in the shape of transient attacks of pain accompanied by misty vision, with haloes round the lights. The acute attack is accompanied by very severe pain, often causing actual vomiting, and therefore liable to be mistaken for a bilious attack. The onset is always sudden, frequently associated with some condition, such as alcoholic indulgence, that leads to raising of the general blood pressure. Vision deteriorates with such rapidity that at the end of a few hours hand movements only are distinguished.

2. *Objective Signs.*—The eye is intensely congested with marked ciliary injection. The cornea is steamy and defective in sensibility. The anterior chamber is shallow. The pupil is semidilated, with regular outline, generally rather oval in shape, with the long axis vertical. It will be remembered that in acute iritis the pupil is generally small, with irregular outline. Finally, the intraocular tension is very considerably increased. Examination of the other eye may show a cupped disc.

If due attention is paid to these points, there should be no difficulty in the diagnosis of ordinary primary acute glaucoma. The cases in which difficulty is found are those of glaucoma secondary to cyclitis or to the obstruction to the intraocular flow due to adhesions of the iris. In these the smallness and irregularity of the pupil, combined with the deep anterior chamber, and possibly the presence of punctate deposits on the cornea, will generally indicate the nature of the complaint.

In all cases of acute primary glaucoma, iridectomy should be performed as soon as conveniently possible. It would take us too far to deal with the proper method of performing this operation, nor do I think it is an operation that should be undertaken by any one who is not likely to have the opportunity of performing more than one or two. It is certainly one of the most difficult that the ophthalmic surgeon is called upon to do.

Is there anything to be done while arrangements for operating are being made? Hot bathing, instillation of a solution of eserine sulphate 1 per cent. every two hours may be successful in reducing the tension; at any rate they should be tried, and a brisk saline purge administered. In all cases in which the intraocular tension is much raised, I prefer immediately before doing an iridectomy to first lower the tension in the posterior chamber by puncturing the eye behind the equator with a Graefe knife. This obviates one of the worst risks of the operation, namely, the dislocation of the lens forwards as a result of the sudden lowering of the tension in front. Where possible this may well be done a few hours before the actual iridectomy. It is simple of performance, and cocaine affords sufficient anaesthesia. For the iridectomy itself a general anaesthetic will be required.

Remarks

ON

PARTIAL THYROIDECTOMY,

WITH SPECIAL REFERENCE TO EXOPHTHALMIC GOITRE, AND OBSERVATIONS ON 113 OPERATIONS UNDER LOCAL ANAESTHESIA.

By T. P. DUNHILL, M.D., B.S.,

JUNIOR SURGEON TO IN-PATIENTS, ST. VINCENT'S HOSPITAL, MELBOURNE.

DURING the past twenty months I have performed the operation of partial thyroidectomy 113 times, in the great majority of cases for exophthalmic goitre. During that time, watching the cases before and after operation—sometimes through successive operations—certain conclusions have forced themselves upon me.

The question, "Should exophthalmic goitre be treated surgically?" has been answered by the patients themselves in about one half of the cases, and by medical practitioners in the other. Every case had been treated medically until it had become apparent to the physician or the patient that improvement was not taking place. In many of the cases the condition of the patient had become extremely critical.

In cases which are definitely not improving under medical treatment there can be no question as to the

necessity for surgical interference, if one believes that the disease is a thyrotoxicosis, and that the removal from the individual of a large part of the poison-producing body will enable a state of equilibrium as regards the output of thyroid secretion to be regained and maintained. While not for a moment minimizing the risks of the operation (which are very great, and may easily lead to disaster), it may be said that the operation is as safe as any major operation in surgery. I believe that there is no need to fear death either at or following operation, provided it is performed under local anaesthesia.

Difference in Type.

Differences in degree and type with corresponding differences in character and rapidity of response to operative treatment may be noted, and I have begun to classify cases of thyrotoxicosis from the point of view of operation as follows:

1. Those cases which have all the classical signs—namely, goitre, exophthalmos, tachycardia and palpitation, and tremor—but are still able to do some work. The tachycardia is constant and palpitation frequent, especially with a little extra exertion. They may look well or be greatly emaciated, but they have no organic heart lesion and no oedema. Frequently there is complete amenorrhoea. Some patients suffer much from diarrhoea. The appetite is usually ravenous.

