found necessary to do with the bridge or the middle ear. In his view antrotomy was not a good term. (On being questioned how he would do an ' ectomy " of the attic or cells round the Eustachian tube or at the tip of the petrous, Dr. Rodger replied that these were outside the mastoid process.

Then, also on the question of phraseology, he was surprised to find Edinburgh using the modified radical operation and the Heath operation as synonymous terms. He was house surgeon in Edinburgh over twenty years ago, when the Heath controversy was quite fresh. They did use the modified radical operation then, mainly in the cases in which they were compelled to operate on the patient's better-hearing ear, but it was never called by Heath's name. Heath's operation was held to be discredited because, while it purported to be a substitute for the radical operation, the excellent results claimed were really achieved by its displacement of the Schwartze operation in acute and subacute cases. Heath's followers used his method for all cases. In acute cases we all expect a good result if the mastoid excavation is efficiently done, and it matters little whether the drainage is into the meatus or from part of the mastoid wound left open !

He was sure that those particularly who had—like himself—to deal with a large number of children at a children's hospital or school clinic, would welcome any method short of the radical operation, if it gave a reasonable chance of retaining the hearing while achieving a dry ear.

There was one question Dr. Rodger would ask, with regard to the incus. Physiologically it seems impossible that the hearing should not be affected by the removal of the central link of the ossicular chain. It had been stated to-day that it does not make any difference. He would like to hear the opinion of others at this meeting as to whether removal of the incus really meant nothing, because it seemed very important. Yesterday he (Dr. Rodger) did two mastoids in young children—children he had seen at the school clinic. In one case the

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discharge had been going on for four years and in the other longer, with a polypus filling the meatus. He approached them both with the hope that he would not have to do a radical operation and he did an operation very similar to what had been described to-day, but in both cases the incus was lying so loose that it came away, and he completed the radical operation. Dr. Rodger said that if he could be assured that it was not necessary to complete the radical even when the incus could not be saved, and that retention of the malleus and membrane without the incus promised better hearing, he would be grateful for having heard these papers read.

Dr. DOUGLAS GUTHRIE said that he would like to associate himself with Dr. Ritchie Rodger in congratulating those members who had brought forward this subject, because it raised so many interesting problems. He understood that the operation of attico-antrotomy, or attico-antrostomy, was intended as a means of avoiding the destructive radical mastoid operation. He agreed with Dr. Rodger in what he said about the work of Mr. Charles Heath. He also went to see Mr. Heath operate and was filled with admiration for his technique. Heath probably operated on cases in which we should have performed a Schwartze operation.

Why was the radical so detrimental to the hearing? Did the deafness result from removal of the membrane and ossicles or was it rather that fibrous tissue formed on the inner wall? He (Dr. Guthrie) thought that the latter was the correct explanation and that if one could invent any means of preventing fibrous tissue from forming around the stapes after the radical operation, the results, *qua* hearing, would be much better. One method was to have the tympanum protected by the tympanic membrane or its remains, hence the better hearing after attico-antrotomy. If one removes the incus and leaves behind part of the tympanic membrane, one is leaving something to protect the typanum and that is why, if he (Dr. Guthrie) found the incus loose, he would not proceed then to do a radical. The tympanic membrane should be left in certain cases because of its protective value.

How far does the tympanic membrane contribute to the sense of hearing? The general impression is that it is functional only for low notes. When there is a large perforation, some of the lower notes are lost. If one removes the incus, the tympanic membrane is then no longer an integral part of the organ of hearing. The membrane no longer transmits its vibrations to the ossicular chain. With a perforation, or an antrostomy fistula close to it, it cannot transmit vibrations to the air, as a closed tympanum is essential. One of the most successful cases shown to-day was that in which the tympanic membrane was adherent to the inner wall and acted as a sort of skin graft; that would appear to be a good method on Nature's part of preventing scar tissue and securing a good result so far as the hearing is concerned.

