The patient was a gentleman, with multiple nasal sinusitis on both sides. Nasal antrostomy was performed, fairly large openings being made on both sides. As he lived in the country, he was instructed in washing out the cavities with a suitable cannula in the usual way. Three months later he returned to say that he thought the openings had closed, and I was disappointed to find on examination that his opinion was correct. Proof-puncture of both sides, however, showed that the antra contained no pus, and I was able, therefore, to assure the patient that, though closed, the suppuration in the cavities had been cured.

Six months after the antral operation he was again anæsthetised in order to have the sphenoidal sinuses opened up and drained, and as he still showed some slight apprehension with regard to the antra, I took the opportunity of reopening both cavities through the nose and of examining them with the finger. To my surprise, fibrous tissue strands could be felt criss-crossing the cavity in all directions and very completely filling it up. Both antra were alike in this respect. I did not disturb the arrangement.

Nasal endoscopy is of the greatest value after antrostomy, as one can watch very comfortably the progress of events after operation. The most usual development is that the edges of the artificial opening become cicatrised and sharp, while the interior is more or less filled up by a pale, œdematous, bulbous mass which secretes more or less mucus or muco-pus, the quantity gradually diminishing, in favourable cases, as time goes on, coincident with a reduction in the size of the mass inside. Examination with a probe proves this mass to be solid, and not semi-liquid or polypoid. The above case is the first in which I have been able to prove complete obliteration by fibrous tissue, and it shows that closure of the antrostomy opening is not necessarily to be regretted.

The case, I should add, was one in which the original suppuration was of short duration, probably not any longer than about six months

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

February 2, 1917.

President: Mr. T. Mark Hovell.

Speech without the Use of the Larynx.—E. W. Scripture.—The patient, a girl, aged eighteen, has worn a tracheotomy tube since the age of three. She breathes entirely through the tube; if it is closed or removed she begins to suffocate. With the laryngoscope the walls of the lower pharynx are seen to obscure the larynx. On retching, the larynx is raised into view. Apparently she cannot make air pass through the larynx. She can speak quite distinctly in a faint, almost toneless voice. It is of interest to inquire if the passage through the larynx can be reopened. There seems to be no fundamental reason why this should be

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impossible. If it is reopened, can the vocal cords be brought into action? If so, will the patient readily learn to speak normally, or will there be a conflict with the old method?

Apparatus for the Graphic Record of Speech.—Inscriptions of speech are made by the phonautograph method. The person speaks into a mouthpiece. The vibrations and puffs of air travel down a wide tube to a special recorder. The movements of the air are registered by a fine lever on a rapidly revolving blackened cylinder. The records are afterwards varnished.

Speech requires in the first place a supply of air with a difference in pressure before and behind some obstruction. Ordinarily the lung pressure is increased and the obstruction is formed in the larynx or the mouth. The patient shown uses the pharynx instead of the thorax. To produce "t," for example, she places the tip of the tongue against the front of the roof of the mouth in the normal way. Then she contracts the pharynx—as can be seen from outside—and compresses the air. When the tongue contact is released, a "t" is heard. She likewise produces all the occlusives, such as "p," "k," and the fricatives, such as "f," "th," "s," "sh," in a normal manner except for the supply of air. As the amount of air in the pharynx is very small, the sounds become weak in long phrases.

To produce a vowel, a vibrating body is necessary. This she obtains by raising the back of the tongue against the velum palati. When the air is compressed in the pharynx, she allows it to escape by slightly relaxing the tongue-velum contact in such a way that the contact edges vibrate. The tongue-velum contact thus forms a pseudo-glottis. The different vowels are produced by adjusting the mouth cavity.

The patient can even indicate differences of pitch, though in an imperfect way, as in singing "ah-ah-ah-ah" on four notes of an octave.

This girl has never received any instruction in speech, and has evolved this method of talking quite automatically.