2. Cases which have all the classical signs but in which the symptoms have progressed until organic changes have taken place in the heart muscle; or there is dilated heart with inefficient valves. The patient may have an irregular, intermittent pulse. Oedema is present, perhaps only a little on walking about, perhaps constant in whatever part of the body is dependent. In one case it was also marked in the face, where it had been present for some months, on the side which was lowermost during sleep. In other cases there has been simply oedema of the feet and legs on walking, the oedema disappearing on lying down.

3. Cases in which the signs are incompletely developed, but often presenting great toxæmia. There is very little enlargement of the thyroid gland but very marked tachycardia and a constant sensation of smothering. Exophthalmos and characteristic tremor are not present. One cannot call this class of case "exophthalmic goitre"; the term "thyrotoxicosis" is much more suitable.

4. Cases sometimes described as secondary exophthalmic goitre, in which from the history it would appear that the goitre preceded the thyrotoxic condition. The thyroid gland is usually very much enlarged, and the enlargement may be central or unilateral. If the patient is put to bed, it is found that tachycardia is not always present, but palpitation supervenes so constantly on the slightest exertion that the patient is practically invalided. Owing to the size of the goitre and the long period during which it has been present, there is generally some pressure on the trachea, causing dyspnoea on exertion, and often during sleep—frequently, indeed, preventing sleep. There is sometimes some prominence of the eyes, and there is usually tremor.

Response to Operative Treatment.

Cases of the first class respond rapidly and almost completely to operative treatment. They have not lost their recuperative power, and, though they are ill and have all the classical symptoms of the disease, when the poisoning body is removed they at once feel a tremendous difference in themselves, and in a few weeks are almost—I might say completely—well. One woman says she can now do all her household washing and ironing, but scrubbing causes some slight return of the palpitation. Another cooks for her husband and two children, does all the household work, and, as well, teaches six music pupils. Two others, who had been completely invalided, are farmers' wives; each does the housework and a great deal of work incidental to the farm as well. This is the stage at which the operation should be performed, as practically complete recovery can be promised, and the period of convalescence is short.

If the patients have gone beyond this stage and belong to the second class—if there are objective signs of heart failure—the rapidity and completeness of cure varies. All the textbooks and articles which I can find speak of cases of this class as too advanced for operative interference presumably for two reasons: First, because the patient

are too ill to be cured; and, second and chief, because the operation in such cases would be too dangerous. The statement that they are too far advanced for operation is not true. I would go so far as to say that no case, unless almost moribund, is too far advanced to obtain immense relief from operation. The extent of relief is in inverse ratio to the extent of the organic heart lesion. Under local anaesthesia, the danger of the operation, even in the most advanced cases, is practically *nil*. Sometimes it is most difficult to tell whether or not there is actually organic heart disease. I have seen a case with oedema of the feet and legs, with the apex beat outside the nipple line, with markedly irregular pulse, with eyes so prominent that she had suffered from corneal ulceration twice, and who had the greatest difficulty in getting to town from the western district on account of the oedema and dyspnoea. This patient left the hospital with a regular pulse of 80. She is a farmer's wife, and now does her own housework, and writes me that she always feels well. One would have felt certain that this woman had myocarditis with a permanently damaged heart.

