night and this morning. He has marked head retraction, stiffness of the legs, and Kernig's sign is present. There are no ocular signs or facial twitching. The leucocytes number 19,000 per c.mm. Lumbar puncture yielded a fluid, turbid, and under increased pressure.

Pathologist's report on fluid: "The specimen contains no pus cells. At all events, I can find none after prolonged centrifugalisation. There is very little deposit at all, and what there is consists of mononuclear cells, viz. lymphocytes and a few endothelial cells. There are no organisms in the stained smear."

Subsequent to lumbar puncture, the temperature dropped in twenty-four hours from 104° F. to normal, and the pulse rate from 120 to 84.

*October* 8.—Temperature normal. Pulse 84. Lumbar puncture was repeated to-day as a precautionary measure. The fluid was found to be still under increased pressure. It presented a naked eye turbidity, but of less degree than the former specimen.

With regard to this specimen the pathologist reported as follows: "The second specimen of cerebro-spinal fluid has yielded a good growth of streptococci."

*October* 10.—Lumbar puncture performed for the third and last time.

*October* 14.—The temperature has settled to normal.

*November* 13.—For the last month the temperature has not been raised above normal, and progress has been altogether satisfactory.

The section of the chart which shows the effect of the lumbar puncture is figured.

# SOCIETIES' PROCEEDINGS.

## ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

*November* 3, 1916.

*President:* T. Mark Hovell, F.R.C.S.Ed.

**Presidential Address.—T. Mark Hovell** (see Journ. of Laryngol., Rhinol., and Otol., January, 1917, p. 1).

**Cases and Specimens illustratiug Work on Atrophic Rhinitis (Ozæna) and Tuberculosis.—Dan McKenzie, John Mackeith, and Wyatt Wingrave.**—For a full account of the work done and conclu-

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sions arrived at members are referred to the articles which appeared in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOLOGY, May, June, and July, 1916.

(I) CASES OF ATROPHIC RHINITIS TREATED WITH TUBERCULIN.

JOHN MACKEITH.

CASE 1.—Patient, a female, aged twenty-one (A. P——). Has had atrophic rhinitis of several years' duration, subsequent to cortical mastoid operation. Has had course of tuberculin treatment, from January to September, 1913. In addition to the improvement in the condition of the nose, hearing has greatly improved.

CASE 2.—Patient, a female, aged twenty-three (F. K——). Has had atrophic rhinitis for about twelve years. Mother died of phthisis, also an aunt. Had course of tuberculin treatment, October, 1914, to June, 1915. In addition to the improvement in the condition of the nose she does not have "colds" as she used to do.

CASE 3.—Patient, a male, aged thirteen and a half (B. T——). Had course of tuberculin treatment, March, 1913, to February, 1914, which was followed by violent reactions. No history of tuberculosis in his family. Had enlarged gland (tubercle ?) of neck.

CASE 4.—Patient, a female, aged thirteen (M. F——). Mother died of phthisis. Had four courses of tuberculin treatment: (*a*) July, 1912, to February, 1913; (*b*) June, 1913, to August, 1913; (*c*) October, 1913, to December, 1913; (*d*) March, 1914, to July, 1914.

CASE 5.—Patient, a female, aged twenty-four (M. S——). Tubercle bacilli in sputum, May, 1913. No tubercle bacilli in sputum, March, 1914. Had a course of tuberculin treatment, May, 1913, to January, 1914.

Charts and records of the cases are shown.

Mr. Mackeith was solely responsible for the management of these cases during the treatment by tuberculin.

(II) CASES OF ATROPHIC RHINITIS (OZÆNA) IN SISTERS; ACID-FAST BACILLI ABSENT; WASSERMANN REACTION POSITIVE.

DAN MCKENZIE.

CASE 1.—R. A——, aged twenty-two. Typical appearances of ozæna. Acid-fast bacilli were not found either in the nasal crusts or in the sputum. Wassermann reaction positive.

CASE 2.—F. A——, aged twenty. Conditions similar to those of the first patient, whose sister she is.

Since the appearance of the above-mentioned papers fifteen unselected cases of atrophic rhinitis of different types have been examined, with special reference to the acid-fast bacillus—crusts and discharges from the nose being sent to Dr. Wingrave. Of these fifteen cases the acid-fast bacillus was found to be present in eight and absent in seven. Of the seven *negative* cases, two were post-operative cases with very mild nasal phenomena. In three the Wassermann reaction was positive—these include the cases now exhibited. In two, although they presented the clinical appearances of typical ozæna, no evidence either of tubercle or of syphilis could be found. All eight *positive* cases were diagnosed clinically as ozæna. Two were children, aged seven and eight, respectively, the youngest patients we have so far seen. Another

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interesting case was that of a girl, aged thirteen, the tuberculous family taint appearing in her mother, who was a patient at the Central London Throat and Ear Hospital with lupus of the nose. A maternal aunt and a sister of the girl had died of phthisis. In the nose of this patient there was very little crust deposit, but the fœtor was unmistakable. Attention is directed to the negative cases in which the Wassermann reaction proved positive. This finding may be compared with that formerly reported, in which a partial positive Wassermann reaction was found in a patient who responded negatively to all the tests for tuberculosis.[1]

### (III) Specimens of Atrophic Rhinitis (Ozæna).

Exhibited by Wyatt Wingrave.

(1) Acid-fast films prepared direct from ozæna crusts: (*a*) Coarse type; (*b*) slender type. Stained by (*a*) fuchsin and methyl green; (*b*) fuchsin and picric acid.

(2) Reinforced clumps.

(3) Growth on Dorset egg and fœtid broth medium.

(4) Sections of gland from inoculated guinea-pigs. "Tubercle" bacilli *in situ*. Stained by orthodox Ziehl-Neelsen (alcohol).

(5) Typical examples of discharge, or ozæna crusts (macroscopic).

*Histological Changes.*—Alterations in the nasal mucous membrane are not so profound as one would expect. The early or exudative stage, when the discharge is fairly abundant and somewhat "creamy," is not attended by any striking histological feature beyond a distinct increase of the lymphoid and vascular elements. Later, however, when atrophy and fœtor are pronounced, there is decided shrinkage in the whole mucous membrane. Lymphocytic and endothelial infiltration of the glands is now replaced by atrophy of the acini and general fibroplastic tissue, all structures—nerves included—sharing the general atrophy. But the most striking feature is metaplasia of the surface epithelium. The columnar and ciliated cells are entirely replaced by many layers of stratified squames which often block the ducts. These changes extend by continuity to the accessory sinuses, the naso-pharynx, the larynx, and even the trachea, but they never pass beyond the muco-cutaneous junction. Ulceration or necrosis never occurs, and bone is never attacked. In this respect it differs entirely from lupus, although it somewhat closely resembles lupus erythematosus, with which it has been found in conjunction. Giant cell systems are never seen.

*The Discharge.*—In early stages it is somewhat free and contains plenty of mucin, but never resembles pus. So that, even at this early period, it cannot be called "purulent." Later on it becomes more and more scanty, loses its mucin, and can only be detached with difficulty. Its dark colour may be due to anthracosis or to various chromogenic bacteria, and its degree will vary with its retention *in situ*. Chemically the lipoids predominate, with cell globulin and keratin granules, much being derived from the metaplastic epithelium, which shows the characteristic acid-fast reaction of epidermal cells. For diagnostic purposes, small portions of the green crusts should be spread with normal saline solution on slides, which are then firmly pressed together and separated by sliding. Fixing may be wet or dry. If the fixing is by heat, this should be radiant, and not exceed 40° C., otherwise the bacilli swell up

[1] Journ. of Laryngol., Rhinol., and Otol., May, 1916, p. 184.