Regarding the operation of attico-antrotomy in the child, Dr. Guthrie did not know what Dr. Brownlie Smith's experience had been, but he (Dr. Guthrie) had found that the modified radical operation and the operation of attico-antrostomy were very difficult to perform

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in a child. It was a difficult matter to reduce the bridge and take away just sufficient to leave a rim of tympanic membrane hanging in mid-air, without removing too little or too much. At the Children's Hospital the results of modified operations were not very good, although one always hesitated very much to perform the radical mastoid operation. Dr. Guthrie asked Dr. Brownlie Smith what his opinion was regarding the radical mastoid operation in children. He could almost count on the fingers of one hand the number of " radicals " he had performed during the last six or eight years at the Children's Hospital. This operation was very seldom necessary, and it had a very deleterious effect upon the hearing.

Dr. Guthrie ventured to suggest to Dr. Brownlie Smith that it would be advisable to test the lower tone limit and ascertain how far that was affected, in view of the alleged effect of the tympanic membrane in transmitting low tones.

Mr. LITHGOW said that what struck him in particular in Dr. Carter's paper was the percentage of cures now actually obtained, as compared with the previous group of cases in which Dr. Fraser reported 49 per cent. of cures in a large series of cases. In the study of cases now reported, the number of cures was almost doubled. One wondered whether the technique was in some way altered, or perhaps the cases selected were of a different type. Mr. Lithgow asked if Dr. Carter could tell the meeting to what he attributed this remarkable difference in the percentage of cures.

Dr. EWART MARTIN did not agree with Dr. Brownlie Smith in his description of the operations performed. Dr. Brownlie Smith had referred in his paper to the modified radical or Heath operation. Dr. Martin thought that the two terms were not synonymous. The late Dr. J. S. Fraser always considered that the Heath operation was not in any way a modified radical and Dr. Martin agreed with this terminology.

The Heath operation was done in acute cases. The operation which Dr. Brownlie Smith had demonstrated was a modification of the radical operation done in chronic cases, the main point being the conservation of hearing, the attic only being removed and the drum left in position, thus constituting an attico-antrotomy or antrectomy. The operation formerly performed in these cases was a modified radical. In all cases discussed by Dr. Carter this operation was performed. In one or two cases the incus was removed without any apparent deterioration in hearing.

Dr. Martin thought that the modified radical should be done in cases in which there was an attic perforation, or perhaps a high posterior perforation, but not in cases in which the rest of the drum was destroyed.

Dr. ADAM said he thought that when it was a case of dealing with children one ought to do everything one could to preserve the hearing. The objection to the radical mastoid operation was that it left the patient very deaf. He agreed with the previous speakers that fibrosis is the thing to avoid. He mentioned the case of a boy of 14 who developed purulent meningitis, and in whom the radical operation was done. Though everything was cleared from his middle ear, he could now hear

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a whisper at fifteen feet. It seemed to Dr. Adam that if one removed the incus one might as well remove the whole of the ossicles. He said he would like to ask why in Case III the radical operation was not done originally. He thought the same remark applied to Case X, in which there were no ossicles. There was nothing in such cases to be gained by this modified operation. He thought that in Case XI also there should be a radical operation. On the other hand, he considered that some of the cases were admirable.