The most that cases in this class can hope for is great improvement without absolute cure, but it is quite worth while to operate to obtain this result, since great relief can always be promised. Local anaesthesia is essential. The following is a good example of the relief of symptoms:

The patient, a nun, had been under constant medical treatment for three years, but had grown steadily worse. When I saw her the face was asymmetrical with dependent oedema on the side on which she had been lying; the lower limbs also were oedematous. The pulse was most irregular and rapid. She had a large three-lobed goitre, and suffered with neuralgic pains at the apices of the lateral lobes and up into the ear, which prevented sleep. The other symptoms were those usual in a bad case of exophthalmic goitre. It was the oedema and the pulse which gave the interest to the case from the standpoint from which we are now viewing it. I kept her in hospital three weeks, and then sent her back to her convent. In the meantime I operated on another nun from the same convent, who had been ill with goitre for twenty-two years. Then the first nun, recognizing the risks of operation, wished to be operated upon. I removed the right lateral and the middle lobe, under local anaesthesia, without difficulty, and the patient was never once in danger to life as the result of the operation. Before operation she was completely invalided, but since she has taken long walks and has made a trip to Tasmania, visiting several convents there. The pain in the ears and upper neck region has disappeared, and all throbbing has gone. Her pulse, which was 120 to 130, is now between 80 and 90; it is still irregular, but quiet. There is oedema now only after long walks, and only in the feet. With a little care, she lives a happy life.

In a number of cases there is slight degree of oedema of the feet, but the heart beats regularly though fast—cases in which there is some acute dilatation, but apparently no gross organic change in the myocardium. These patients recover practically completely, but the period of convalescence is more prolonged than in cases in which there is no cardiac dilatation.

A good instance of this type is a lady who saw me in May of last year, and who arranged to be operated on. She was quite a typical case. On her way to Melbourne for the operation she heard of a case that had died after operation under general anaesthesia, and she at once went back to her home in the country and stayed there for three months. She then came to Melbourne again because she was rapidly becoming worse. She could not then get up the steps to my room. Her feet were oedematous; she had delirium cordis, and she was very ill. I removed the right lobe, the isthmus, and the lower pole of the left lobe at one operation. Her pulse slowed down, and all the objective signs improved, but she remained very weak and sweated profusely for six weeks before she felt much improvement. Then in the sixth week she gained 4 lb. in weight, all the sweating stopped, and from that time improvement was continuous and rapid.

The third class of case, with small thyroid gland, no exophthalmos, marked tremor, intense tachycardia, and constant smothering sensations, I regard as being the worst type to handle. The symptoms, which are out of all proportion to the enlargement of the gland, may indicate that thyrotoxicosis is a dysthyroidea and not a hyperthyroidea, an altered secretion and not simply an excessive secretion. In this class removal of half the gland does not give the certain relief of symptoms that it affords in typical cases. It seems as though even a small remaining portion of gland tissue pours out a secretion of such virulence that it is still able to poison the nervous system. The number of cases of this class is really very small.

With regard to cases without apparent enlargement of the thyroid gland, it must be remembered that not infrequently there is a very large lobe, the greater part of which is behind the upper end of the sternum and the inner end of the clavicle and first rib. In two patients, one male and one female, it was practically impossible to detect enlargement of the gland, yet at the operation the enucleating finger was in contact with the second rib posteriorly, and in each case a large retrosternal goitre was removed.

The fourth class, described by some as secondary exophthalmic goitre, consists of cases in which the nervous symptoms are secondary, not primary, as the goitre precedes the heart irritability.

As a typical example of this class I would instance a nun in whom the goitre had been present twenty-two years. She had received constant medical attention. During the latter years she was practically invalided through palpitation, tremors, and sleeplessness. She was afraid of operation, as its severity had been frequently pointed out to her. A large central retrosternal goitre was removed. She was out of bed on the sixth day; within three months she was managing, and is still managing, a large orphan asylum.

When to Operate.

Every case should be treated medically for, say, three months, and if there is continuous improvement which shows definite signs of going on to complete cure, medical treatment should be persevered with. I have had three such cases, and I did not operate, although the patients placed themselves unreservedly in my hands.

A practitioner who advises against operation in any case which is not gaining ground, or which is losing ground, is undertaking a large responsibility. Nor is the operation to be regarded as a last resort. If a patient is kept under medical treatment until it is obvious that she is going to die unless some miracle be performed, her chances of ultimate complete recovery have been taken from her. Operation should be performed as soon as it is recognized that the patient is not improving, and before she has lost so much ground that she will require much nursing back to health after the cause of the disease has been removed. At the same time, it should be clearly recognized that it is practically never too late to operate, and that the operation in itself need never prove fatal if performed under local anaesthesia.