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and become deformed. Weak formol alcohol is preferable, which should be well rinsed with water. Stain by carbol fuchsin on a hot plate for at least ten minutes, wash in 25 per cent. sulphuric acid, and counterstain with saturated solution of picric acid in water, or if other structures are to be shown use 1 per cent. methyl green in preference to methylene blue. Both of these stains are preferable to the orthodox Ziehl-Neelsen, since they afford much better differentiation. The films cannot be too thin. These stains will show the "acid-fasts" brilliantly retaining the fuchsin. Other films should also be stained in the same way, but no alcohol should be used after the acid bath. They should have at least three washings with acid. Many of the "acid-fasts" wlll be found to be alcohol-fast as well, even so far as to be "colour true," *i. e.* they will not take up the counterstain. The picro-fuchsin is the more precise process. A great variety of bacteria, chiefly saprophytes, will usually be seen, but for the present purpose the acid-fasts only demand description. In a well-advanced case the acid-fast will at once be seen, in earlier cases they may require some patience. They are somewhat polymorphic, being long or short, thick or thin, solitary or fasciculated, straight or bent, but nearly always "beaded"—*i. e.* not uniform in staining. In size and general appearance they strongly resemble both types of tubercle bacilli and in some films no difference can be found. Much of the variation in thickness is due to the fixing and staining; if heated too much they will swell up like rice or pop-corn, assuming various fantastic shapes; some may be distinctly "clubbed." Tinctorially and morphologically, they therefore closely resemble tubercle bacilli, which also are not infrequently amphophile to the Ziehl-Neelsen stain, and but feebly alcohol-fast,

*Cultivation.*—So far they have resisted the orthodox methods, either aerobic or anaerobic, but by imitating their natural habits they multiplied slowly but freely, growing in felted masses resembling streptothrix. A sterile emulsion was first made from fœtid crusts, this was then mixed with Dorset egg medium and "planted" with crust material. Reinforcement by simply inoculating the "crusts" or by adding a few drops of sterile fœtid broth is generally successful in from five to ten days.

*Inoculation Tests.*—By the courtesy of the Lister Institute several series of guinea-pigs and rabbits have been inoculated. The research is far from complete and is being continued. The results so far obtained are, briefly, as follow: In September, 1915, Dr. Henderson Smith injected six guinea-pigs with a reinforced emulsion (five days) made from a typical case of ozæna. No. 1 died during the sixth week, showing well-marked tuberculosis of the spleen. The five surviving apparently healthy guinea-pigs were killed during the tenth week. No. 2 revealed extensive caseation of liver, spleen, retroperitoneal and inguinal glands. No. 3 showed well-marked caseation of the inguinal glands, but the viscera were apparently unaffected. Nos. 4, 5, and 6 appeared to be quite healthy. Nos. 1, 2, and 3 were injected subcutaneously, Nos. 4, 5, and 6 intraperitoneally. Histological examination of the caseated foci showed characteristic tubercular lesions, there being giant cell systems with true tubercle bacilli, both intra- and extracellular. The bacilli were strongly alcohol-fast and of the slender type. Dr. Henderson Smith reported: "The smears from the spleen nodules and the glands both showed acid-fast bacilli very like tubercle. I have very little doubt they are tubercle. I was interested to find that you obtained

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histological tubercle in the sections." Emulsions were then made from the tuberculous viscera of Nos. 2 and 3, with which three guinea-pigs were inoculated on the day of the necropsy. No. 1 died in the eighth week, No. 2 died at the twelfth week, both showing extensive gland caseation with "bacilli both acid and alcohol-fast, obviously tubercular." Guinea-pig No. 3 was mislaid. Nos. 1 and 2 were injected subcutaneously, No. 3 intraperitoneally. In each group of tests those injected beneath the skin-developed lesions, while the animal injected intraperitoneally escaped. There were no pulmonary lesions in any one of them, nor could any intranasal change be found. Excluding one animal which was lost, *five out of eight developed lesions which were indistinguishable from tubercle.* In each test the strictest precautions were taken against contamination at every step, from collection of the material at the hospital to the final necropsy.

A stage has therefore been reached which must not be considered conclusive, although collectively the evidence may be viewed as strongly presumptive. It has been established that certain organisms, morphologically and tinctorially resembling tubercle bacilli, are present in ozæna which we have never found in any other nasal disorder.

Mr. Herbert Tilley: We should not allow this occasion to pass without expressing our thanks and congratulations to Dr. McKenzie, Mr. Mackeith, and Dr. Wingrave for the excellent piece of work which they have done in connection with the relationship between atrophic rhinitis and tubercle. Probably most of us have read their monograph which was published in the Journal of Laryngology, Rhinology, and Otology, and since then, when dealing with cases of atrophic rhinitis, have laid more stress on getting all the details of the family history from the point of view of tubercle. In many cases I have been surprised to find such a history in the forbears. The question, however, has arisen in my mind whether, if we were to investigate the family history of any one of us here, we should not be able to find some relative who had had tubercle. But I think the percentage in cases of atrophic rhinitis would be greater than in any other form of nasal disease. I have carefully examined the cases exhibited to-day, and, with the exception of the little girl—who has not had many injections, and would scarcely yet be claimed as a success—the nasal cavities seemed to be in a very good condition. Presuming that they have had no other treatment, the result of the tuberculin injections has been, on the whole, better than in the other methods we have been in the habit of using. Perhaps it is as yet too early to speak of what the ultimate result is likely to be; but whatever may be the result, whether positive or negative, I cannot withhold my admiration for the useful work which these gentleman have done.

Dr. Watson-Williams: I should like to add my thanks for the monumental investigation which has been undertaken by Dr. McKenzie, Mr. Mackeith, and Dr. Wingrave. It requires a great deal of enterprise to start an investigation on this subject nowadays, which has been the cemetery of many laborious hours; and we can only hope that their conclusions, which certainly seem warranted, will prove to be justified. No one has taught us more than has Dr. McKenzie himself to be very cautious in arriving at conclusions, and I think we cannot read these papers without feeling that they are the product of balanced minds. Dr. McKenzie has at least given us food for reflection, and has gone a long way towards leading up to some conclusive evidence in the

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treatment of the disease, the *bête noir* of laryngology. He has so far carried me with him in his way of thinking that I shall give his methods a careful trial.

Dr. DUNDAS GRANT: I also feel very strongly, with those who have already spoken, that we have had here an honest endeavour to get further towards the truth of the conditions known as ozæna and atrophic rhinitis. A weak point in the work lies in the fact that Dr. McKenzie has taken the terms "ozæna" and "atrophic rhinitis" as identical. Ozæna without the pecular smell is scarcely worthy of that name. Ozæna does certainly occur in subjects of pulmonary tuberculosis, though seldom; whereas chronic atrophic rhinitis with crusts, dryness, and pus, is common. If you put the two together under the heading of ozæna for statistical purposes, the result will be to invest ozæna as such with a degree of anxiety for the unfortunate sufferers from it which, I think, is not justified. I would remind you that for years the French have spoken paradoxically of an ozæna without smell, and they assert that, as a rule, "ozæna without smell" is generally tuberculous. It is probably lupoid in character, and might react to tuberculin. Apart from that, the results which have been obtained in the cases before us are worthy of every consideration. I should be glad if members would express their opinions as to whether ozæna and chronic atrophic rhinitis should be classed together for the purpose of drawing statistical deductions of either pathological or clinical import.