Dr. I. SIMSON HALL said he agreed with Dr. Ritchie Rodger in a great many of his opening remarks. He did not believe in classifying the mastoid operation into four groups. He much preferred to call the variations between the radical operation and the Schwartze operation the modified radical as Dr. Rodger suggested. Dr. Hall also agreed with Dr. Rodger in his condemnation of " otomies ". Every operation ought to be an " ectomy " and one of the most important points in carrying out this modified operation was that it should be just as thorough as one could possibly make it. The series which Dr. Birrell reported was, of course, carried out with a certain object in view, that was the deciding between certain types of treatment. In all these cases one of the most outstanding features of the operation itself was the thorough method in which it was carried out. Were it not for the remains of the drum and certain ossicles at the end of the operation, one might think that a radical operation had been performed. Even the facial spur had been lowered almost to the level of the floor, just as in the radical operation. The conservation of hearing was, of course, the important point. We have to realize we can do nothing to bring back the hearing after it is lost. Everything has to be done to preserve the hearing that remains. If the patient has hearing at, say, a whisper, then that patient ought to be given the chance of recovery. There is nothing to prevent one doing the radical operation later, if it becomes necessary. The series of fifty or sixty cases had convinced Dr. Hall that many cases would recover if one cleared out the attic, the antrum and mastoid cells, even although practically all the drum had been destroyed by disease. Even such a case would recover and would recover with good hearing. Dr. Hall said he regarded the indication for the modified operation was good hearing, provided that, once it was opened up, the middle ear was not completely disorganized. Dr. Hall thought the removal of the incus a very interesting point indeed, but he suggested that the improvement of hearing was not so much improvement due to removal of the incus but to removal of another diseased bone, with probable granulations around it.

There were many other interesting points, particularly those which Dr. Guthrie raised, but Dr. Hall said he did not want to refer to them except one case which he recently came across in the Out-Patient Department—an old operation case in which the patient deliberately put drops of water into her ear to cause it to discharge, because she found that the hearing was best when she had a running ear.

Dr. J. P. STEWART said that Dr. Ritchie Rodger mentioned that in mastoidectomy he makes a complete clearance of all the mastoid air cells. In many cases where an extensive pneumatization of the mastoid

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bone was present, it was a sheer impossibility to clear out every pneumatic cell, and to illustrate his statement, gave but two examples—(*a*) cellular development in the bony portion of the Eustachian tube, and (*b*) a similar development in the bony walls of the internal auditory meatus.

THE PRESIDENT said the Society was definitely indebted to Dr. Brownlie Smith and other members for bringing this subject up. He thought all were agreed that the term " attico-antrotomy " should be used as a test for drunkenness rather than as a term for an operation. To revert to the Heath subject again, he called the Heath operation the " conservative " operation. It is a distinction with practically no difference, but in the Western Infirmary they refer to the operation of attico-antrotomy as the " modified " mastoid operation. He (the President) thought that the omission of any reference to the presence of cholesteatoma was rather surprising. He thought they must have a different kind of cholesteatoma in Glasgow to that they were fortunate enough to have in Edinburgh because he would think it very bad technique not to carry out a very radical mastoid where there was cholesteatoma in the middle ear. About Case VIII, the President thought there was a point that might be mentioned. He asked how long this ear had been discharging. It seemed to him that this was a description of a radical mastoid.

Dr. BROWNLIE SMITH (in reply) said he was very sorry that there had been so much discussion of the terminology. He thought that there was an operation which still has a place in mastoid surgery in which a part of the bony meatal wall is taken down and a flap cut from the membranous meatus without the bridge being removed. He thought that operation should continue to be called the modified radical mastoid. With regard to the terminology raised by Dr. Ritchie Rodger, it was difficult to see how one could have an " ectomy " of the attic region without removing the ossicles. He thought attico-antrotomy explained pretty well what was meant.

Dr. Smith confessed he did not test the hearing of the lower notes in some of the cases.

Regarding the value of the operation in children, he did not think a radical operation should be done in a child unless it was absolutely necessary. Regarding the reason why the radical mastoid operation was not done in Case III, the question which occurred to him (Dr. Smith) was why he operated at all. She was rather a persistent patient, who wanted " something done " and she had a complete stenosis of the external meatus of both ears when first seen. He thought it best to open one mastoid process because she was so deaf. Unfortunately the meatus had closed up again.

CASES

CASE XII.—**Congenital Narrowing of the Œsophagus.**
—Dr. I. SIMSON HALL.

Robert C., male, aged 14, seen 24.10.36, complaining of difficulty in swallowing for three or four years. Patient has had previous dilatation of the œsophagus.

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General examination negative. X-ray shows a constant narrowing of the lower third of the œsophagus with slight dilatation of the œsophagus above.

Present diagnosis—congenital narrowing of the lower end of the œsophagus.

Discussion.