Mr. Herbert Tilley: Dr. Scripture says in his notes: "There seems to be no fundamental reason why this should be impossible," *i. e.* the reopening of the larynx. The case illustrates what is the not uncommon but evil result of doing a high tracheotomy, or, more strictly speaking, a high laryngotomy. This patient seems to have had the tube inserted in the cricoid or thyro-cricoid region, with the usual result—viz. excessive formation of granulation tissue followed by cicatrisation with eventual blocking of the lumen of the air-way. In University College Hospital there is at the present moment a boy who has been there four months for the treatment of this same condition. Under an anæsthetic we could pass only the finest Lister's urethral bougie from the tracheotomy wound through the larynx. We substituted a low, for the previously high tracheotomy. Laryngofissure was then performed. In the subglottic region I found a passage admitting only the small steel bougie. We dissected out some fibrous tissue, and then inserted a small intubation tube, leaving in also the low tracheotomy tube. The child was then able to breathe through the tracheotomy tube as well as through the intubation tube: the intubation tube has now been in, on and off, for four months. We have dilated the stricture so that it is now possible to insert a full-sized intubation tube, and to dispense with the tracheotomy tube for increasing periods of time. If we leave out the intubation tube for three days the stridor recommences and we have to re-intubate. I think we shall be able to continue with the intubation tube until the child

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has grown a little more, and then dispense with it altogether. If not, the question will arise as to whether we can turn in some skin flaps or graft the narrowed area of the laryngotracheal region. Perhaps Dr. Scripture's patient has a narrow stricture of the subglottic region, and as she has had it for fifteen years it will mean that whoever treats the condition must be persevering, for it will probably occupy many months. Examination should be made by the direct method, to see what the glottic and subglottic regions are like, and then explore from below to ascertain if there is any passage from the trachea through the subglottic region into the lower throat. It may be necessary to split the larynx and cricoid, to remove any obstructive or redundant masses of connective tissue, and to determine the possibility of either dilating the stricture by intubation tubes or by instituting some plastic operation which shall prevent future narrowing of the air-way. My hospital patient has a good voice when the intubation tube is removed.

Dr. W. Hill: It is a difficult matter to undertake a case such as that described by Mr. Tilley. The treatment may extend over two years, or even four, and the result is often disappointing. In one of my cases, in spite of the use of an intubation tube for six months, the tracheotomy tube had to be re-inserted after all apparatus had been dispensed with for a few weeks, and I gave the case up in despair, as far as dilating up the strictured larynx was concerned. I am aware, however, that some good results have been recorded in such conditions. This patient is a child, and if the larynx grows and one can get a wider passage, the functional disability may possibly be reduced to a minimum.

Dr. W. H. Kelson: Why is it said that apparently no air passes through the larynx? The voice she has probably indicates that a very little air does pass that way. Some years ago I showed here the case of a man who had cut his throat above the larynx, causing a big aperture, and in that case the man could not speak at all when the opening was exposed. But when it was covered with the hand or with a handkerchief he could speak well, showing that the larynx played a minor part in the act of speaking.

Dr. Scripture (in reply): The patient cannot get air through the larynx. She collects air in the back of the pharynx and then squeezes it out with the muscles of the neck. When the tube is closed she begins to suffocate.

The Relation of Peri-dental Gingivitis to Vincent's Angina.—Frank E. Taylor and **W. H. McKinstry.**—At the Queen Alexandra Military Hospital, during the last few months, we have bacteriologically examined nearly 300 cases of fuso-spirillary infection of the mouth, and have abundantly confirmed previous findings of the constant presence of these organisms in all forms of ulcero-membranous inflammation of the mouth, either alone, or associated with various forms of cocci, bacilli, and leptothrices.

In addition to the diffuse ulcero-membranous gingivitis previously described by Vincent and others, which is frequently found in association with Vincent's angina, there is also frequently met with a more restricted infection of the gums with these fusiform and spirillary organisms, in which the lesions are limited to those parts of the gums which are in immediate contact with the necks of the teeth. This condition constitutes, we believe, a distinct clinical entity, and may accurately be designated "fuso-spirillary peri-dental or marginal gingivitis"—a con-

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dition which was fully named and described by us in a paper read before the Odontological Section of this Society on November 27, 1916.[1]

In addition to its prevalence, this affection is of additional interest and importance in that it is often confused with pyorrhœa alveolaris, although it differs from this condition in the absence of pus and pus-pockets. Further, the treatment, course, duration, and prognosis of these two affections are essentially different.