Mr. F. A. ROSE: I should also like to congratulate Dr. McKenzie and his colleagues on this excellent piece of work. I also want to ask a question. I am not clear, after reading the notes, whether it is claimed that these acid-fast bacilli are in the tissues of the nose, or only in the secretion inside the nose.

Dr. DAN MCKENZIE: I pointed out in my paper that we have never yet succeeded in finding these bacilli in the tissues of the nose.

Mr. F. A. ROSE: Assuming that the bacilli are present in the secretions only, is it not possible that they are there only by accident? A nose which is the subject of atrophic rhinitis is one which cannot protect itself from infection, so that all the bacilli in the dust in the streets may be deposited there. And if the patient only lives among enough acid-fast bacilli, there is no reason why those should not be found in the nasal secretions. We know that if a careful search be made for diphtheroid bacilli they are found in 90 per cent. of cases of atrophic rhinitis; and it is impossible not to find streptococci, staphylococci, *Micrococcus catarrhalis*, and other organisms. The question is, What relation have these bacteria to the disease?

Dr. JOBSON HORNE (commenting on the statement in the paper, "It has been established that certain organisms, morphologically and tinctorially resembling tubercle bacilli, are present in ozæna which we have never found in any other nasal disorder") said: If I may be permitted, I would refer my listeners to the "Descriptive Catalogue of the Museum of the British Congress on Tuberculosis," held in London in July, 1901. On that occasion I was fortunate in bringing together a representative collection of cultures of bacilli, acid-resisting and morphologically and tinctorially resembling the tubercle bacillus. Amongst these was one isolated by Karlinski (Maglaj, Bosnia) from nasal secretion. Perhaps Dr. Wingrave will tell us whether the bacillus to which he refers has not been isolated before, or whether it

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is perhaps the same one which was isolated some years ago from the nose. The case for tuberculosis will stand or fall on the animal experiments, but they are, as the authors admit, far from complete, and must not be considered conclusive. Even a negative result will be valuable in elucidating the facts about ozæna. The question is whether this acid-resisting bacillus is merely an accessory to the crusts and discharge or whether it is a factor in the production of the disease. I am inclined to the former view.

Sir StClair Thomson: All research work is to be admired, even when the results are negative. I am not qualified to join in this debate, because I also have, so far, neglected to read these communications *in extenso*. But of the cases I saw in the next room none were free from suppuration, and more than one had the ozænatous odour. In connection with tubercle I do not know whether it is of value to this debate, but I have had exceptional opportunities of seeing cases of tubercle, and for some years I have interested myself in a clinical research which I hope to publish some day: I mean the condition of the nose and pharynx in persons who have, or have not, tubercle of the larynx. I have quoted that there is a sort of *a priori* statement that the patient with stenosis of the nose, or other trouble in his nose or in the pharynx, is more likely to get tubercle, and tubercle of his larynx, than is anybody else. I see the throats of 300 tuberculous patients per annum, and I have been doing that for five years, and the result has been, to my surprise, that patients with tuberculosis of the chest or the larynx have got no more marked nasal deformity from disease than has the healthy individual, and that such affections of the nose as sinusitis or ozæna are no more common in sanatoria than they are anywhere else.

Dr. Brown Kelly: I think we are indebted to Dr. McKenzie and his co-workers for so thoroughly investigating the nature and treatment of ozæna, our ignorance of which is not creditable. I regret that my own work on behalf of the International Collective Investigation of Ozæna has apparently come to nought, The only part which proved of practical benefit was that in connection with the employment of a vaccine of Peréz's bacillus. This vaccine is undoubtedly specific in some cases; it causes the fœtor to pass off, the nose to discharge more freely, and the crusts to disappear. Some of the cases which I treated in 1913–14 still remain cured. Peréz's bacillus can be produced by injecting a mixed culture of ozæna crusts into the marginal vein of the ear of the rabbit. The animal usually dies in a day, and the bacillus can be recovered from the turbinals. If the animal survive, it has a chronic nasal discharge, and if it be killed later, the anterior turbinal is atrophied.

Dr. D. R. Paterson: I have also taken part in a collective investigation into ozæna, and have received a definite impression of a connection in family histories between tubercle and ozæna. I examined a large number of school children, confining my attention to cases in which the characteristic smell existed, and was struck by the frequency of the association. I have long noted the liability of ozæna patients to perish of tuberculosis.

Dr. Donelan: Would it not be well for the Section to avoid using the term ozæna in cases where there is not the characteristic smell? Should we not speak of ozæna simply as a symptom occurring in atrophic rhinitis, or are we to run the risk of having it cropping up

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at every moment as an alternative disease? I understand we are dealing with atrophic rhinitis. Whether it be due to the bacillus as worked out by these investigators, or not, remains to be seen. Several of the cases shown to-day seemed to be at least secreting, if not actually suppurating, and one woman has the distinct ozænic sympton, and appeared to have some suppuration in the left sphenoidal sinus.

Dr. DAN MCKENZIE (in reply): On behalf of my fellow workers and myself, I thank those who have spoken for the very kindly way in which they have treated our attempt at research. The criticisms which have been expressed we not only expected, but have actually experienced in our own minds. I began this research with the idea that I should arrive at a negative finding. When I began I thought there was only an accidental connection between tuberculosis and ozæna. As time went on, however, my experience brought me round to the belief that there is a real connection between atrophic rhinitis and tuberculosis. And when I use the words "atrophic rhinitis" in connection with this research, I mean ozænatous or fœtid atrophic rhinitis. The items in detail have been dealt with in our papers and there is no need to recapitulate the grounds for our belief. We are so convinced by our experience that we say we are content to leave the results of our research to time; we believe that in fifteen to twenty years general opinion will agree that ozæna is associated with tuberculosis in this respect, that they are part and parcel of one pathological process, that they are related as pathological entities. With regard to the point raised by Mr. Rose, as to those bacilli found in the crusts being due to accidental contamination from the air, that is answered by the fact that we have searched for this bacillus in other diseases with crust-formation and have not found it in them. It only occurs, as far as we have gone, in those which show the clinical signs of ozæna.

**Three Cases exemplifying some likely Common Causes of Cancer of the Throat, and some Facts about Treatment by Diathermy.—W. Stuart-Low.**—CASE 1.—A man, aged fifty-two, who had been before this Section on two former occasions with a rapidly growing epithelioma of the soft palate. It began mid-way between the uvula and the base of the anterior faucial pillar, and rapidly, and superficially, spread to the uvula and middle line, and appeared so unusual that experienced observers mistook it for a syphilitic condition. When first seen in February, 1915, the growth was only the size of a sixpenny piece, then it rapidly involved the anterior faucial pillar and uvula. Dr. Wyatt Wingrave pronounced the specimen removed to be a rapidly growing epithelioma. Pain had been very severe from early in the history of the case, and hard glands at the angle of the jaw also appeared early and caused an unusual degree of pain. The history of syphilis was proved, and the Wasserman test was positive. At our meeting in March attention was drawn to his habit of drinking scalding hot coffee. When he first came to the hospital his mouth was in a very septic state from septic gingivitis, dental caries, and pyorrhœa alveolaris. The chemical reaction of the fluids in the mouth and throat were distinctly acid. Dentition was defective. He had always taken a large quantity of common salt with his meals, and been a very heavy smoker. Two weeks ago all the uvula and palpably affected tissue were dissected away under a general anæsthetic, laryngotomy first having been performed and the

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larynx firmly plugged. The diathermy cautery was then freely applied to the surface of the exposed tissues, and punctures made into the freshly exposed parts at various spots. The method of diathermy puncture of malignant glands, first practised by myself, was then employed, viz. the hard mass of the glands having been exposed by freely reflecting the soft structures, the diathermy point was pressed into the glands repeatedly at various points, and the skin replaced and stitched up. Healing by first intention invariably resulted as in this instance.