Dr. Brown Kelly said one would require to know the result of microscopic examination and an X-ray.

Case XIII.—**Specific Disease of Larynx.**

—Dr. I. Simson Hall.

M.G., female, aged 31, first seen 8.10.36. Specific disease of the larynx. History of intermittent sore throats for two years and intermittent attacks of hoarseness. Present attack of hoarseness of two months' duration. Patient has had some cough, with sputum, and is losing weight.

Examination of the larynx shows an ulcerated surface on the right side of the larynx, involving the right arytenoid and extending on to the lateral wall of the pharynx. The epiglottis has been eroded. Wassermann reaction is positive. There is also evidence, of tuberculous infiltration of the left apex.

Discussion.

Dr. Brown Kelly said he thought the appearances here characteristic neither of tuberculosis nor of syphilis. He regarded the case as one of lupus. The appearance of the epiglottis was suggestive of this disease.

Dr. Simson Hall said he was extremely interested to hear Dr. Brown Kelly's comment on this case, because the same possibility had occurred to him in view of three cases of similar type which he had seen a short time before. But had Dr. Brown Kelly seen that case when he (Dr. Hall) saw it first of all, he might agree that the first stage in treatment was a complete and satisfactory exhibition of antisyphilitic remedies. Dr. Hall was quite prepared to take further specimens now that the larynx was improved and see what was found.

Case XIV.—**Bilateral Abductor Paresis of Vocal Cords.**

—Dr. I. Simson Hall.

A.C., female, aged 62, first seen 13.6.36. Bilateral abductor paralysis with adductor spasm. History of attacks of choking for two months. The attacks appear to be increasing in severity. When patient was seen the attacks were so severe as to give rise to anxiety regarding her safety.

Patient was admitted for investigation, and continued having attacks while in the ward; she had, approximately, two attacks each night. The attacks gradually decreased in severity until the

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patient was allowed home. Since discharge from hospital she has had a little trouble but, on the whole, has been better.

Wassermann reaction, blood examination, cerebrospinal fluid, general examination and physical examination. Investigations carried out in hospital were entirely negative.

Discussion.

The President said it had occurred to him that this might be the result of vascular changes in the bulb. He had asked the patient about giddiness and found that she is subject to giddiness from time to time, suggestive of similar vascular changes in the internal ear.

Dr. Brown Kelly thought that to-day the larynx was perfectly normal. The old lady gave an account of what she called " choking " attacks, which were evidently glottic spasm. She had had a lot of worry and had been very much run down. Patients with this affection occasionally have attacks during the night and spring out of bed " to get breath " ; the duration of the spasm is very short. Dr. Brown Kelly saw no sign of defective adbuction in this case. As double abductor paralysis was always due to organic changes, these would not allow of the paralysis being intermittent. If the general examination of the patient had not been negative, the glottic spasm might have suggested a laryngeal crisis.

Mr. Lithgow said although he had seen the case repeatedly he had never seen the glottis really *open*. The cords were always near the cadaveric position on inspiration.

Dr. Douglas Guthrie said he had had the benefit of examining this case just after her arrival that afternoon. When the patient took a deep breath, he thought that both cords were fixed, close to the middle line, leaving only a narrow chink, and he was surprised to note the absence of dyspnœa.

Dr. Logan Turner asked if a neurologist had examined this case.

Dr. Simson Hall reported that Dr. Ritchie Rodger suggested that it was of specific origin because in his experience all these cases turned out eventually to be specific. On examination, however, no sign of specific infection had been found.

Dr. Hall said he hoped to get some help as regards treatment. When Mr. Lithgow first examined the patient in the waiting-room they were distinctly alarmed and considered that tracheotomy might be required. In the ward she again had spasms as severe. The woman lives in Fife, at some considerable distance from a doctor. Was she to be allowed to continue as she was or should some method of treatment be adopted? The treatment contemplated was similar to that in the case previously reported to the Society in which the anterior ends of the vocal cords had been moved outwards in order to get a larger opening. She was in the ward with a view to that treatment.