In our earlier examinations of cases of Vincent's angina the investigations were restricted to the ulcero-membranous lesions of the pharynx, and to the differential diagnosis of the condition from other ulcerative membranous infections, particularly diphtheria and syphilis. Later the ulcero-membranous lesions were found not to be confined to the pharynx, and many cases of fuso-spirillary gingivitis were observed, often associated with the typical Vincent's angina. It is, however, the restricted peri-dental or marginal gingivitis which we have particularly found associated with Vincent's angina, although in a few cases the accompanying gingivitis was of a more diffuse character.

Since our attention was first directed to this association of peri-dental gingivitis and Vincent's angina, we have made a systematic examination of the gums in seventy cases of Vincent's angina, and in every case, without a single exception, we have found the gums to be affected, the condition in the great majority of these cases being a localised peri-dental or marginal gingivitis. Conversely, out of 150 cases of fuso-spirillary gingivitis, the characteristic lesions of Vincent's angina have been present in the pharynx or tonsil in seventy cases. In all these cases the clinical findings have been confirmed by careful bacteriological examination.

An investigation of the histories of these cases shows the same sequence of events in them all—namely, that the gums were always infected first, and that the sore throat was the more recent condition, having been infected, it would seem, from the gums. In many cases the patients themselves would make no complaint of the gums, but on inquiry it would be found that the gums had been sore and bled more or less freely whenever an attempt was made to use a toothbrush or clean the teeth. This condition of the gums may have been present for days, weeks, or even months, and in a few cases years, before infection of the tonsil or pharynx supervened. In some of these chronic cases of peri-dental gingivitis the patients had repeatedly suffered from attacks of sore throat, and examination in these cases usually revealed evidences of old ulceration of the tonsil or pharynx, with loss of tissue, deep crater-like depressions in these organs being often found.

The histories of the cases keep repeating the same sequence of events with monotonous regularity—first there are bleeding sore gums, which may, or may not, have been diagnosed as pyorrhœa, and which may have been present for some considerable time, and then the throat becomes affected and the typical ulcero-membranous pharyngitis and tonsillitis of Vincent's angina is seen. The diagnosis is confirmed by finding the typical organisms in both conditions.

Our experience has been confined to adults, but Vincent's angina is also seen in children, and it would be interesting to learn if the same frequency of peri-dental gingivitis is observed in association with Vincent's angina in children, and whether the same sequence of events, viz. the peri-dental gingivitis preceding the Vincent's angina, also occurs in them.

[1] *Proceedings*, 1916–17, x (Sect. Odont.), p. 8.

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As the result of our investigations we suggest that when a patient complains of a sore throat which presents the characters of Vincent's angina, it is essential to examine carefully the tooth-margins for evidence of peri-dental gingivitis, or conditions diagnosed as pyorrhœa, and that smears be made from both sources and examined microscopically for the detection of the causal micro-organisms. When these are found to be present the peri-dental gingivitis should be adequately treated as well as the Vincent's angina, otherwise the condition is likely to persist indefinitely, or to cause repeated recurrences of the sore throat.

Our thanks are due to Mr. J. C. Potter, Laryngologist to the Queen Alexandra Military Hospital, for sending us many of the cases, and confirming our results, and to the Commanding Officer, Surgeon-General J. Dallas Edge, C.B., A M.S., for permission to publish them.

Dr. DAN MCKENZIE: The association of peri-dental gingivitis and Vincent's angina seems to add one more lesion to the number already described in which this organism is present in large numbers. If Dr. Wingrave had been present he would have been able to discuss the matter, as he has devoted attention to it for many years. He has also found the organism of Vincent's angina in ear discharges, and in one or two brain abscesses. In a case I reported here the organism was found by him in the cellulitis of the neck following upon an operation for tonsillitis and adenoids, which proved fatal. Though it is present in large numbers in these lesions I do not think that its pathogenicity has yet actually been established. It is found normally in the mouth, and the question is as to what is responsible for the conversion of the organism from a harmless parasite into a factor in a troublesome lesion. Dr. Wingrave believes both the fusiform organism and the spirillum to be modifications of one species.

Dr. WATSON-WILLIAMS: May a too free brushing of the teeth with a stiff brush cause an infection of the gums by producing abrasions? A number of cases of pyorrhœa alveolaris are possibly due to this cause. Less vigorous brushing is often desirable, whereas the contrary is frequently urged.

Dr. W. HILL: How many typical tonsillar lesions has Dr. Taylor seen associated with this special type of Vincent's disease? We do not often see it. Several of my cases seen before the war were soldiers living in camps.