Case 2.—A man, aged fifty-four, a railway guard at Basingstoke, was sent to the clinic a month ago. He only complained of increasing inconvenience in the throat and of some difficulty in swallowing. Pain was almost absent except at night, and there were no enlarged glands to be felt. The growth had affected the whole of the soft palate, which was largely destroyed, and what remained was sloughy and craggy when touched by the finger. It had also extended to the tonsillar region on both sides. The implication of the palate was very similar to that in the case just described, but the absence of pain and glandular involvement was in marked contrast. Wassermann's reaction was found to be positive, and there was a clear history of syphilis. He had always been a heavy smoker, often consuming 1 oz. of tobacco a day. The mouth was very septic from badly cleaned teeth, septic gingivitis, and large accumulations of septic tartar. The saliva was very acid. There were many carious teeth and dentition was defective, and he had always taken quantities of common salt with his food, and been fond of hot food. Three weeks ago laryngotomy was performed, and the larynx plugged, and the whole of the affected parts cut away; the tonsils which were affected being dissected out. Diathermy puncture was freely applied to the surface of the wound, and the point pressed into any parts that felt unusually resistant or firm on examination with the finger. A week later the diathermy puncture was again applied to a few sloughy looking parts. Dr. Wyatt Wingrave found the growth to be a rapidly growing variety, and a specimen is exhibited under the microscope. It is peculiar in showing many large glands in its structure.

Case 3.—A man, aged forty-five, who came to the clinic last May, complaining of increasing difficulty in breathing; the history was that he had been affected and under treatment for six months previously. A large mass of fungating growth, which proved to be epitheliomatous, was seen to be implicating the right vocal cord and ventricular band. A low tracheotomy was performed. He was found to have a positive Wassermann reaction. He had a very septic mouth with acid reaction, and he had smoked a great deal. Diathermy puncture has been done, the laryngeal growth having been punctured regularly at intervals of a week both by the direct method and in the suspension position.

Diathermy has been proved to be very helpful in these cases and in a number of others in which it has been employed. It undoubtedly relieves the pain both internally in the throat and in the neck and head after puncture of the masses of glands by the method I introduced. It seems to be best to repeat the application at intervals of a few days, and not to apply it at any one time too extensively or severely. The growth is not only destroyed in places, but grows more slowly at the deeper sites where cure is not effected nor possible. Diathermy should be employed as early as possible in the history of such cases. In more advanced cases sloughy portions of the tumour are got rid of after the

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puncture, and in this way fœtor is lessened and sepsis of the mouth and throat diminished.

As regards contributory causes of cancer, syphilis has been present in every case that the exhibitor has investigated. Sepsis of the mouth, generally in an aggravated form, has invariably existed, and the saliva has been found to be quite acid in reaction, and excess of common salt has mostly been taken. Dental deficiency seems also to be a contributory cause, leading to the food being improperly masticated, and thus irritating or wounding the pharynx. It has also been noticed that these patients accustom themselves to taking very hot food.

Dr. WILLIAM HILL: The results are very good. But we see the cases rather early, and it is desirable we should see them later as well. I have had some experience with diathermy, thanks to the work which has been done at St. Bartholomew's Hospital, and it seems to be very useful. But the plan of dealing with glands is not one upon which I have embarked, and I ask whether it is worth while to diathermise the glands, as Mr. Stuart-Low has done; I have only carried this out in my cases to relieve pain. I think it is better for the patient after these extensive excisions, he is more comfortable, and the scarring is not so great. But you must be prepared for tumefaction of the pharynx and trachea, although Mr. Harmer said he did not meet with this condition, which is one that may necessitate temporary tracheotomy. It is well to remember that in diathermy a little more tissue is always destroyed than is apparent at the time.

Mr. NORMAN PATTERSON: I think that in this case treatment of the glands by ordinary surgical methods would have been eminently satisfactory. It was not an inoperable case and removal by dissection was preferable to applying a cautery.

Mr. STUART-LOW (in reply): It is a method which I use after employing the knife first. By that means one is enabled to see exactly what one has done, and little harm is likely to result from the diathermy.

**A Braun's Artificial Larynx worn by a patient for Five and Three-quarter Years in a Case of Laryngo-fissure for Epithelioma, followed by Complete Excision of the Larynx.—Sir StClair Thomson.**—The patient, J. S. P——, was aged forty-three when he came under my observation in February, 1909. The record of his medical history is as follows: 1909—February 25, laryngo-fissure; May, stenosis started in glottis; November 28, tracheotomy; December 6, incision of larynx; 1915—November 5, gland in neck; 1916—August 18, died. N.B.—No local recurrence.[1]

Mr. E. D. D. DAVIS: I should like to ask whether members have had experience of Braun's tube. I have a patient of Major Waggett's under my care, who has worn a Braun's tube for about seven years, and he complains that saliva escapes into his trachea, causing violent attacks of coughing, so that the passage between the trachea and the pharynx is a disadvantage, and he has several times asked to have it closed. He speaks in a toneless whisper, which it is difficult for a stranger to understand, and speaking is laborious for him. The history of the case is interesting. In 1903 Sir Felix Semon did a laryngo-fissure. There was a recurrence in six weeks. Major Waggett and Mr. Stabb did a second and extensive laryngo-fissure three months after the first operation. He did well until 1907, and then Major Waggett

[1] Case published in full in the *Brit. Med. Journ.*, February 17, 1912.

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and Mr. Stabb performed a laryngectomy, and he has worn a Braun's tube ever since. The result is very encouraging.

Sir StClair Thomson (in reply): The patient was able to breathe both through his mouth and through his neck, so he obtained a double supply of air. Indeed he was able to bicycle. When sitting at home and not wanting so much air, he put the stopper in his neck, and so had a good rough whisper speech. This tube also enabled him to enjoy a smoke. He did not complain of the tube leaking, and he lived a useful and happy life for five and a half years. The question of recurrence is important. I did laryngo-fissure in February. The patient was getting some stenosis in his glottis by May. Sir Henry Butlin saw the case in consultation, and he could not make up his mind. But by November the man had such a degree of stenosis that I had to do tracheotomy in a hurry. Sir Henry Butlin saw him again, and said: "Take out the whole larynx." I took it out, and the man did well. But when the larynx was examined pathologically, there was no evidence of malignant recurrence. (This was before the days of the Wassermann test. Later we found that the patient was an old syphilitic subject.) I still have the larynx, if any further investigations are required. This was a great blow to me, because tracheotomy would probably have done just as well. Sir Henry Butlin told me not to worry, as the man was probably much better without his larynx. Now, it is to be noted that five and a half years later this patient came back for cancer in the glands of the neck, in spite of excision of the larynx. But there was no recurrence in the throat. To his last day he breathed comfortably, dying of asthenia owing to recurrence in the glands of the neck. People who are not versed in laryngo-fissure say: "If a man has malignant disease at all in his larynx, take out his whole larynx." But here is a man who had his larynx taken out in very good time, yet that did not prevent recurrence five and a half years afterwards. Laryngo-fissure, in suitable cases, gives better results in cancer than any other operation; and the case shows that even a complete laryngectomy is not an infallible guarantee against recurrence.