Dr. M. J. Gibson quoted a case in which the patient had almost parallel symptoms, with similar clinical findings to the case exhibited by Dr. Hall. During one of the laryngeal " attacks " the patient was sent to hospital in an ambulance, and arrived dead. *Post mortem*

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examination failed to reveal any macroscopic pathological change in the larynx, the respiratory passages or the central nervous system. In the light of that fatal result he (Dr. Gibson) felt that Dr. Hall should advise his patient to submit to a permanent tracheotomy.

Dr. SIMSON HALL said the variation in the appearance of the larynx from time to time was just the point which had worried them all the time they had had the patient under observation. He entirely agreed with both Dr. Brown Kelly and Dr. Douglas Guthrie. The larynx did open at times. At other times both cords were fixed in the middle line and it was then that the patient got these spasms. It was not a matter of minutes only. While in the ward the patient was examined at all times of the day, and for days at a time the cords were fixed. Then again the cords opened up and that was the condition when she went home. The spasms appeared to be dangerous and it appeared as if the condition would have to be relieved.

CASE XV.—**Case for Diagnosis : (?) Pachydermia of Larynx.**—Dr. I. SIMSON HALL.

J.C., female, aged 35, first seen 16.7.36. History of hoarseness in throat, of three months' duration. Patient has purulent sputum.

Examination of the larynx shows a small white nodule on the right cord between the anterior and middle thirds. There is a good deal of secretion present.

25.7.36.—Larynx is clear; appearance of the nodule is unchanged.

15.10.36.—Appearance of the nodule is unchanged: cords are congested.

DISCUSSION.

Dr. BROWN KELLY regarded this as a very interesting and rare case. A small pointed nodule, as stated in the report, was visible on the right vocal cord, and behind it was a shallow excavation into which a slightly prominent thickening on the opposite cord passed on phonation; the posterior wall of the larynx also was somewhat thickened. These might be pachydermias. The question of interest was—what was the cause of these thickenings? Did the patient at an early age suffer from syphilis or some acute inflammatory condition in the larynx? There was no history of vocal strain.

Dr. ADAM stated that the patient told him she had been hoarse for fifteen years. It looked to him like a case of chronic laryngitis.

The PRESIDENT thought the patient had enough in the upper part of her nose and throat to account for her trouble and suggested that the condition of her sinuses should be gone into. He also noted that she had unhealthy tonsils.

CASE XVI.—**Illustrating the Use of Hinge Cartilage Graft in Nasal Repair.**—Dr. I. SIMSON HALL.

Elizabeth B., aged 17, first seen 22.1.35. Nasal bones originally very spread out owing to injury; bridge very depressed; nostrils wide with tendency to forward opening.

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Repair carried out in three stages. *First stage:* Submucous resection of the septum, as the airway was very obstructed. *Second stage:* Mobilization of the bony base of the nose at narrowing of the bony structure. *Third stage:* Insertion of hinge cartilage graft taken from the right seventh rib.

CASE XVII.—**Brain Abscess : Serous Meningitis : Recovery.**—Dr. I. SIMSON HALL.

C.K., aged 10, first seen 18.2.30. History of chronic otitis media for several years: intermittent exacerbation of otitis media for period of six years; granulations in the ear curetted over a period of four years.

Examination on admission.—Left ear—pulsating pus; some thickening of periosteum over the right mastoid area; some tenderness. Remainder of the examination showed no marked abnormality. Tuning-fork showed that there was hearing in the left ear. There was some neck rigidity; Kernig's sign was positive; patient was drowsy.

12.6.36.—*Operation.*—Cholesteatoma found filling antrum and aditus and burrowing back under the sinus. Middle-ear contents disorganized; granulations and remains of ossicles cleared out. The dura was exposed, and a hard indurated area was found above the mastoid antrum. Exploration with a narrow-bladed knife through the indurated area was followed by an immediate gush of pus. A fine drainage tube was then inserted along the side of the knife. The wound was packed with saline, with provision for irrigation.

