SOCIETIES' PROCEEDINGS

SCOTTISH OTOLOGICAL SOCIETY

Gleneagles—May 30, 1931.

President—Dr DOUGLAS GUTHRIE.

Anæsthetics in relation to Throat, Nose and Ear Cases—J. W. LEITCH.—The paper is published in the *Journal of Laryngology and Otology*, Vol. xlvi., p. 612, September 1931.

DISCUSSION.

Dr. DOUGLAS GUTHRIE said that he had hoped that Dr. Torrance Thomson would refer to post-anæsthetic treatment, and in particular to the prevention of post-anæsthetic vomiting.

He (the speaker) thought it advisable that the anæsthetist, as well as the operator, should visit the patient on the evening of the operation. There should, perhaps, be greater co-operation between the patient and anæsthetist, before, during, and after the operation, as the personality of the anæsthetist counts for a great deal, and a preliminary talk with the patient would not only lessen his nervousness, but would also facilitate a quieter anæsthesia.

The anæsthetist should also be encouraged to assist the operator in nose and throat operations, as there are no operations in which team work is more essential. There should, in fact, be a mutual co-operation between operator and anæsthetist, and each should thoroughly understand the technique of the other.

No operation involving the use of a general anæsthetic should be regarded as "slight," and under no circumstances should a patient, or the parents or friends of a patient, be told that an operation is devoid of risk and perfectly safe. The risk is slight but it is always present.

Reference has been made to the use of avertin. I have no personal experience of its use, but last month I saw it used at the Klinik in Freiburg for a frontal sinus operation, and for two mastoid operations, and the anæsthesia was remarkably smooth. We were told that it was very largely used, and that the results were excellent.

I agree with Dr. Torrance Thomson that gas and oxygen is a mixture of great value, especially in mastoid operations. The patient recovers rapidly, suffers little or no shock, and the anæsthesia is probably safer than any other.

Few will agree with the remarks of Dr. Leitch regarding atropine, although his objection to its use seems worthy of careful consideration.

Probably the simplest and smoothest anæsthesia of all is the intra-tracheal insufflation of ether. Dr. Middleton, who frequently gives anæsthetics for me, passes a gum elastic catheter by way of the nose, and he can introduce it into the trachea by this route with little difficulty and without the guidance of a direct laryngoscope.

One other point might be mentioned, and that is the importance of

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distracting the patient's attention during the induction of anæsthesia, by asking him to count. Somehow, this old-fashioned idea has recently been abandoned, but in using anæsthetics by the open method, it is certainly a valuable aid to quiet induction.

Lastly, a point which cannot too strongly be stressed, is the importance of regarding ear and throat anæsthesia as a specialised branch of anæsthetics, requiring special training. If ever a skilled anæsthetist is essential, it is for a nose or throat operation. The house surgeon and the general practitioner would themselves be the first to admit that a skilled anæsthetist should be employed by the laryngologist.

Miss WINIFRED WOOD.—"The President has mentioned the danger of apprehension on the part of the patient. I agree that some pains should be taken to make the introduction of the anæsthetic more pleasant and to lessen the post operative sensations. I have not had any experience of luminal in ear, nose, and throat work, but I have in head work, and in that work also, of course, the anæsthetist has to be well out of the way. For some time I have tried to eliminate morphia, and luminal seems to fit in well. I have used it a great deal in children and a lot in adult head work. My experiences may be of help: 1 gr. of luminal is given for every 14 lb. of body-weight. They take it extremely well and there is no sign of toxæmia. In children one finds it very difficult to judge the correct dose. We give a lot more than 1 gr. to 14 lb. To a child of 4 years which weighed 1 st. 11 lb. I have given 4 gr. There are some points which might be of use in ear, nose, and throat work. It does not raise the venous pressure. It does not abolish the cough or vomiting reflex. There are no signs of toxæmia, and it does not depress the respiration. The patients come from the ward to the anæsthetic room so sound asleep that they are not even able to count aloud during induction, yet they can be very easily roused after the operation. After long operations they vomit quite easily. I ought also to say that we give the dose of luminal 2½ hours to 3 hours before operation to get the best result."