**War Injury of the Nose to show the Result of Treatment for Stenosis caused by a Bullet Wound.—Sir StClair Thomson.**—Capt. C. R. V. J—— received a bullet wound in January, 1915, which penetrated the nose from the right to the left side. When he came under observation fourteen days later there was almost complete stenosis from adhesions between the septum and outer wall in each nasal chamber. It was also clear that the patient had a very deviated septum. On August 19, under chloroform, I performed a resection of the septum, which was very irregular, having evidently been comminuted by the bullet. Several pieces of cartilage were replaced, as has been my custom for many years. The adhesions were then divided, and rubber sponge plugs introduced. There has been some tendency to scar contraction, chiefly on the floor and roof, which is so common in the nose and larynx after these war injuries. This has been corrected by the persevering use of Lake's rubber splints, which the patient is still wearing.

**War Injury of the Nose to show Result of Treatment for External Disfigurement and Stenosis caused by Shrapnel Wound. —Sir StClair Thomson.**—Lieut. F. H. B——, aged twenty-one. On May 17, 1915, while in a trench at Givenchy, a shrapnel burst over him



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and wounded him in the nose. I was asked to see him in consultation at the Chichester Hospital in June, 1915. The wound on the external nose had been so badly put together in France that the result was an unsightly disfigurement, as is well shown in the two photographs exhibited. There was no respiration through the left nostril, and the right was so occluded with adhesions that it admitted only a fine probe. In addition, the shrapnel had produced a condition like hare-lip, and a fracture of the superior maxilla. I suggested a plastic operation to Dr. D. Ewart, of Chichester, and a photograph, as well as the patient's present condition, will show how very admirably he carried out this delicate piece of surgery. The patient was transferred to my care in London in January, 1916. As the nasal respiration, although improved, was still unsatisfactory, the adhesions were divided under chloroform, and I found the septum so fairly plumb that it was left alone. Since then he has been persevering with the use of Lake's rubber splints, with the result that he has now a good thoroughfare, although there is still the usual tendency in these cases to some return of cicatricial stenosis.

Dr. DAN MCKENZIE: I suggest diathermy in treatment of these adhesions. Has anyone tried to graft the interior of the nose in these cases?

Dr. BROWN KELLY: I have seen five or six cases in which a bullet traversed the bony bridge of the nose without causing trouble. In others, however, in which the projectile traversed the lower part of the nose, almost hopeless damage resulted, owing to the inferior turbinates and septum being united. If these cases are not seen within ten days of being wounded, thick synechiæ form. I think that is one of the reasons why there should be rhinologists at the Front.

Dr. DUNDAS GRANT: The plan of treatment is so good, and it is so easily carried out in a number of cases, that there is scarcely any call for improvement upon it. After doing the submucous resection of part of it, I find ordinary cotton-wool smeared with vaseline is good, and better still is a little indiarubber finger-stall put upon the blades of a Killian's long nasal speculum, pushed through and packed with gauze. It can be pulled out without the slightest discomfort.

Mr. HERBERT TILLEY: I should like to ask Sir StClair Thomson what are his reasons for preferring Lake's rubber splints. I have given them up for the past seven or eight years, because patients complained of neuralgia when these splints were used. I have since employed thin celluloid plates which cause no discomfort; they also leave room for nasal breathing, and prevent the opposing parts coming into contact. If the rubber splints are used because they are thicker, and give support, I would suggest the use of a gauze wick wrapped round with oil silk; they can be made of a size to fit the part, mould themselves to the surroundings, and can be removed without any pain.

Dr. PEGLER: Those who can look back far enough will remember that what is called a Lake's splint was a later invention, and that for some years previously he used indiarubber sheeting, cut to required shape, and adapting thickness and size to suit the particular case. I employed them very successfully in a case of a soldier whom I showed early last session, who had had very bad traumatic stenosis, and had required two or three operations for its relief. If Mr. Tilley has had to complain of neuralgia in his cases, it is probably because there was a want of due proportion between the passage desired to be kept open, and

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the size, particularly the thickness of the splint. The adaptation must be perfect, neither too tight nor too loose; never loose enough to work back into the naso-pharynx. How my *confrères* manage to cure synechiæ cases requiring lengthened treatment without such a splint of rubber I do not know. Lake's ready-made article, though occasionally one may find a size and shape adaptable to a special case, has never appealed to me, and I therefore make a point of keeping a stock of sheeting of various thicknesses by me, and cutting out the kind of thing I happen to require at the time.

Mr. J. F. O'MALLEY: It is necessary to leave in the substance used for ten days. I do not cut through with scissors, but get in Grünwald's forceps as wide as the nasal passage which is clear of the nasal synechiæ, and in that way one establishes the complete width of the nasal passages as they existed before, and then one applies a piece of rubber which is loosely fitting. (Dr. PEGLER: We all use Grünwald's forceps.) I avoid using a local anæsthetic previously, so as to ensure that one is dealing with the actual size of the nose.

Dr. WILLIAM HILL: Captain Hastings has contrived ingenious devices for these cases; he has made large use of ordinary hairpins with thin indiarubber tubing, attaching them to the forehead. This prevents depression of the nose. I have been much impressed by the delicate work he has done in preventing deformity from both the tip and the bridge of the nose falling in. But there may be deficiencies which have to be supplemented by plastic flaps. Mr. Hern, dentist to the same hospital, has also some ingenious devices.

Dr. DONELAN: I should like to support what Dr. Pegler has said about indiarubber sheeting. For many years I have used it of the thickness of surgical gloves; in fact, in the hospital we use up old surgical gloves for this purpose. In treating synechiæ one can pack it exactly as wanted. Mr. O'Malley's suggestion of taking out the adhesion entirely with the forceps is an important element in the treatment. If you put in rubber sheeting, and pack nicely with gauze, the clearance is maintained; in two or three days you can take out the dressing and put in a fresh one, and so maintain the separation as long as necessary during healing.

Sir STCLAIR THOMSON (in reply): With regard to the cosmetic result in the second case, Dr. Ewart, of Chichester, is responsible for it. The patient was wounded at Loos, and his nose was put back on to his face so badly that he was almost hideous. He was engaged to be married, and his fiancée begged the hospital staff to take away some of the ugliness, and you can see in the photograph how excellent a result Dr. Ewart has achieved. With regard to the stenosis, the bullet went through high up, and much of the stenosis occurred at the top. There was a constant tendency to closure at the top, and I used Lake's splints simply because I was brought up on them! I have used a celluloid plate, but that was when the adhesions were *vis-à-vis*—one on the septum and one on the turbinals—and it was only necessary to keep the surfaces apart. I agree that Lake's splints are rather unpleasant—one patient has had to wear it since January, and the other a year. One patient had a splint made out of aluminium, and it acted admirably.

**Large Choanal Polypus removed through the Mouth in a Case of Suppuration of the Right Maxillary Antrum.—Sir StClair Thomson.**—This large growth was removed on October 25, 1916. The

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patient had noticed a polypus in her right nose for the last ten years, and it had been twice operated upon, under chloroform. *The polypoid* mass blocked up the right nostril, and hung down into the post-nasal space, below the level of the soft palate. It was plucked out through the mouth. The ethmoidal region appeared normal. The cause of previous failures is doubtless due to the fact that the right antrum had not been operated on. I found it full of fœtid pus.