Lumbar puncture: cerebrospinal fluid under tension but clear. Cell count: 9 cells per c.cm. No organisms found and no growth on culture. Colloidal gold reaction normal.

DISCUSSION.

Dr. ADAM said he was interested that Dr. Hall had incised the dura. During the last two years or so Dr. Connal and he had a series of nine purulent meningitis cases, with seven recoveries and in all of them they incised the dura. The first case which suggested that method of treatment to him (Dr. Adam) was one he operated upon when he was at the Royal Infirmary. He had removed the bone extensively and the tegmen and he packed the cavity too tightly; Jacksonian fits developed within twenty-four hours and subsided on removal of the packing. Just when he went to Stobhill he had a case which developed serous meningitis after a radical operation. He punctured the lateral cistern and there was no further trouble. He decided after that that he would incise the dura in every case and did so in these nine cases. In five of them Dr. Connal and he also injected air through the lumbar needle, following Mayer's suggestion. The incision certainly relieves pressure. Dr. Adam said that he incises as far back as one can get. There has

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never been any suppuration of the brain following the incision. In one case they could see the convolutions of the brain, with black, engorged veins. Three years ago, somebody collected 600 cases with 3 per cent. of recoveries. Neumann of Vienna had had fifty-nine cases in sixteen years, with 37 per cent. recoveries. In theirs (Dr. Adam's and Dr. Connal's) the recovery rate was 77 per cent., but Dr. Adam said that nine was too small a number on which to reckon ratios.

Dr. J. P. STEWART asked what type of cell was found in the cerebrospinal fluid. He thought that in many cases of brain abscess one got an increase in the tension of the cerebrospinal fluid, with a lymphocytosis of the small round cells to a maximum of 50 cells.

Dr. HOWIE asked if this was not a case of localized subdural collection of pus. He said there had been no generalized meningeal irritation at all.

Dr. SIMSON HALL (in reply) said the point at which a serous meningitis becomes a purulent meningitis must necessarily be difficult to determine, but he classified this case as a serous meningitis because of the increase of cerebrospinal fluid and because the cells had risen in number. The collection of pus was undoubtedly very close to the dura. Whether it was purely confined to the potential space under the dura, Dr. Hall did not know definitely, but it seemed to him that the knife went into the cavity of a brain abscess and, as he is a great believer in the minimum of interference in these cases, he contented himself with inserting a small tube as a drain alongside the knife blade.

CASE XVIII.—**Two Cases illustrating Duel-Ballance Technique.**—Dr. I. SIMSON HALL.

F.K., aged 16, first seen 8.6.36, when complaint was of some pain in the left ear for three days, accompanied by slight discharge. Patient gave a history of intermittent discharge from the ear. He had had a radical mastoid operation fourteen years before. The day prior to admission he had what he described as a "giddy turn" which was accompanied by vomiting.

There was complete facial paralysis on the left side, which had existed since the operation fourteen years ago.

Examination of the left ear showed that a radical mastoid operation had been carried out, and (?) tuberculous glands had been removed from the left side of the neck.

Examination with Bárány noise box showed that there was no hearing in the left ear. Rotation test, in clockwise direction, gave an after-nystagmus of 20 seconds, with slight pointing error to the right. The cold caloric test in the left ear gave no response.

First operation, 30.6.36.—Anterior cutaneous nerve of the left thigh divided proximally and marked with black silk thread.

Second stage of operation, 22.7.36.—Old mastoid wound reopened. Stylomastoid foramen was exposed. The facial nerve could not be found. On working upwards it was discovered that the labyrinth had been obliterated at the first operation and, with it, the facial

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nerve. The proximal stump of the facial nerve was finally discovered emerging into the middle ear, just below the geniculate ganglion. Examination of the parotid surface showed no trace of the nerve. A galvanic current was then applied to the capsule of the parotid gland and a reaction was obtained at one point. On careful dissection, alternating with galvanic stimulus, the stump of the nerve was finally identified in the parotid substance, just proximal to the point at which it divided into its various branches. The stump was then dissected clear. The leg wound was reopened and the graft of degenerated nerve, of about 10 cm. was removed. A groove was cut in the bone, in the direction of the normal course of the facial nerve, and the graft was laid in this groove. The proximal end was slipped over the stump of the facial nerve as a cuff and the fibres tucked inside the graft. The lower end was then stitched with nerve suture silk over the distal stump. The graft in the bone was then covered with gold leaf, and the wound was closed.