Local Anaesthesia.

In my opinion local anaesthesia governs the whole question as to the safety or otherwise of the operation for exophthalmic goitre.¹ The underlying causes of death at or after operation are too ill-defined for us to be able to tell which cases will and which will not stand general anaesthesia. Under general anaesthesia the operation cannot be recommended as safe. Under local anaesthesia it may be recommended as perfectly safe unless the patient be moribund. In 88 operations for exophthalmic goitre I have had only one death, due to causes which will be explained later, and which need not occur again. I know of 54 deaths which have taken place during the last year in cases operated on under general anaesthesia.

There are many other reasons why local anaesthesia should be employed. Careful as I have been to avoid the vicinity of the recurrent laryngeal nerve, on one occasion the patient suddenly lost her voice and could only whisper. I at once removed all the artery clamps I had applied, and in a few moments she spoke naturally. I believe that if the patient had been under general anaesthesia a silk ligature would have been tied tightly around the nerve. In this instance the forceps had been applied to stop some deep venous oozing, but the nerve had evidently not been badly crushed. I never speak to the patient during the earlier part of the operation, but while the lower pole is being freed from its connexions and the inferior vessels divided, my practice is first to apply forceps, then to ask some question, and on the first sound of voice to cut above the forceps with scissors. While there is phonation I know that the nerve is not grasped in the forceps.

Another reason against general anaesthesia is that it is usually followed by some vomiting or retching, which is not only extremely painful with a deep and extensive wound in the neck, but also not free from danger, through the possibility of secondary haemorrhage from the large and brittle vessels which have been ligated. With local anaesthesia there is no vomiting.

Should there be any tendency to acute thyroidism, the treatment is to saturate the patient with fluid, preferably by copious ingestion of water. This is impossible immediately after general anaesthesia. Although the cases now never suffer from acute thyroidism, I always insist on their drinking three pints of water within the first two or three hours after operation as a prophylactic. The large size of a goitre is no bar to its removal under local anaesthesia. From one patient I removed a goitre (not exophthalmic), which weighed $1\frac{1}{2}$ lb., and that only represented one lobe and the isthmus. It spread widely under the sternomastoid muscles, displaced the carotid arteries and jugular veins, distorted the trachea, and extended apparently to the base of the skull. I have injected three cases, one after the other, before beginning to operate, and then operated on the three in succession without trouble.

The total number of partial thyroidectomy operations I have performed under local anaesthesia is 113. It was necessary to give a general anaesthetic only to one of them, a girl of 17 years, who was so frightened that the operation could not be commenced until general anaesthesia was used. The anaesthesia is usually exceedingly good, though a little dragging sensation is felt while the deep connexions of the gland are being divided. This part of the operation takes very few minutes.

Even should it be admitted that general anaesthesia might be used in selected cases, the majority are too far advanced for a general anaesthetic when they are sent, or come themselves, to a surgeon, and there are many—all of those constituting the second class mentioned above—to whom it would be courting disaster to administer a general anaesthetic.

How much Gland should be Removed?

The next question is, "How much gland substance should be removed?" The answer is, "Enough to cure the patient." Heineck writes:

The surgeons that have, for the cure of this disease, removed the largest quantity of thyroid tissue short of its entirety, are those that obtained the very best results, both from the standpoint of the number of recoveries as well as from the standpoint of the completeness of recoveries.

Yet for several reasons too much should not be removed at one operation. First, it is bad surgery to remove more than is necessary to effect a cure. More can always be removed, but if too much be removed it cannot be replaced. Moreover, the second operation is safer even than the first, and the patients are so much improved as a result of the first that they face a second with equanimity.