Dr. IRWIN MOORE: At the meetings of the Section, on May 7 and November 5, 1915, I reported in detail the case of a "Choanal Polypus originating in the Right Maxillary Antrum of a man aged forty-two."[1] Since the post-nasal portion of this polypus was fixed by inflammatory adhesions to the choanal margin, it was impossible to grasp and remove it by forceps, or snare through the nasopharynx. I therefore opened the antrum through the canine fossa, and removed with forceps first the pedicle, which was soft and necrotic, next the nasal portion through the anterior naris, whilst the projecting nasopharyngeal portion was removed through the mouth. This case supports the view first suggested by Killian that the maxillary antrum is nearly always the seat of origin of these polypi; also it shows that these growths may be subject to inflammatory and necrotic changes.

Dr. D. R. PATERSON: How young are the patients in which such cases occur? A fortnight ago I saw a child, aged five, who was very ill with a large bulging swelling in the nasopharynx, and it was said to have been there only three weeks. Before touching it, as the breathing was much impeded when the patient was under a general anæsthetic, I did a tracheotomy, and then attacked it. I found it was fairly firm, and on puncturing it with a syringe I got nothing out of it. I passed up a post-nasal forceps, and twisted it out. It turned out to be a large nasopharyngeal polyp, originating in left nostril, but the parents seemed positive that there had been no symptoms of nasal obstruction until about three weeks previously. That it had been growing a long time was evident from the pressure effect on the left posterior naris, which was much enlarged.

Dr. BROWN KELLY: These polypi, which I think should be called naso-antral polypi, are common. If a polypus is present in the posterior part of the middle meatus, and, on snaring it, there is a discharge of translucent liquid from the nose, it is almost certainly a naso-antral polypus. These polypi are usually single; they may attain so great a size as to hang down into the pharynx; and they occur in children, as Dr. Paterson has said. With very rare exceptions, polypi in children under the age of ten come from the antrum. On removing these naso-antral polypi, no bleeding-point can be seen in the nose which would indicate their seat of origin. A misleading feature is that transillumination shows the antrum on the affected side to be brighter than on the presumably healthy side. Cysts of the lining membrane of the antrum are often associated with accessory ostia, and it is through one of these that the polypus escapes from the antrum.

Mr. FRANK A. ROSE: In answer to Dr. Paterson, I would confirm Dr. Brown Kelly's remarks. In my experience, a polypus in a small child is invariably single, and of the antro-choanal type. One exception to this occurred in a patient aged nine. With regard to the results of transilluminating the antra, the one on the affected side is frequently

[1] JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxxi, p. 53.

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brighter than the other. I had the curiosity to take a patient back, after the removal of the polypus, and transilluminate again; the antrum was then dark, on account of the blood which was escaping from the root filling the antrum.

Sir StClair Thompson (in reply): I am glad to have originated this discussion, because we have Dr. Brown Kelly here, and when I wrote the chapter in my book on this subject it was chiefly founded on his work and publications. I should have liked to have asked him and the other speakers whether it is necessary to do an operation on the antrum in these cases. This patient had fœtor and pus, and of course I did an endo-nasal operation. I have removed these growths from children, in whom I do not know whether there has been recurrence or not. [Mr. Rose: Recurrence, in my experience, is uncommon.] I think there is no need to operate on the antrum unless it is diseased, or unless there is recurrence.

**Foreign Body in the Right Maxillary Antrum for Twenty-five Years causing Facial Neuralgia, discovered by X Rays and removed by Operation through the Canine Fossa.—Irwin Moore.**—Patient, a lady, aged sixty-seven, was brought to me by Mr. Millican, L.D.S., of Surbiton, with a history of facial neuralgia for twenty-five years. While residing in the West Indies in 1891 she had a right upper molar extracted; this was followed by very severe pain under the right eye, from which she has never been entirely free. In 1897 she had a nervous breakdown, and a "lump" was said to have been felt over the right maxillary antrum, accompanied by much pain and tenderness. In consequence the remaining upper molars were extracted. In 1901 the patient came to England and consulted a throat specialist, without any benefit. She returned to the West Indies, seldom free from pain, with occasional exacerbations. In 1911 she went to New York, and had the right infra-orbital nerve resected. In 1913, while residing at Bexhill, following another acute attack of pain she noticed that the "lump" was loose and moved about. Recently she has been treated by means of alcoholic injections. In September, 1916, she consulted Mr. Millican, who extracted the two upper central incisors which were loose and septic, and took her to Mr. Charles A. Clark to be X-rayed. The radiogram showed a foreign body in the right maxillary antrum lying against the nasal wall. It appeared to be cylindrical in shape, about 1 in. in length and $\frac{1}{8}$ in. in diameter.

On October 12 I was asked to see the patient in consultation. There was no history of nasal catarrh or suppuration, and both nares were found to be perfectly healthy and normal. On inspecting the radiogram it was apparent that a rod-shaped body was present in the right maxillary antrum, and I advised that the antrum should be opened and a search made for the foreign body. Two days later I opened the antrum through the canine fossa and found the piece of aluminium now shown lying loose in the angle formed by the meeting of the posterior and inner walls. The lining membrane of the antrum was found to be perfectly healthy. The foreign body was cylindrical in shape, and consisted of pure aluminium, having a length of 1·34 cm. = 0·113 in. (just over $\frac{1}{8}$ in. in length), and a diameter of 0·29 cm. = 0·175 in. The specific gravity was 2·666 and the weight was 0·24 grm. = 3·69 grains. One extremity was smooth, whilst the other appeared to have been cut by pliers. This piece of metal had

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apparently been buried or fixed for twenty-five years, and (as suggested by the patient's symptoms) only became loose and movable in the antrum three years ago.

This case is of great interest as showing that: (1) The maxillary antrum will tolerate a foreign body for twenty-five years without causing catarrh or suppuration, the usual accompaniment of foreign bodies in these cavities. (2) The shadow of this rod-shaped body could be distinctly seen when the antrum was transilluminated. (3) The appearance of the aluminium foreign body (according to the opinion of expert radiographers) was not compatible with its being metal. (4) Cases of facial neuralgia may be treated for years without any suspicion of being caused by antrum trouble. (5) The progress which has been made during recent years in radiography has proved of great service in the diagnosis and treatment of diseases of the accessory sinuses of the nose.

A stereoscopic view of the maxillary antrum by Mr. Charles A. Clark is shown, also the piece of metal removed.

Mr. P. MILLICAN (introduced by Dr. Irwin Moore): The trouble started after the patient had had her first right upper molar removed by an American practitioner twenty-five years ago. She has very large antra, and I believe that the anterior buccal root of that molar was in intimate relation with the antrum—possibly it projected into it. It is my opinion that, having discovered that he had made a passage into the antrum, the practitioner attempted to plug the socket with a piece of aluminium rod. This rod he found to be longer than was necessary, so he snipped off the excess with pliers while it was in her mouth—the mark of the pliers may be distinctly seen on the aluminium rod taken from her antrum by operation. This piece of rod escaped from his reach, passed into the antrum, and remained embedded there for twenty-five years. I should like to add (what is useful to note) that the patient suffered periodically two kinds of pain: one of a stabbing nature caused by the sharp ends of the foreign body irritating the mucous membrane of the antrum, and the other a "lump sensation," the site of which was variable.

**Sarcoma of the Right Maxillary Antrum; Lateral Rhinotomy performed (Moure's Operation).—Irwin Moore.**—Patient, a female, aged fifty, was first seen on July 14, when she complained of swelling of the right cheek for six months, accompanied by considerable mucopurulent discharge from the right nostril. There was marked bulging outwards and upwards of the right maxillary antrum, some displacement of the right eye, and œdema of the lower lid. The right nasal cavity was completely filled with polypi.