Subsequent observations :

1.8.36.—When shaving, patient notices that his face is straighter.

7.8.36.—There is a considerable amount of twitching in the corner of the mouth, on the left side. Patient is being treated with electrical treatment and massage.

9.8.36.—Transferred to Astley Ainslie Institution.

28.9.36.—The face, in repose, is straight. The patient has now got voluntary movement in the left side of the face and can almost close the eye.

29.10.36.—The face, in repose, is almost straight ; movement is still improving. The patient can now move the eyebrow on the left side and can almost completely close the left eye.

The very great improvement in this patient's general appearance is one of the most pleasing features, although it appears unlikely that complete movement will be regained in the left side.

Case XIX.—R.S.

Patient was admitted to the ward suffering from acute otitis media on the left side. There was evidence of mastoid infection and there was also complete paralysis of the left side of the face. Electrical reaction showed that there was reaction of degeneration in the nerve.

At the operation, undertaken to deal with the mastoiditis, the facial nerve was exposed and the stylomastoid foramen up to the point at which it turned under the horizontal semicircular canal. The sheath was then slit up, and the slitting of the sheath was followed by the bulging out of the nerve fibres. The nerve was covered with rubber dam, and the wound was partially closed.

Recovery of facial movement has been satisfactory.

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DISCUSSION.

The PRESIDENT said these cases showed very good results. The first had been paralysed for fourteen years and showed an excellent result.

Dr. M. J. GIBSON thought that Case 19 raised the question of just when one should expose the facial nerve. Most members have had cases which recovered with paracentesis or a Schwartze mastoid operation. He asked Dr. Hall why he went on and exposed the facial nerve in this particular case, if there were any special indications that would justify more extensive procedure and how far up would he advise the nerve should be exposed.

Dr. SIMSON HALL (in reply) said the only definite indication which he could find as a guide to exposure of the nerve was the degeneration of the nerve. Whether that was to be taken as an indication whether one should expose the nerve or not he was not prepared to say as he had not had sufficient experience, but the one thing he would like to point out was that it was a very simple operation. It did the patient no harm and it did the nerve no harm and it only added half an hour to the operation. In one or two cases he had certainly found justification when he took this step. In one case he found obvious signs of healing of inflammation of the nerve sheath, then he came to definite kinking of the nerve in the canal. In this particular type of operation one took exposure up to where the nerve bent, just underneath the horizontal semicircular canal.

CASE XX.—**Post-cricoid Carcinoma.**—Dr. I. SIMSON HALL.

R.M., male, aged 37. First seen 8.12.34, with a history of roughness and soreness of the throat for six months.

Examination was negative, except for examination of the larynx. There was found to be paralysis of the left vocal cord and some swelling of the left arytenoid.

On direct examination there was found to be a growth behind the cricoid, with a tendency to spread upwards on the left side towards the left side of the larynx. Most of the growth, however, was in the œsophagus.

The patient was transferred to Beechmount Hospital, for bomb treatment.

Seen *October*, 1936: he has still fixation of the left side of the larynx, but has been at work continuously since treatment; has had no difficulty in swallowing, and is putting on weight.

DISCUSSION.

Dr. LOGAN TURNER said he had had an opportunity of seeing a number of cases treated with "the bomb" and no doubt Dr. Hall would agree with him in attributing the great alleviation of symptoms in cases of malignant disease of the pharynx, tonsillar region and post-cricoid region to treatment with radium by that method. He (Dr. Turner) was glad to see that this patient was able to be back at his work.