Mr. O'MALLEY: Has Dr. Taylor made any sections showing cellular changes in the tissue due to the activity of the organism mentioned? I have removed tonsils in which a similar condition existed, and the report I received was that the tissue changes showed an excessive amount of lymphoid cells, a small-celled exudation, in the parts surrounding the ulcerated areas.

Mr. FRANK TAYLOR (in reply): We have seen more than 300 cases of infection by these organisms, and in every case, in our experience, the lesion has been limited to the buccal cavity. With regard to the presence of these organisms in a healthy mouth, one is tempted to ask, What is a healthy mouth? Even in well-groomed mouths one occasionally sees fusiform bacilli and spirochætes, but the microscopic picture of the film from such a condition is quite different from that in which there is an infection. In the former case the films require much searching to detect the organisms, while in the latter there are masses of them. There is a difference of opinion as to whether these are two distinct organisms, or whether they are different stages of the same. We have actually found evidence of infection in toothbrushes, and in several

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cases we have associated the infection with the use of such brushes. In the last few months we have seen about 150 cases of Vincent's angina. We have not had the opportunity of making sections of the gum tissue, because the effect is the reverse of a hypertrophy, so that there has been no redundancy of tissue to remove.

Laryngofissure for Epithelioma of the Larynx, shown at Intervals of Three and a Quarter Years, Two and a Quarter Years, Ten Months, and Three Months after Operation.—Sir StClair Thomson.—Case 1.—Laryngofissure three years after operation. Male, now aged sixty-one, had been hoarse for twelve months when he presented himself on October 17, 1913, with a cupped growth occupying the posterior half of the right vocal cord. The cord moved freely. The Wassermann reaction was negative, and there were no tubercle bacilli in the sputum. The projecting portion of growth was removed by the indirect method with Mackenzie's forceps, and reported to be an undoubted squamous-celled carcinoma. November 10, 1913: Usual laryngofissure; tracheotomy tube removed at end of operation. Microscopic examination revealed structure of typical squamous epithelioma, not invading the muscle planes and showing a margin of healthy tissue all round. The patient's excellent voice is remarkable.

Case 2.—Male, now aged seventy-one. This gentleman has already been examined by the Section three times. He was first shown on November 6, 1914, before operation, with the whole of the left cord replaced by a red, knobby, ulcerating infiltration. The cord moved well. The infiltration was not suitable for removing a portion for microscopic examination, and the diagnosis therefore depended entirely on the naked-eye appearances and exclusion of other possibilities. It will be remembered that the microscopic examination of the growth, removed by a first laryngofissure on November 12, 1914, suggested that the growth had spread close up to the line of excision in the posterior subglottic region. A second laryngofissure was therefore performed on November 20 (*i. e.* a week after the first) and the patient was shown to the Section a fortnight later (viz. December 4, 1914). The tracheotomy tube was removed at the end of the operation on each occasion, and, as will be seen by the dates of his appearance before the Section, his recovery each time was rapid. He was again exhibited before the Section for a third time on November 5, 1915.[1] The patient has not seen for a year, but when last inspected he had an excellent voice and no trace of recurrence.

Case 3.—Male, aged sixty-eight, was sent to me by Mr. Johnson Taylor, of Norwich, who had diagnosed malignant disease of the larynx. The anterior four-fifths of the vocal cord were replaced by an ulcerating, raised, indolent, pale pink infiltration, slightly white in the centre. The cord moved freely. April 4, 1916: The usual laryngofissure was carried out. The operation was practically bloodless and no vessels were tied from the beginning to the end of the operation. It occupied one hour. The tracheotomy tube was removed before the patient left the table. He was sitting up reading the paper in bed the same evening, and next day was out of bed and eating solid food. The microscopic examination revealed an undoubted epithelioma and that the incision was well clear of the growth.

Case 4.—Male, aged fifty-seven and a half. The history of the

[1] Journ. of Laryngol., Rhinol., and Otol., vol. xxxi, p. 46.

