SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF LARYNGOLOGY.

March 7, 1930.

President—Dr DAN MCKENZIE.

Ulceration of Soft Palate and Tonsil: Tumours on Wall of Pharynx. Case for Diagnosis—E. WATSON-WILLIAMS, M.C., F.R.C.S. Ed.—A. F., male, aged 61, complains of pain and difficulty in swallowing. In July 1929 he had dental treatment and the dentist discovered ulceration of the soft palate above the right tonsil. This had caused no symptoms, and the patient was unaware of it. He was treated with full doses of potassium iodide, and for a time improvement took place, though the ulcer never healed. Wassermann reaction was negative; patient has never had syphilis; his wife and children are healthy. In October 1929 pain began in right side of throat, and has continued; is now very severe, especially at night, and is referred up in front of ear and into scalp. Difficulty in swallowing was at first due only to this pain, which was increased, but latterly food lodges in the throat and sometimes comes down the nose. Slight cough with little sputum. Voice unchanged. Hard lump in neck has been present for two months, during which patient has become much thinner. On examination right half of soft palate is pulled down and fixed, palato-pharyngeus being obviously immobile. Whole of right side of palate is involved in a fine, very superficial ulceration, clean, and only slightly differing in colour and surface from normal, and this extends a little to the left of the uvula, which is not affected. Ulcer is painful to touch; does not bleed on palpation; no feeling of infiltration; in one or two places a small heaping-up of mucous membrane is seen, and this is hard. Surface of tonsil itself appears to have escaped. External to tonsil is a dark blue coloration of mucous membrane; said to have been present since birth. Movement of healthy half of palate seems quite normal. On examining larynx, fixation of palato-pharyngeus is seen to be associated with two or three large, smooth, submucous tumours on right side and posterior wall of pharynx; the lowest overhangs the arytenoid, second lowest hides the end of the epiglottis. This second tumour is superficially ulcerated in a manner similar to the palate. These tumours are hard and fixed; they are tender, but do not bleed. The larynx itself appears normal. Gland mass seen in right side of neck, chiefly just above centre of clavicle, not quite smooth, hard and nearly completely fixed to deep tissues, but not to skin; a smaller

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portion lies on outer wall of thyroid cartilage; the sternomastoid muscle passes over the mass and appears to be free from it.

I have had a report from the Tuberculosis Officer, Mr J. L. Thomas of the King Edward VII. Welsh Memorial Association, stating that the sputum is negative and there is no definite evidence of tuberculosis in the case. The Wassermann test was repeated and the reaction was again negative. Since I last saw the patient three weeks ago, a number of prominent superficial veins have developed over the gland on the right side of the neck.

Sir JAMES DUNDAS-GRANT said he thought that as the case progressed the condition would prove to be epithelioma.

Mr A. J. WRIGHT said that the interesting points of this case were the wide diffusion and the polymorphic type of the condition. That was not infrequently seen in epithelioma round about the soft palate. It seemed to invade superficially a wide area, and showed a variety of characteristics in the different portions.

Mr CYRIL HORSFORD said that the right half of the larynx was in continuous fixation with what appeared to be a growth above it, and there was some secretion, which appeared to be over an ulcerated surface in the aryepiglottic fold.

Mr E. WATSON-WILLIAMS (in reply) said that though the larynx was very much overhung by these masses in the lateral pharyngeal wall, he did not think it was actually involved in the process. What excited his curiosity was the nature of the very superficial ulceration of the soft palate. He was still in doubt whether the pharyngeal disease was epithelioma or a sarcomatous condition.

Postscript.—May 1930. By direct laryngoscopy. Under general anæsthesia the larynx itself was found to be free from growth. Biopsy showed epithelioma in both palate and pharynx; no operation was attempted.

Nasopharyngeal Fibroma: Tumour removed by Diathermy—R. R. SIMPSON, F.R.C.S. Ed.—E. H., male, aged 16. Complained of nasal obstruction of one month's duration.