Dr. H. P. FAIRLIE.—"I also have been very interested in all that has been said. So many points have been touched on that it is difficult to limit oneself to those of more personal interest. I was very pleased to hear Dr. Wood's experience with luminal. I had tried it and given it up, but I think because my dosage was not correct. Since hearing her, I shall have another trial. I have been looking for some perfectly safe preliminary narcotic that would be better than hyoscine and morphia. I have been using nembutal, not in ear and throat surgery but in general surgery, and in general I have found it very satisfactory, getting a much more uniform result than I got with luminal. I hesitate to use any powerful narcotics for nose and throat work for the reasons which some of you have referred to. All these drugs prolong their action for some considerable time after the operation is finished, and I have so often been warned that the patient should have complete control as soon as possible, so that if blood is escaping he is able to deal with it. I feel very strongly on the subject of atropine and the use it is as a routine. For ear, nose, and throat surgery I use almost exclusively ether. I have found that chloroform is especially dangerous because of the accompanying use of

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adrenalin and cocain. It has been proved that that combination is very dangerous, and so often they are used in nose and throat work that I have practically given up the use of chloroform. If one is going to use ether then the advantage of using atropine is enormous. Dr. Torrance Thomson has spoken about other barbiturates, but again I think these are rather ruled out for the same reason as luminal and avertin—the fact that the patient is under their influence for a long time afterwards. One more word about gas and oxygen. I have not used it much in nose and throat work for the reason that in my experience it increased the hæmorrhage very considerably. One cannot get gas and oxygen anæsthesia without considerable increase of blood pressure and congestion, and therefore increase of hæmorrhage which is an objectionable feature in operations on ear, nose and throat cases."

Dr. HALL said: "I was very interested in the previous speaker's remarks regarding the use of nembutal, as a pre-operative medication. In Mr. Lithgow's wards in the Royal Infirmary, Edinburgh, we have for some months past used nembutal as a pre-operative medication for all nasal operations performed under local anæsthesia. It may be of interest to the surgeons here, that, in the opinion of those who have used it, nembutal is distinctly superior to anything we have so far tried in preparing patients for nasal operation. The patient is quiet during operation, or even sleeps, and frequently practically nothing is remembered of the procedure carried out.

"Using nembutal, those slightly hysterical cases which sometimes give us so much trouble under local anæsthesia, have been conspicuous by their absence. As regards general anæsthesia, we are distinctly prejudiced in favour of intratracheal anæsthesia by ether. An important point in the use of this method of anæsthesia, in ear and throat work in particular, is, I believe, the use of the electric motor pump in preference to an oxygen cylinder. The large volume of air, and the clear airway thus obtained, is of considerable importance to the patient, and of great comfort to the operator. We have found that after intratracheal ether delivered in this fashion, the incidence of collapse of the lung is probably smaller than by any other anæsthetic, and figures go to show that this is by no means an inconsiderable point, so far as post-operative complications are concerned. Chest complications in general have been conspicuous by their absence, and post-operative vomiting has been reduced almost to vanishing point. The impression given by most speakers is that in using this form of anæsthesia, the nasal route is preferable for the passage of the catheter. If the mouth is available, from the surgeon's point of view I do not agree with this. On several occasions following the nasal use of a catheter, patients have complained of pain in the nose, and when one considers the frequency of septal deviation and enlarged turbinates, it does not appear advisable that the delicate nasal mucosa should be subjected to this trauma, if the easier route, by the mouth, is available. Gas and oxygen is ideal for many of the operations in our specialty, particularly in young people, and we have frequently used gas and oxygen by the intratracheal method. Contrary to the opinion of some others, I do not think the pharynx requires packing. Experience goes to show that if the single tube is used, about the same volume of gas is required, whether the

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pharynx is packed or not packed. I believe that the clearer the airway is kept, the less bleeding is caused to hinder the operator."