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onset of this patient's trouble is very interesting. He consulted Dr. W. R. Gibson, in Madras, who found a "papilloma" between the anterior ends of vocal cords together with slight ulceration of the right vocal cord. This papilloma was about the size of a green pea. The diagnosis lay between papilloma and malignancy. The patient was advised to return to England at once for advice and possible operation. *En route*, about three weeks before coming under observation, he had an attack of acute tonsillitis, with much pharyngeal straining and his voice suddenly became "perfectly all right." About this time he brought up some blood on one occasion, but is not aware of having ever coughed up anything special. The patient was referred to me by Mr. G. Jackson, of Plymouth. On October 12, 1916, he presented himself with an almost natural voice, yet it was found that the anterior two-thirds of the right cord were occupied by a red, beefy, abraded, shallow infiltration. The cord moved freely and the condition was not suitable for removing a portion for examination. The diagnosis, therefore, rested entirely on clinical appearances and the exclusion of other factors. October 13, 1916: The usual laryngofissure was carried out. The tracheotomy tube was removed at the end of the operation. Patient was sitting out of bed and eating solid food the next day. He left the nursing home at the end of twelve days. The patient has not been seen since, and, therefore, the present condition cannot be reported on.

Dr. WATSON-WILLIAMS: The results in these cases are excellent. In the operation for laryngofissure I consider the preliminary injection of cocaine, before making the incision into the larynx, very useful in abolishing the cough reflex which may cause so much inconvenience. Dr. Irwin Moore has recently introduced improved or new instruments, such as the new saw and shears for dividing the cricoid, etc. Amongst Sir StClair Thomson's cases we find one where there is an apparent growth with appearances suggesting innocency, and in an unusual situation for a malignant growth of the larynx—namely, in the anterior commissure. Hence we ought to reconsider the view which had been put forward, that if the anterior third of the vocal cord is occupied by a growth it is far less suspicious of malignancy than if it is in the posterior half. It does not seem that location is a guide as to the character of a growth.

Dr. D. R. PATERSON: The whole operation, as carried out by Sir StClair Thomson, is a very satisfactory procedure. It has been much simplified in technique, and altogether it is one which is more desirable than it was formerly. One of the points upon which Sir StClair appears to lay stress is that it is a practically bloodless operation on account of the use of local anæsthesia. Of course, he has been fortunate in getting the cases at so early a stage, and the lesson these cases teach is that we should try to educate the profession generally not to allow cases of hoarseness to run on in the way they are permitted to do, and that hoarseness may indicate a serious condition, which the sooner it is tackled the better.

Mr. BADGEREW: I have seen a number of cases upon which Sir StClair Thomson has operated in the last eighteen months, and three points particularly impressed me: (1) The operation is practically bloodless; (2) there is little, if any, shock—the patient is well the same evening, and next day is sitting up; (3) the voice is exceedingly good. I ask whether Sir StClair expects, in the case operated upon three months ago, a better voice than the patient has now, which I consider very good.

Dr. JOBSON HORNE: In commenting on the fact stated in the notes

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that in all four cases the affected cord "moved well" or "moved freely" at the time the patient came under observation, may I say that is not in accordance with general experience in cases of malignant disease of the larynx. It shows that the growth has not infiltrated the subjacent intrinsic muscles, and it also shows that an early diagnosis is everything in obtaining a good result from the operation.

Dr. W. HILL: Everything goes smoothly, and there is very little bleeding in this operation, as carried out by Sir StClair Thomson. It appears to be followed by little shock if not done with violence. Much of his success is probably due to the fact that he does not put the patients in the Butlin posture afterwards, but makes them sit up at once. Butlin's posture does not, as the originator hoped it would, prevent the septic secretions going down into the lungs, and if the patient has a weak heart, there may ensure œdema of the lungs, and in one in three cases death has resulted. In Sir StClair Thomson's cases there are no complications, so far as I can ascertain. These cases of his were most suitable for operation—the lesion not too large, but just large enough for easy diagnosis. In some of my cases, when I first saw them, invasion of the pharynx, and occasionally of the œsophagus and the mediastinal glands also had occurred, so that operation had no chance Though I do not depreciate the value of his technique, yet I think his after-treatment is even more important.

Mr. FRANK ROSE: I should like to confirm Dr. Hill's remarks about the attitude in which these patients should be placed after the operation. I have tried keeping the patient lying down with the head very low; I have also adopted the method of making the patient sit up immediately after the operation, and I have no doubt that the last named is the better method—he is more comfortable, and gets better more rapidly.