There are differences of opinion as to whether it is necessary to remove more than one lobe. Kocher says that removal of one lobe and ligature of one artery of the other side is sufficient; C. H. Mayo does not advise removal of more than one lobe and the isthmus; Hartley removes considerably more. It is possible, however, that I have not seen their latest publications. In most cases the lobes are so large that if one lobe and the isthmus be removed the remaining lobe is still very much larger than the whole of a normal gland; and it is, moreover, excessively vascular and active. In a case like this the removal of one lobe improves the condition much, but the gland tissue remaining is still sufficient to poison the individual, causing some tremors and palpitation on exertion, and the pulse-rate may still be high.

If the patient is to be completely cured part of the second lobe must be removed. There is no danger of myxoedema if the upper and posterior portion of one lobe be left with its blood supply intact. The removal of portion of the second lobe has cured the condition in every typical case. Some months should be allowed to elapse between the first and second operations, because in many cases palpitation after the operation is simply the result of weakness, and disappears with the returning strength of the patient.

Crushing Gland Substance.

Next to the question as to whether these cases should be treated surgically, the chief interest centres around several points in the technique, chief of which is the method of division of gland substance. Almost all authorities state that the gland should be crushed before division, and that the crushed portion should be ligated or sutured. This is recommended presumably for two reasons, first, to prevent

haemorrhage, and secondly to prevent the exit of thyrotoxic secretion. I regard any crushing as quite unnecessary and exceedingly dangerous.

If the operation is for the removal of one lobe alone, it does not matter much whether the isthmus be crushed or not, though even in this case it is unnecessary. There is nearly always a division more or less fibrous somewhere through the isthmus. This is easily found, and if the isthmus is divided along it there is very little bleeding. Crushing across the isthmus causes an increase in the pulse-rate for some days after operation. Stitching up or tying up the crushed isthmus appears to me to be wrong, because it shuts up the crushed and bruised gland in a closed bag, the only exit from which is through the lymphatics and venules of the gland. It should be treated as an abscess or as an accumulation of any toxic material would be treated—that is, by allowing means of free exit for a day or two by means of a tube. This is shown much more definitely in the removal of half the second lobe. In my earlier operations on the second lobe I used to crush across and attempt to ligate, because the literature had taught me to fear haemorrhage when cutting across the middle of a gland in exophthalmic goitre. If a lobe is crushed across I have always found the patients exceedingly ill and in the gravest danger for some days subsequent to operation from acute thyroidism. I know now that this is due to so much gland tissue being bruised and crushed and enclosed until it is licked up by the veins and lymphatics of the gland and capsule during the succeeding days.

In the whole series of 88 operations for the thyrotoxic variety of goitre I have had only one death following operation, and it was, I believe, due to this cause. The case was my thirteenth. I had just begun to recognize that in a large bilateral vascular goitre the removal of one lobe was not enough to cure the case. The disease being a thyrotoxicosis, the larger vascular lobe which remains is still larger than a normal thyroid, and pours out thyrotoxic material sufficient to cause all the symptoms of exophthalmic goitre. I therefore did two things which I have since seen to be quite wrong. I removed the right lobe, the isthmus, and half the remaining lobe at the one operation; this was the first error. I crushed the second lobe across before dividing it; this was the second and chief error. This extensive removal of gland tissue at one operation is certainly a mistake if the surgeon is at all slow in completing the operation. With the practice that a great number of cases has given I can now remove one lobe, the isthmus, and half the second lobe in much less time than I took to remove one lobe in my earlier cases, and the handling of the gland is much less.

Many cases since the thirteenth have been incomparably worse before operation, but not one of them has caused me any anxiety. I remove one lobe at a time, and the patient stands it well. Later, if necessary, I remove half the second lobe, and again the patient stands it well, but I never crush. Books speak of bleeding as the great danger of cutting across a lobe, and they speak of crushing as the safeguard against bleeding. If a lobe be crushed across, a large quantity of bruised and pulped thyroid tissue must be left, which is taken up by the blood and lymph streams of the gland itself, and causes the gravest condition by acute thyroidism.