26th August 1929.—Operation: Preliminary high tracheotomy; Rose's position. Diathermy knife introduced as for removal of adenoids but moved in reverse direction, *i.e.* from below upwards, cutting slowly. Nasal attachments posteriorly severed by diathermy knife, intranasally.

Mr SIMPSON said that he employed a curved cutting terminal and worked round the vault of the nasopharynx to the posterior part of the septum. The nasopharyngeal portion of the tumour was cut off and was removed by the mouth.

Mr HERBERT TILLEY said that in places where radium was not available, diathermy provided an equally bloodless and valuable method for destroying

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nasopharyngeal fibromata. Radium was particularly useful in large sessile growths of the same nature.

Mr F. A. ROSE said that diathermy was the simplest and safest method available at present for dealing with these very difficult tumours.

Dr FITZGERALD POWELL said he had removed three tumours of this kind through the antrum, but the method carried out in this case seemed more satisfactory. Had there been hæmorrhage, and had the tumour been pedunculated or sessile? Recently he had had a sessile one to deal with. He could not have removed it through the antrum, so radium was applied and the growth disappeared entirely.

Mr MUSGRAVE WOODMAN said he must warn members against using radium in cases of intensely vascular sarcomata, because in these it was very dangerous. True, the growths disappeared rapidly, but dissemination occurred. He suggested that, wherever possible, the tumour should be removed by diathermy, using radium only as a prophylactic to prevent local recurrence.

Mr SIMPSON (in reply) said that Dr W. W. Adamson had reported the growth as fibroma, with no sign of malignancy. It was a definitely sessile tumour, occupying the whole breadth of the roof of the nasopharynx. Hæmorrhage was only troublesome when the nasal part was being removed, *i.e.* when the posterior part of the ethmoidal region was cut through. Access had been obtained by retracting the palate with the head in the Rose position.

Growth on Vocal Cords: Case for Diagnosis—DOROTHY J. COLLIER, B.M., B.Ch. (introduced by Mr E. A. PETERS).—J. R., male, aged 75. History of hoarseness of four months' duration, coming on after a cold. Whole of left vocal cord occupied by a greyish-white warty mass. Similar but thinner appearance on right vocal cord and at anterior commissure. Slight limitation of movement of both cords.

A section of a fragment removed by direct laryngoscopy showed subepithelial inflammation with lesions of the epithelium. No mycelium was present though the patient's larynx presented a mycotic appearance.

Sir JAMES DUNDAS-GRANT said he thought he saw some growth in the left half of the root of the tongue.

Dr P. WATSON-WILLIAMS suggested the taking of a smear or swab for film staining and culture of organisms, as a smear might reveal what a section might fail to show, *e.g.* some mycosis or infective condition in the membrane or the vocal cords.

Mr PETERS (in reply) said that the appearance in the area to which Sir James Dundas-Grant referred was traumatic, caused by pressure of a directoscope.

Excessive Development of the Styloid Processes—E. A. PETERS, F.R.C.S.—A man, aged 20, was admitted to hospital for a

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nasal operation and removal of septic tonsils. During dissection a white match-like structure was exposed on either side and recognised by palpation to be the styloid process.

The styloid process, on either side, lay in the bed remaining on removal of the tonsil, crossing diagonally downwards and forwards; the bone was covered by a thick fascial sheath. Apparently it is the stylohyoid ligament which normally creates the ridge on the deep aspect of the tonsil, and in this case it was replaced by bone. When we read of cases in which the process engages the ring of a tonsillotome the point of the process is dislocated from its normal position.