Dr. DAN MCKENZIE: I ask Sir StClair, as I have asked on previous occasions, as to the advisability of removing a piece of the growth before operating. In one of these cases a projecting portion of growth was removed, but in the other cases no portion was removed because "the infiltration was not suitable." I would ask when it is suitable, and how we are to tell.

Sir STCLAIR THOMSON (in reply): It is striking that not one of the four cases shown this afternoon had fixation of the cord; it is very important to remember that. Yet I had a case in which flagging of the cord was the only suspicious symptom. It does not always mean that the case is advanced; the case I have in mind was in an early stage. In two of to-day's cases the growth was on the anterior four-fifths of the cord. The old idea that malignant disease selects by preference the posterior aspect of the glottis is, in my experience, quite a mistake. Perhaps the growths in half my cases were more in the anterior than in the posterior half of the larynx. With regard to previous removal of a portion for examination, in one case where a piece was projecting there seemed no reason why I should not make assurance doubly sure, but this is not my usual practice; one might nick a piece of mucous membrane, the effect of which might be to stir up the disease. Of course part of the success has been due to the fact that I know when to hold my hand. That is shown in the case which Mr. Trotter will tell you of presently. I saw it was not suitable for laryngofissure, so I turned it over to him. Though Dr. Hill has seen some of my most favourable cases, I have had others which have been troublesome. In one or two I had to split the cricoid as well as the thyroid, and these are the more serious cases, because we get recurrences among

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them, though some have remained indefinitely without recurrence. Mr. Badgerow spoke of the absence of shock, and I have asked myself why. I show you a typical chart. The patients are operated upon at 9 in the morning, and at 6 p.m. the same day they are sitting up in bed reading the evening paper. Nearly all are out of bed the next day. I think this absence of shock is due to the use of cocaine before the operation. The skin is injected with eudrenine beforehand, and for some years past I have also made an intratracheal injection of cocaine before doing the tracheotomy: it seems to abolish the shock, and there is no coughing. It makes it as quiet and bloodless an operation as septum resection. Some of the patients have left London again within a fortnight. I do not know how I came to adopt this position for patients, because twenty years ago the teaching of Butlin, which was largely followed, was to put the patient low in the bed, and he was not allowed to lift his head, so that he lay there slobbering in blood and mucus, which he was unable to cough up, and the blood and mucus were sucked down into the lung. My first experience of the sitting-up posture was in a German in whom the anæsthetic was not given elegantly, and blood got into the base of the lung and produced consolidation. He refused to lie down after the operation, and he got well because he sat up and spat the blood up! The only improvements I feel I have made are merely simplifications. Dr. Irwin Moore, to whom I am deeply indebted for details connected with these operations, injects the patients' skin an hour before the operation at 9. This is one of the reasons why the operation is so bloodless. It is a question of having all the preliminaries well done, not hurrying the operation, and taking care to restrict beforehand any indulgence in tobacco and alcohol, and having the blood-pressure determined. One man thus operated upon had double aortic trouble, albuminuria and cirrhosis of the liver, yet his operation went as smoothly as that in any other case: he was thoroughly prepared for five days beforehand in a nursing home. We occasionally meet with a growth which is semi-pedunculated. The second patient was a case of the kind. I have published a case in which the patient came into my study with such a pedunculated little "currant" growth of one vocal cord, so simple looking that on the spot I lifted it off with Mackenzie's forceps, but when the report was that it was epithelioma, I did laryngofissure. In another case the patient came to the out-patient room with a pedunculated growth, which I regarded as malignant. I took it off and it proved so, and I did laryngofissure, but what we then removed proved to have no cancerous elements in it at all. This shows how superficial some of these early cases may be. But most of the cases I have had have been those in which the cord was simply infiltrated, just as it might be by a syphilitic deposit, and preliminary removal of a portion for microscopical examination would be impossible. You would have to take out a piece right through the middle in order to get a satisfactory microscopical examination.

Extrinsic Cancer of the Larynx Two and a Half Years after Operation through the Side of the Neck.—Wilfred Trotter and **Sir StClair Thomson.**—G. H——, aged fifty-eight, presented himself King's College Hospital on February 24, 1914, with a reddish, slightly cauliflower growth of the left aryepiglottic fold, well limited and only extending a little way down towards the pyriform fossa. The Wassermann reaction was negative. Under cocaine a good portion of the growth

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was removed by the indirect method and reported to be a squamous-celled carcinoma. One gland was felt under the sternomastoid, just behind the left angle of the jaw. The case was transferred to Mr. Trotter, at University College Hospital.