My opinion is not formed from that single case but from the facts that all cases in which I crushed were very ill, and conversely that in a larger number of subsequent cases I have sliced a lateral lobe from upper to lower pole without crushing, and there has never been the slightest danger from acute thyroidism. A tube is inserted for two days down to the raw surface of the gland through a separate incision. The collar incision is accurately sutured. The amount of colourless or slightly blood-stained secretion discharged on to the dressings is sometimes amazing; it continues for four or five days, and is, I think, from the cut surface of the gland and not from the surrounding tissues, because it is not present when a single lobe has been removed, the only cut surface there being through a fibrous division in the isthmus. This discharge is not accompanied by symptoms, a fact that seems to me further evidence that acute thyroidism is not due to absorption of thyrotoxin by surrounding tissues, but that, when present, it is due to absorption from crushed gland by the veins and lymphatics of the gland and capsule

itself. One case is interesting in this respect. A second lobe had been partially excised by clean cutting and without crushing, a large raw surface being left. Gauze drainage had been used. Instead of draining, the gauze had blocked the exit. When I next dressed the case I found the neck distended with secretion. I moved the gauze and the retained secretion poured out. It had been under pressure, but the patient had not been distressed. I believe that avoidance of crushing and free drainage are of the greatest importance.

Crushing is not necessary to stop haemorrhage. A lobe may be cut across with impunity. I do it constantly. When operating on a second lobe I cut from the front of the upper pole downwards and backwards to the back of the lower pole. That removes from half to two-thirds of the lobe, while it leaves the blood supply from the superior thyroid artery intact. Also it preserves the parathyroid glandules of that side from injury, though I cannot believe they possess the importance assigned to them by American surgeons.

The haemorrhage looks alarming at first, but the larger vessels are in the capsule, and are easily picked up. Any big point on the gland surface is underrun with catgut, and sponge pressure soon stops the oozing. Twice in the series I have, when removing a gauze drain on the second day after operation, separated a ligature from a vessel. The haemorrhage was sudden and great; the wound had to be opened at once to secure the vessel. Since then I have always used a tube, never gauze. Latterly, with increased rapidity in operating, I have been removing one lobe, the isthmus, and half the second lobe at one operation, when I have judged that wise. The time taken, and the amount of handling necessary for this, are less than was required for the removal of one lobe in my earlier operations.

What I have written may appear to imply that the operation is easy and safe, but its severity should not be minimized. All handling must be of the gentlest nature, and must be rapid. The vessels are increased in number and size, and they are very brittle. If one gets off the track, the haemorrhage may be appalling and uncontrollable. If the operation is prolonged, the bleeding is bound to be excessive. It is not necessary, however, for any of these accidents to occur.

Finally, I would plead for early operation, as soon as it is seen that medical treatment is not effecting a cure, for with local anaesthesia, rapid operating, no crushing, and free drainage, the operation may be regarded as absolutely safe.

Analysis of Cases.

The following is a short analysis of my cases:

Total number of partial thyroidectomy operations under local anaesthesia, 113. Of these:

Malignant goitre	...	...	2 cases.
Exophthalmic goitre	...	...	88 cases, 1 death.
Parenchymatous or adenomatous	...	...	23 cases, no death.

The parenchymatous cases may be dismissed without comment. Of the exophthalmic cases, 52 were typical cases with classical symptoms; 15 of these 52 had part of the second lobe subsequently removed. Of this class I can say that in every case where the removal of the larger lobe has not effected a cure, the removal of part of the second lobe has done so (always excepting the one case which died). In many of the latter cases one and a half lobes were removed at one operation.

Eight cases with irregular heart beats and pronounced oedema. Of these, 4 had part of the second lobe subsequently removed; 1 had a third operation because the upper pole left after the second operation was unsightly. The original goitre had been of immense size. Every one of these stood the operation well. All are still alive but one. She had made a splendid recovery, and three months later went to her country home, engaged in a round of festivities for a week in a climate with the temperature of over 100° in the shade most of the time, and died very suddenly at the end of it. This case, before operation, had oedema of the legs, body, and arms. There were striae around the elbows like those on the abdomen of a multiparous woman, and the evening before operation fluid was drawn off from both pleural cavities. After the operation she passed immense quantities of urine each day. Every trace of oedema disappeared until the week in which she died. All the others are very much improved.