Dr. HARPER.—"I am a great believer in general anæsthetics for throat, nose, and ear surgery. While it is possible to anæsthetise the parts to be operated on by a local anæsthetic, I believe the general shock to the patient in a major operation is considerable. With a general anæsthetic you can operate much more quickly than you can under local anæsthesia, since it is not necessary to consider the feelings of the patient. I have found no added danger in a general anæsthetic, given by a competent man. We must remember that a local anæsthetic is not without risk, as the statistics will show. I disagree with Dr. Martin that a general anæsthetic is dangerous in bronchoscopy and œsophagoscopy. I have not found it so. In most of my cases I use general anæsthesia, especially in cases of foreign bodies in the lung and in large foreign bodies in the œsophagus. In the latter type of case, I think a general anæsthetic is very necessary. I agree with Dr. Fairlie that cocain and adrenalin are dangerous when used in combination with chloroform anæsthesia, but only if they are injected into the tissues, and not when applied to the surface of the mucous membrane."

Dr. DAVID LAMB.—"In giving anæsthetics for abdominal work, I am always glad to see the surgeon preparing to inject novocain into the abdominal wall, thus combining a local with the general anæsthetic. This makes the administration of the general anæsthetic much simpler, giving relaxation of the abdominal wall with greater safety to the patient. I cannot see why we should not have a similar combination in throat work, though some laryngologists object to the procedure. If the throat is swabbed or sprayed with cocain solution, you certainly get relaxation and absence of retching with a much lighter general anæsthesia. During the operation there should be no greater risk of foreign material entering the larynx though this is liable to occur if, as I often see in nursing homes, a patient is carried upstairs on a stretcher head first. The raising of the head tends to precipitate sickness and vomited matter may in this position readily enter the larynx if the effects of the cocain have not passed off. I should like to hear the opinion of laryngologists on this point.

"I was interested to hear Dr. Harper's reference to the dangers of chloroform when adrenalin was being used. Yet if a patient collapses under chloroform, the injection of adrenalin into the heart is frequently reported to give dramatic results. What is the explanation? Whilst in throat work I generally begin with chloroform, I never keep to this alone but add ether as soon as possible,—certainly before the abolition of the corneal reflex,—in my opinion the most dangerous stage in the "induction" of chloroform anæsthesia.

"I was surprised at the dosage of luminal suggested by a previous speaker—1 gr. per stone of body-weight. 14 grs. of luminal given to a 14 st. man would, I should think, keep him stupid for days."

Dr. JAMES ADAM.—"One point has not been raised: Rectal *v.* Intra-tracheal ether. Any one who has performed operations in the region of the face and its cavities under rectal ether, knows how satisfactory it is to be unencumbered by apparatus in the patient's mouth and larynx; and there

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is the further advantage that the diathermy knife can be used—an impossible procedure with intratracheal ether. Recently I removed an extensive tumour involving the upper jaw, antrum and septum, with the diathermy loop under rectal ether. This was a very refractory patient and the anæsthesia was ideal. Equally satisfactory, however, in a similar case but with a co-operating patient, was nembutal followed by percain infiltration. I cannot imagine luminal being more satisfactory than nembutal. The whole aspect of anæsthesia is changing both with regard to patient and surgeon, and except in the case of children a large proportion of our operations will be performed without inhalation anæsthesia."

Dr. W. B. PRIMROSE spoke of the use of chloroform in the surgery of the throat and nose. This drug was most conveniently given by means of the Shipway apparatus, and applied by an oral airway, or by a nasal catheter. The Shipway apparatus should, in this field of surgery, be worked by an oxygen cylinder, not for motive power, but for the beneficial effect of the oxygen on the actions of the medullary centres. Owing to the fundamental nature of the functions of these centres in relation to a poisonous atmosphere, they automatically regulate the intake of the anæsthetic so that an overdose does not occur. This phenomenon is expressed by variations in the breathing, *e.g.* Cheyne-Stokes rhythm, and when such variation is noticed it is evident that the anæsthetic is being regulated by the medullary centres. Prolonged experience of this and associated phenomena shows that this vital regulation is constantly adjusting the anæsthetic to meet the needs of the operation as these change ; that an operation is carried out with the minimum of anæsthetic that will meet the case, and that under such control, cardiac failure is a much more remote possibility than when the control is vested in the external agency of the anæsthetist.