First operation, March 31, 1914: Glands removed from the left side of the neck and found to be reaching from the base of the skull to below the clavicle. The sternomastoid was removed with the glands. The thoracic duct was cut and ligatured. This was followed by leakage of chyle into the wound, which was a long time in healing.

Second operation, June 9, 1914: A somewhat low tracheotomy was done. The larynx was approached through the old wound in the neck. The left ala of the thyroid cartilage was removed. Growth was found to be limited to the left aryepiglottic fold and about the size of a threepenny-piece. This was removed with the clear area of a third of an inch all round. The pharynx was sutured with catgut and a drainage tube inserted. The tracheotomy tube was left in for two days. The patient was discharged from hospital on July 3.

Although subject for many years to chronic bronchitis, and a heavy smoker, the patient remains well, with a good rough voice. In spite of the removal of the left arytænoid and left thyroid cartilage, it is remarkable that there is no glottic stenosis. There is a good fixed cicatricial band on the left side, which acts as a vocal cord.

Mr. W. G. Howarth: I have operated upon one or two of these cases by Mr. Trotter's method, as he described it in his College of Surgeons lectures. In some cases the growth has been too high or too low for my ability. I would ask Mr. Trotter how he deals with the cases in which the growths are in the pharyngeal wall, up to the angle of the jaw; whether he does a snipping of the jaw and a turning up of the ramus, or whether he has some other method of getting at them? How does he reach the growth when it extends downwards behind the pyriform fossa and deeper down on the edge of the œsophagus?

Dr. Watson-Williams: Is Mr. Trotter in the habit of removing the sterno-mastoid with the glands? And, in removing the ala, was the incision carried sufficiently high to divide the superior laryngeal nerve going beneath the ala on that side? If one can preserve that nerve, it is very helpful, because one of the greatest dangers in connection with all these laryngeal operations is the loss of cough reflex. That is one of the reasons we remove our tracheotomy tube after laryngofissure, and why Sir StClair Thomson's patients did well when sitting up, because they had the best chance of responding to the calls of the superior laryngeal nerve. I show a rough drawing of a case in which there was a malignant growth which appeared to be in the back of the left arytænoid. To approach it from the front by laryngofissure would have made it difficult to deal with the posterior aspect of the arytænoid, especially as the growth extended downwards to the back of the cricoid, so I approached it by opening the pharynx laterally. I got sufficient space by exposing the inferior constrictor and making an incision from below the level of the upper border of the thyroid ala to nearly the lower border, and dragging the thyroid ala forcibly forwards, so as to get some rotation of the larynx. As intratracheal anæsthesia was used no tracheotomy tube was needed. Blood was prevented from getting into the trachea or larynx from the occlusion by the tracheal tube. In this way the left arytænoid was removed *in toto*, and the back of the cricoid cleared. The ala of the thyroid cartilage was intact, and hence there was no chance of

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subsequent falling in laterally, and, more important, the limited incision left the superior and external laryngeal nerves intact.

Sir StClair Thomson: I suppose it was inevitable, but I notice that there was a lapse of nearly four months between the diagnosis of the nature of the case and the removal of the disease. Mr. Trotter removed the glands, leaving the other operation till later. I suppose it was due to the leakage of chyle: otherwise, I take it, he would push from one procedure to the other as soon as possible. It was a great surprise to me that only one gland was felt under the sternomastoid, yet at the operation it was found that the glands reached from the base of the skull to the clavicle. Mr. Trotter said other cases promised well: I remember one which promised best of all, and I forget why, but the patient suddenly died. Is the shock more marked in these cases after this extreme dissection? And is it a warning which should put us on our guard? The whole of one-half of the thyroid cartilage was removed on one side, and the left ala was removed. There is no stenosis. In some of my laryngofissures, where I had to take out the whole of one vocal cord, and perhaps three-fifths of the other, there was some stenosis. Formerly the patient could bicycle, and run upstairs, but after the operation he could not.