Two cases, irregular, had intense tachycardia, but no glands enlarged and no exophthalmos. Of these, in 1 case I subsequently removed a small piece of the lower pole of the left lobe. She represents the only failure of the series.

Five cases of secondary exophthalmic goitre. In this class cure is rapid and complete.

Seven of the exophthalmic cases have been in males.

REFERENCE.

Dunhill, *Intercolonial Medical Journal*, June 20th 1908.

A CONTRIBUTION TO THE SURGERY OF LINGUAL THYROIDS.

By WILLIAM STUART-LOW, F.R.C.S.,

SURGEON TO THE CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL;
LECTURER ON PRACTICAL OTOTOLOGY AT THE
MEDICAL GRADUATES' COLLEGE.

THE persistence and development of thyroid remains in the posterior third of the tongue are the least usual of the aberrations to which the thyroid gland is liable, but its occurrence is sufficiently common, and these remains are sufficiently difficult to eradicate successfully and completely to warrant close attention to any improvement in the accepted methods of treatment.

The development of the thyroid gland explains their occurrence. As early as the fourth week, during the appearance of the buccal and pharyngeal portions of the tongue on the floor of the primitive pharynx, the hypoblast between these two parts proliferates and gives rise to a solid protrusion, and the part thus formed pushes downwards and backwards to the hyoid bone, and becomes the isthmus and part of the lateral lobes of the thyroid. The stem of this bud represents the thyro-glossal duct, and the buccal opening of the duct the foramen caecum. It is in the track of this duct that the remnants of thyroid tissue lie. These developmental remains may occur in any part of this canal, and constitute, when arising in the portion of it extending from the foramen caecum to the hyoid bone, lingual thyroids.

There may be one or a number of detached thyroid masses; and when one such mass is removed the others may take on compensatory action and grow, giving rise to a recrudescence of the tumour after operation. This is the reason for the imperativeness of radical measures in operating on these structures in the tongue.

The case narrated in this paper well illustrates the obstacles encountered in the removal of this fetal manifestation, and proves that the procedure most usually adopted may be futile, and therefore not always the best to employ.

A question that must ever be before the mind of the operator and carefully taken into account before deciding upon operation on the lingual thyroid is whether the thyroid gland in the neck is sufficiently developed to carry on the thyroid function in the bodily economy, or is the lingual tumour the only thyroid representative present? It is on record that excision of the lingual thyroid has been followed by myxoedema. The neck should, therefore, always be carefully palpated, and the outline, size, and development of the thyroid estimated. Should the gland be apparently absent, or be but small, one should certainly hesitate before deciding to operate. It would only be when the lingual tumour was of considerable size, and causing such marked disturbance as to impair the health, or jeopardize life, that a radical operation should be entertained.

In such circumstances it would be preferable to resect the thyroid tumour in the tongue, thus reducing its bulk, and so, in all probability, the distressing symptoms, and at the same time leaving sufficient gland to carry on the indispensable thyroid functions. This course should be chosen even at the risk of a recurrence of the lingual enlargement.

In searching the literature of this subject I have been unable to find any record of the method here adopted having been used for the eradication of these tumours—namely, by splitting the tongue from tip to base. The methods usually chosen have been either that of the galvano-cautery, or subhyoid pharyngotomy, or a combination of partial excision and the galvano-cautery.

The particular procedure selected is dependent upon the size of the growth. If the tumour be large, operation through the mouth is not likely to be successful, as access would be insufficient, unless the method here advocated were adopted. In these circumstances the operation of subhyoid pharyngotomy is that most favoured by surgeons, but this is by no means an ideal procedure.

It is excellently suited for the removal of growths at the entrance to the larynx, that is, involving the epiglottis, aryepiglottic folds, arytenoid cartilages, and in the region of the sinus pyriformis. But for tumours in the locality of the base of the tongue it has the great disadvantage of