Transillumination showed the right maxillary antrum to be opaque. X-ray examination by Dr. Finzi also showed that it was opaque, its upper outline ill-defined, and the bone at its upper part partly absorbed. The right sphenoidal sinus was absolutely clear (though it looked rather dark, this being due to a shadow across the cavity.) Both ethmoids also appeared clear. Patient declined operation, but on account of the swelling increasing she was admitted to hospital on September 18, when a lateral rhinotomy was performed.

The growth, which appeared to have arisen from the right ethmoid region, occupied the greater part of the antrum, had penetrated its bony wall, and extended into the soft parts of the cheek, but had not yet

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infiltrated the skin. The floor of the orbit was intact, though somewhat roughened. The growth was thoroughly removed, together with the ethmoid cells and a portion of the muscular tissue of the cheek. There was no difficulty in controlling the hæmorrhage, and the skin incision was sutured and dressed with strips of gauze and collodion. Healing occurred by first intention, the stitches being removed in four days. The œdema of the lower eyelid has not yet quite cleared up. The nose (now six weeks after operation) appears quite clean and healthy, and here is no discharge.

*Microscopical Report.*—The sections show dense masses of a round-celled tissue with a fibrous stroma. The cells vary in size, some of them are large, all possess large nuclei rich in chromatin. The growth is a small round-celled sarcoma, for several of the sections, evidently taken from the tissues outside the antrum. show striated muscle which is undergoing destructive infiltration by masses and lines of the round-celled tissue (Dr. Eastes' laboratory).

Radiograms by Dr. Finzi are shown, together with microscopic sections of the growth. The photographs show the swelling of the right cheek on July 7 and the increase in the growth during the following two months.

Dr. W. Hill: In cases of doubt I recommend radium; in nine cases out of ten it acts like a charm.

Sir StClair Thomson: Recurrence can be best judged from the nose. It is a great thing to make a free opening into the nose. In cases like the two I published, in which the patients lived five and six years afterwards, you can pass the Eustachian catheter into the cavity and feel how it is lined with smooth mucous membrane. Interference with lymphatics leaves patients with a pseudo-œdema on the lower eyelid for three to twelve months, so it does not do to judge of recurrence by the outside appearance. Radium can be introduced to the original site, which is generally the ethmoid.

**Retention Cyst of the Nasal Floor.—Irwin Moore.**—Patient, a male, aged fifty-three, first seen on September 12, 1916, complained of a growth on the right side of the nose and the adjoining portion of the cheek. The case is shown previous to removal by sublabial rhinotomy (Rouge's operation). Photographs and radiogram are also shown.

*Note.*—This case unfortunately could not be shown at the meeting, for while attending the dental department of one of the general hospitals to have some septic teeth removed before operation, the cyst was incised by the dental surgeon. Patient is now attending the hospital daily to have a gauze dressing inserted. Exhibitor hopes to show the case at another meeting, if and when the cyst refills.

**Carcinoma of the Naso-pharynx removed by Operation.—Irwin Moore.**—Patient, a female, aged seventy, attended the London Throat Hospital on July 5, 1916, complaining of frequent attacks of inflammation of the throat for six months, together with dryness of the tongue. Three weeks previously she had felt discomfort in the throat, "as if there was something there," and on taking a deep breath she noticed a swelling behind the soft palate. On retracting the palate on the left side an irregular nodular growth was seen, which was of hard consistence and was attached by a broad base to the lower margin of the Eustachian cushion and lateral wall of the naso-pharynx. Under

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an anæsthetic it was found impossible to draw a wire snare round the growth on account of its wide attachment, so it was removed in pieces by punch forceps, partly through the nose and partly through the mouth, patient being in the "hanging head position."

Patient now complains of shooting pains reaching from the left side of the back to the top of head. The left tonsil is seen to be enlarged, somewhat congested, and feels hard on palpation. This was, however, noticed the day following the operation, and does not appear to have increased in size. No enlarged glands in the neck can be felt, but the question of recurrence in the tonsil is a point on which opinions are invited.

*Histological Report of the Growth.*—The specimen consists to some extent of lymphoid tissue, but this is invaded by a new growth having the structure of a carcinoma. The cancer cells are rounded and arranged in compact solid masses of varying size infiltrating the tissues. There is a good deal of associated inflammatory reaction (Dr. Eastes' laboratory). Microscopical sections are shown.

A drawing from life is exhibited, showing the growth before operation.

Dr. Brown Kelly: I would suggest a trial of radium in cases of malignant disease in the naso-pharynx. Dr. James Adam and I have published cases of very striking disappearance of growth after radium treatment.[1]

Dr. W. Hill: At the Radium Institute a good deal is effected by means of small needles. Radium is introduced through the nostril and embedded in the growth and then passed behind, In one or two cases I have put it into the palate. The next day one may find the growth has disappeared over an area of ½ in. from the needle. I had a patient who was sent me by Mr. Horsford, and I wanted to send the case back after a couple of days that he might see it again, but there was no growth. Two or three days later there was evidence of scarring, even in the nose itself. It was an endothelioma, and extended to the level of the epiglottis. The usual result in carcinoma is not good.

Dr. Irwin Moore: I ask whether members think there is a recurrence of the growth in the left tonsil. The question is, whether this should be dealt with now, and enucleated.

**Cystic Goitre.—Irwin Moore.**—Patient, aged thirty-nine. Enlargement of the thyroid began thirteen years ago during her first pregnancy. A year later she underwent an operation at the Metropolitan Hospital. Seven months ago the swelling recurred, and is now growing rapidly. She has occasional shortness of breath, otherwise no other disturbance.

**Fatal Wounds involving the Carotid Vessels and presenting Unusual Features.—H. Lawson Whale.**—Case 1.—Private S—— was admitted to No. 13 Stationary Hospital on July 13, 1916, with a shrapnel bullet wound at the junction of the free margin of the right ala nasi and the cheek; there was no exit wound. Instantly on his admission there was a copious hæmorrhage from the mouth, from behind the palate. On inspection it was impossible to say from which side of the naso-pharynx the blood came. Since, moreover, a probe showed that the direction of the bullet was towards the left mastoid, responsibility could not be fixed on the branches of one carotid more

[1] See Journ. of Laryngol., Rhinol., and Otol., vol. xxxi, pp. 345, 346.

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than on those of the other. Pressure on the common carotid, however, was much more successful in controlling the gush when made on the right side, so the right external carotid was tied forthwith just above the origin of the superior thyroid. His condition being too grave to warrant his transfer to the X-ray room, he was carried straight back to bed as soon as I had tied the artery, so that we were even yet ignorant of the position of the bullet. Within six hours he developed complete *right* hemiplegia, and without showing any reaction to stimulants, etc., passed through coma to death twenty hours after his arrival.

*Autopsy:* The bullet had passed through both antra, and the nose, and then deeply to the left vertical ramus of the mandible. On impinging on the anterior surface of the left mastoid the intact shrapnel bullet had turned downwards deeply to the carotid sheath, and was lying exactly in the bifurcation of the common carotid. The common and external carotids were normal, but, from its origin up to the base of the skull, the internal carotid was completely thrombosed. This thrombus was continued into the left half of the circle of Willis, and into the middle cerebral artery as far as this could be traced up the Sylvian fissure. There was a sub pial layer of red cortical staining over the Rolandic area. The necropsy showed nothing else noteworthy. On the right side the external carotid and its branches above the superior thyroid were naturally collapsed.