Ether may be added with advantage, but not in an amount sufficient to set up " ether breathing," which is a physically produced dyspnœa that is usually accompanied by the secretion of more or less bronchial mucus which atropine may fail to control. With placid breathing, ether up to 60 per cent. or more with chloroform produces placid breathing with its freedom from irritation ; beyond this, the breathing may not remain placid. Clear placid breathing should always be aimed at, as it is the indication that all the conditions are being satisfactorily met by the anæsthetic, and if this condition be systematically attained, the use of atropine becomes unnecessary.

Chloroform, without the help of oxygen for the control of its dosage, is not to be recommended, particularly from the point of view of the risk due to the occasionally extreme degree of nervous relaxation it produces in some cases.

My experience of these drugs for nose and throat surgery is most satisfactory, for, depending upon the fundamental functions of the medullary centres, the patient can usually be left to their care for considerable periods, but for a glance at the colour, the cervical pulse (if the neck is not completely covered by towels) and at the gently heaving abdomen. The entire field is thus left to the surgeon and his assistants.

Dr. MACKLIN.—" I have never regarded anæsthesia for ear, nose, and throat cases as being very difficult. I disagree with the view that the

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anæsthesia for throat cases must be deeper than that required for upper abdominal cases. The trouble is chiefly mechanical due to the difficulty of access and the necessity of keeping clear of the operation area, and the fact that face and eyes are frequently covered by towels. All the same I am very interested to hear this point suggested; but certainly for mastoid cases and cases not involving the throat, deep anæsthesia is not necessary and is contra-indicated.

"With regard to post-operative vomiting, it has to be remembered that all agents used to produce anæsthesia have a poisonous effect. In order that an operation may be performed it is necessary that the patient be rendered unconscious, flaccid, and inert, and it is not conceivable that such a state can be produced by any benign process. To prevent bad after-effects, it is necessary to reduce the amount of premedication, to reduce the depth of anæsthesia, and to reduce to a minimum the total period under the anæsthetic. Another very important point is to eliminate swallowed blood. A mixture of swallowed blood and anæsthetic is about the most nauseating thing imaginable.

"Another point is the danger of cocain and adrenalin in chloroform anæsthesia. I have never regarded adrenalin as being dangerous, but I think that cocain is very dangerous; and I would like to suggest that when using cocain as an injection or as a packing, that to use 10 per cent. for mixing with the adrenalin, *i.e.* 5 per cent. is too strong, and I think that the chief danger in connection with cocain is too great a concentration. I had the opportunity some years ago of experimenting with local anæsthetics (not in connection with nose and throat work but on the conjunctiva) and it was found that the strength used was always far more than was necessary. I remember shortly afterwards, when I was acting as aural house-surgeon, I reduced the strength of cocain in the mixture from 5 per cent. to 2½ per cent., and as far as one could see, one got actually better results. There is a preparation made by Parke Davis and Co., used largely by dentists, known as 'locosthetic.' In this the strength of cocain is only 0·75 per cent. and this gives perfect anæsthesia.

"With regard to the anæsthetic of choice, my experience of ear, nose, and throat work has in recent years been very limited, but some years ago I had an intensive experience during six months, when one used chiefly chloroform and ether, and I must say that my views then were chiefly in favour of chloroform. One has had the opportunity of using gas-oxygen, not in ear, nose, and throat work, but in general surgery for face and mouth cases, and also in dental surgery, by the intra-tracheal route. One great advantage of intra-tracheal anæsthesia in ear, nose, and throat work as compared, for example, with abdominal surgery, is that you do not have to use anything like the same amount of pressure, and it is possible to allow the patient to breathe automatically. If a pressure gauge of the aneroid type is being used, you can see a movement of the needle with every respiration of the patient, and I do not think the pressure should be increased to the obliteration of this movement. I think that too great pressure leads to the danger of respiratory complications, including massive collapse."

Dr. GIBSON (Dundee).—"I hope Dr. Macklin has not got the idea that we inject 10 per cent. cocain into our patients."

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

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

ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY.

March 6, 1931.

President—Mr. A. R. TWEEDIE, F.R.C.S.

ILLUSTRATIVE SPECIMENS.

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

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

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

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

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

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

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