Mr. Wilfred Trotter (in reply): In reference to the situation of the growth in relation to the incision when it is approached by this transthyroid operation, I may first remind you that normally we remove the ala of the thyroid, and then usually the great cornu of the hyoid as well. If that does not give enough room upwards, I divide the jaw also, though where this is necessary it is very improbable that the case would be cured by operation. When these growths get beyond a certain size, although it is technically possible to remove them and the result looks encouraging, they almost always recur. When a primary growth demands some procedure which is unusually heroic the prospect of cure is not generally good enough to recompense the patient for the discomforts of the operation and convalescence. Hence it is unusual for me to divide the jaw after removing the thyroid ala. There is no difficulty in obtaining increased access downwards. Free division of the infrahyoid and sternomastoid muscles with removal of the lateral lobe of the thyroid gland give access to the œsophagus as far down as the clavicle. With regard to extensive operations, the subject of removal of glands is on an entirely different footing. I am not at all alarmed by extensive gland infection, provided the glands remain isolated, and are not fixed to surrounding structures. Under such circumstances, we can almost guarantee a cure if we do an operation which is sufficiently drastic. The cases must be divided into two groups: The first group includes those cases in which the glands are not palpable in this the ordinary operation is done without removal of the sternomastoid. The second group includes those cases in which the glands are palpable, and here we divide the sternomastoid and jugular vein close to the clavicle and remove the glands, fat, connective tissue, muscle, and vein in one mass up to the skull. This case had one of the most extensive glandular involvements I have ever seen, but owing to the fat muscular neck it was practically impossible to detect the condition. We had even to divide the thoracic duct, in order properly to clear the lower end of the posterior triangle, and yet there is complete freedom from any evidence of glandular recurrence. As to dividing the superior laryngeal nerve, this is not usually important since we are usually about to remove the area to which the nerve is distributed. In a purely exploratory operation the nerve of course should be preserved

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until we know whether a radical excision of the growth is possible. With regard to rotating the larynx, I have done that several times in exploratory operations on the epilaryngeal region, but it gives a less satisfactory access to the region in question, and I see no objection to removing the ala of the thyroid; it does not cause subsequent stenosis, and it gives admirable access to the upper larynx. With reference to the dangers of the operation in comparison with those of laryngofissure, the difference is a very obvious fact of experience, and it is due to the fact that these epilaryngeal tumours are, technically, growths of the pharynx, not of the larynx. As long as we keep inside the larynx, we have nothing to do with such organisms as we heard of earlier in the meeting, the fusiform bacillus and the spirochætes of the mouth; but when the pharynx is encroached upon by the operation, they have always to be reckoned with and to be dreaded. Any wound involving the pharynx or œsophagus is liable to a sloughing infection which very small defects of technique may render extremely dangerous or wholly uncontrollable. The merest scratch of the epithelium of the pharynx leads, as is well known, to the formation of a slough. In laryngofissure, there being no implication of the pharynx, it is not necessary to take any *special* precautions against sepsis, whereas in operations done on the pharynx almost the whole procedure is concerned with protection against the effects of the peculiarly virulent local types of infection. The special dangers of the pharyngeal infections are well seen in an operation apparently so simple as the removal of a pharyngeal pouch. If the closure of the gap left by the excision of the sac is not such as to render leakage impossible, there is the gravest risk of very serious and even fatal sloughing cellulitis and mediastinitis. Such forms of cellulitis spread rapidly, and often without much external evidence, and even if the patient survive the immediate danger, are particularly apt to cause secondary hæmorrhage.

(*To be continued.*)

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Meeting at Chicago, June 15 and 16, 1915.

(*Continued from p.* 233.)

Report of an Unsuccessful Labyrinthectomy for Relief of Distressing Tinnitus Aurium.—Arthur B. Duel.—Tinnitus aurium of such distressing character as to produce insanity, or to drive the sufferer to suicide, is, fortunately, a rare occurrence. The occasional case, in which every effort has failed, and where sedatives have become useless, except for the immediate time being, present as sad a spectacle as the most hopeless alien. The few cases that have been reported in which major operations, like division of the auditory nerve or destruction of the labyrinth, have been tried for their relief, have met with so little success that no one would be tempted to undertake another, except under great stress of circumstance, or some peculiar hopeful prospect, as in the case recorded.

The patient, a woman, aged sixty, married, had slight deafness

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