Case 2.—Sergeant W—— was admitted to No. 13 Stationary Hospital on July 16, 1916, with a shrapnel entrance wound 1 in. external to the left nostril, and an exit wound in the left sub-occipital triangle. The bullet had traversed the left antrum and mastoid. The skiagram gave no useful information. He had left facial paresis of infranuclear type, cerebro-spinal otorrhœa, and fine horizontal nystagmus of the first degree on deviation to the left. He had no giddiness, vomiting, ataxia, atonia, or dysdiadokokinesis. His superficial reflexes were sluggish. A slight diffuse swelling occupied the parotid and temporal regions. Hearing, by air or bone conduction, was absent on the left; temperature, etc., were normal. Ordinary cleansing and expectant measures were instituted. July 18: The temporal œdema had subsided, that over the parotid was harder, and was continued down the anterior border of the sternomastoid as a brawny mass. His pulse was 110, temperature 105° F., with a rigor, and four hours later 103·8° F., with another rigor. The pupils were equal, sluggishly reacting to light; and at no time now or subsequently did the fundi oculi show anything abnormal. July 19: Operation. Through the ordinary post-aural incision the outer shell of the mastoid (which was found cracked) was removed. The bullet in passing had smashed the facial "bridge," with the rest of the bony posterior meatal wall. The lateral sinus was laid bare with the chisel; no perisinous pus was found, but the sinus wall was hard, pulseless, covered with shreddy granulations, and nearly black. Bone was cut away backwards until healthy sinus was reached (1½ in.), and downwards to the bulb. The insertion of a needle showed that the thrombus was only mural, not complete; and before putting gauze plugs between the dura and skull behind, and into the sigmoid sinus itself (which was slit open for this purpose), blood was allowed to flow for a few seconds. The internal jugular and common facial veins were tied in the neck. I did not turn out the clot between the ligature and the bulb. Subsequent history: For ten days there was a gradually diminishing

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flow of cerebro-spinal fluid from the wound, the external auditory meatus, and into the mouth (? *viâ* the Eustachian tube). Besides ordinary dressings, etc., he was given Wright's antisepsis vaccine and champagne. The cerebro-spinal flow and the nystagmus slowly disappeared, and in all respects he steadily improved. But on July 26 the temperature and pulse became irregular, and his condition suggested septicæmia. A blood culture was made, and an autogenous vaccine of streptococci prepared from it. August 1: Hæmorrhage from the lowest angle of the post-aural wound, apparently from deeply in the parotid region. The patient only lost 4 oz. of blood, and the flow was easily stopped by pressure; but his pulse became thready, and he died within an hour.

*Autopsy.*—The lateral sinus was occluded back to the torcular. The straight, occipital, and superior longitudinal sinuses were healthy. The bulbar opening of the inferior petrosal sinus was well occluded. Brain: There was slight bruising of the *right* cerebellum and temporo-sphenoidal lobe (? by *contre-coup*). The wounds, both bullet and operative, were quite clean. The heart was much infiltrated with fat. The bullet, in traversing the left parotid gland, had completely severed the external carotid artery at the point of its final division into superficial temporal and internal maxillary. This hole in the artery was clean-cut, and from it there was a blood track up to the post-aural wound.

*Comment.*—There was never any indication that the bullet had involved any large artery. The clean and complete severance of the vessel, the track of the bullet, and the absence of macroscopic sepsis, made it clear to all who saw the necropsy carried out that this was not a case of secondary ulceration, but of direct trauma. I do not know whether the patient's life would have been saved if I had tied the artery when I tied the vein. Probably not, since he had a blood infection.

**Carcinoma of Naso-pharynx in a Girl, aged Seventeen.—W. M. Mollison.**—F. C——, aged seventeen. A hard mass of glands in the left side of the neck; fixed, occasionally painful and tender. The tonsils and adenoids were removed at a London hospital six months ago. She was seen at Guy's Hospital in October, 1916. A small mass was seen in the naso-pharynx, chiefly on the left side. This was removed mostly through the nose, but partly with an adenoid curette. To the naked eye the mass resembled simple adenoids, but section proved it to be a squamous-celled carcinoma (Dr. Nicholson). A section is shown.

**Laryngeal Case for Diagnosis.—W. M. Mollison.**—A. B——, aged thirty-five, has been attending in the throat and ear department at Guy's Hospital for some months; he is hoarse and complains of a little pain at times. The left side of the larynx is swollen and fixed; the mesial surface of the swelling is superficially ulcerated. The Wassermann reaction has been negative at two examinations. No tubercle bacilli have been found in the sputum on repeated examination.

The exhibitor would be glad of suggestions as to the diagnosis and methods of treatment. Potassium iodide has been given, also arsenic and iron, without any effect.

Sir StClair Thomson: This appears to me to be a case of typical tuberculosis of the larynx. This patient has a fixed vocal cord, and there is an infiltration of the epiglottis, the left cord (with ulceration)

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and left arytænoid. This process, arising in three different parts of the larynx, could not be anything but tubercle.

**Double Abductor Paralysis.—William Hill.**—This man had portion of a large goitre removed twelve years ago by two vertical incisions in the neck, and both recurrent nerves have probably been involved in deep contracting scars. It is noteworthy that only the abductor fibres are affected. Alarming attacks of laryngeal obstruction occurred at times on exertion and more especially at night, when he suffered from a severe cold. These attacks have become worse recently. The question is raised whether unilateral chordectomy and removal of the vocal process of the arytænoid will relieve the obstruction, and whether the voice will necessarily be reduced to a whisper, seeing that adduction is still apparently perfect. Good results have occasionally been reported following unilateral chordectomy, but not by well-known laryngologists, as far as can be gathered, suggestions are invited.

Mr. Rose: I was present at the operation undertaken for the relief of the paralysis of the vocal cord on a horse some years ago, and I helped Prof. Hobday to operate. The result in that case was not such as to encourage doing the operation on the human subject; there was no material benefit to respiration.

Dr. Donelan: I think that if the patient would consent to the loss of his voice there should be no difficulty about cordectomy, any more than there would be in respect of removal of cords in epithelioma of the larynx.

**Recurrent Ulceration of the Mouth.—H. Lambert Lack.**—The patient, a woman, aged twenty, has been under my care since May for repeatedly recurring ulceration in the mouth, which commenced last Christmas. She has had similar attacks ever since she had chicken-pox at the age of ten. All the previous attacks have been mild compared with the present one, and have lasted one or two months. Then there has been an interval of at least six months. The spots commence as lenticular or rounded ulcers, with a white sloughy base and surrounding inflamed area. They are very tender and slowly increase in size. So far as I have observed, the spots show no tendency to disappear, except under treatment; one spot which was untreated for three or four weeks attained the size of a sixpence, with a very thickened base. They occur on the mucous membrane of the lips, inside of the cheeks, gums, palate, and tongue. Three years ago they were found on the vagina. The treatment has been the local application of nitrate of silver, which has always seemed effectual, but not in preventing fresh attacks. The Wassermann reaction is negative. The patient is in excellent health otherwise.

Suggestions as to diagnosis and treatment would be welcomed.

## Abstracts.

### NOSE.

**Collapse of the Alæ Nasi: Its Etiology and Treatment.—Warren C. Batroff.** The "Laryngoscope," 1915, p. 72.

The writer has been impressed with the results obtained by Halle and Joseph, of Berlin, in the plastic surgery of the nose and nasal orifices. He states that pathological collapse of the alæ nasi occurs during forcible

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