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CASE XXI.—**Plummer Vinson Syndrome treated by dilatation with beneficial results.**—Dr. G. EWART MARTIN.

H.W., female, aged 54. *Complaint.*—Difficulty in swallowing for ten years, which was increasing. No other signs apart from a feeling of dryness in the mouth.

Examination.—Typical dry glazed tongue with some glazing of the pharyngeal wall. Good nasal airway with an atrophy of the inferior turbinates. Nothing in the hypopharynx apart from a slight excess of secretion.

X-ray, after a bismuth drink, showed a spasm of the upper end of the œsophagus.

Œsophagoscopy.—Nothing to note apart from a spasm of the œsophagus which was dilated up.

Re-examined on 30.10.36.—Swallowing normal: glazing of the tongue has cleared up.

DISCUSSION.

Dr. BROWN KELLY said he had no adverse criticism to make as to the diagnosis or successful treatment of this case. It was to the nomenclature that he wished to take exception. He had known for years that this syndrome was misnamed but he had not been inclined to attempt its correction. Quite recently, however, Dr. D. R. Paterson of Cardiff, had dealt with the question of priority in publication of the description of this disease when delivering the Annual Address at the London Central Ear and Throat Hospital. As his paper would be published later, the subject need not be discussed further. The speaker suggested that the affection be termed *Spasm at the entrance to the œsophagus.*

The PRESIDENT remarked that this patient still had fissures at the angle of the mouth. She said she had had them for at least thirty years. The President thought that was one of the characteristic signs.

Dr. EWART MARTIN thanked Dr. Brown Kelly for his remarks. He assured him that his work and that of Dr. Paterson—the initial work on spasm of the œsophagus—were not in any way forgotten in the use of the term Plummer-Vinson Syndrome. In such cases the term was used only because in the recent medical publications, such as in the recent edition of Osler by McCrae, this symptom was described under the name of Plummer-Vinson Syndrome.

Dr. Martin said it was difficult to determine whether this spasm was the result of a severe anæmia, or if the general anæmia present was the result of the consequent malnutrition due to difficulty in swallowing.

CASE XXII.—**Schwannoma or Neurilemmanoma of the Nasal Vestibule.**—Dr. G. EWART MARTIN.

J.T., female, aged 39. *Complaint.*—Nasal obstruction.

Examination.—Large swelling occupying the floor of the left anterior nares, rather suggestive of a lipoma.

Cyst removed and sent for examination.

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Discussion.

Dr. Brown Kelly said that if one took into consideration that the swelling was in the anterior part of the floor of the nose, that it proved to be a cyst, and that the patient was a woman, these facts would go far to support the view that this was a retention cyst in the floor of the nose. This condition was described in the Edinburgh Text Book edited by Dr. Logan Turner. The cysts arose from long ducts which were present in the lining membrane of the floor of the nose, inside the junction of the skin and mucous membrane. Dr. Brown Kelly was sorry to cast doubt on the diagnosis of what he believed would have been the first recorded case of a nasal schwannoma. It was not mentioned in Denker and Kahler.

The President suggested that perhaps the pathologist would take the responsibility of publishing this case.

Case XXIII.—**Keloid of Mastoid Scar.**—Dr. G. Ewart Martin.

J.W., aged 17. Case of an acute otitis media with a mastoid involvement in 1932. Schwartze operation: result satisfactory: ear dry and healthy and hearing normal. Small accessory auricle above the ear. Six months later the scar became prominent and a definite keloid developed which increased in size and pushed the ear forward. Treatment was discussed with the Radiologist, the scar excised and stitched, and is now being treated with deep X-ray therapy.

Discussion.

Dr. Ritchie Rodger said that keloid is not common in a mastoid scar. He had had only one case. It was an enormous swelling and he, like Dr. Martin, consulted the radiologist, who advised a radium plaque. This was no use and he buried ten radium needles, $\frac{1}{2}$ mgm. each, vertically into the keloid, which disappeared completely in the course of three weeks.

The President said that the radium people seemed to prefer that the scar should be excised first.

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