Dr DOUGLAS GUTHRIE showed lantern slides illustrating various abnormalities of the styloid process. Dr Guthrie said that some years ago Grüber examined 2000 skulls and only in one found a styloid process exceeding 3 in. in length. In ten the length was over 1½ in. He (the speaker) had examined about 300 skulls in Edinburgh museums and had found two in which the styloid process exceeded 3 in. in length. Both were skulls of elderly persons. A much rarer abnormality was a solid bar of bone connecting the hyoid bone with the base of the skull. An example of this [slide shown] was reported by Lipschütz. This might possibly be due to ossification of embryonic cartilage; it apparently was not a senile change, as the subject was a young person. A third, and much rarer form of abnormality, was the presence of a stylohyoid chain of bones, such as was found in the dog and other animals. Man was the only species which possessed a styloid process firmly ossified to the base of the skull. It was absent in monkeys, while in the dog, horse and many other animals a chain of bones connected by joints was present. Those abnormalities might not give rise to any symptoms, and only be discovered incidentally at operation, as in the case shown by Mr Peters.

Mr A. J. WRIGHT said that though this condition had been dealt with as an anatomical curiosity, occasionally it had a clinical bearing. Sometimes one saw persons in whom the styloid process was so much lengthened and displaced in direction that it caused discomfort during swallowing. He had met with three such cases, and had operated upon two of them. In the third the patient had refused operation. One could feel the point of the styloid process on either side. He showed a styloid process which he had removed eight years ago. He had intentionally refrained from taking away the tonsil in that case, yet the symptoms entirely disappeared. Sir St Clair Thomson stated in his book — wrongly, he (the speaker) thought—that this condition never produced symptoms, but was simply discovered occasionally as a curiosity during operation.

Mr C. A. SCOTT RIDOUT said he had had a case in which pain in the throat was caused by abnormally long styloid processes, removal of which had relieved the symptoms. The processes had extended right into the middle of the tonsil.

Mr E. WATSON-WILLIAMS said he had had a case of unilateral enlarged styloid process in a patient, aged 50, who had had continual and increasing pain on swallowing. The pain appeared to be in the tonsil and he advised its removal. He (the speaker) did not diagnose the condition before

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operation. On dissecting the tonsil he came upon the styloid process. Dissection was completed without going through the muscle coat and in the centre of the tonsil bed was a very marked prominence caused by the styloid process covered by the muscles. The process was fractured outwards and there was subsequent relief from all symptoms.

Mr PETERS (in reply) said that he had not removed the styloid process, and therefore it would be seen if its presence caused symptoms. In that event he would follow the course mentioned by Mr Ridout.

Sections of Tonsils.—E. A. PETERS, F.R.C.S.

(1) Diphtheria carrier. (2) Chronic lacunar tonsillitis. (3) Subacute tonsillitis with chronic lacunar tonsillitis.

The tonsils show inflammation of the epithelium, particularly in the crypts, with patches of necrosis indicating areas of absorption.

An American writer has said that the ulceration is due to plugging up of the follicles. In the follicles of the sections shown there is a good deal of necrosis, and in the depth of the crypt the epithelium is reduced to one-cell thickness. In the crypt are some organisms and streptothricial masses. Owing to the non-cleansing of the crypts it is easy to understand how the organisms grow on the pabulum from the ulcerated surface, and absorption must be considerable. On examination of these crypts it can be understood how it is that more symptoms arise from septic tonsils than from dental apical abscess.

Dr DAN MCKENZIE (President) said he supposed members would agree that publication of the word "sepsis" in connection with tonsils was ridiculous, as all tonsils were septic, and to say "septic tonsils" was not making a diagnosis. A tonsil should be judged by its behaviour, not by its clinical appearance or by the bacteriological reports upon it. Mr Peters' sections showed gross lesions, and he (the President) thought that that side of tonsil pathology had been neglected—at least in so far as its connection with rheumatism and general systemic infection was concerned.

Mr HERBERT TILLEY asked on what authority Mr Peters stated that American authors considered that it was merely the plugging of the lacunæ with septic material which gave rise to the symptoms. In the *Transactions of the American Laryngological Association* there was an article written by Dr Wood, of Philadelphia, on the pathology of toxæmia from septic tonsils, and the gist of that article was that it was not merely the plugging of the lacunæ with septic material but actual destruction of their lining epithelium which permitted the absorption of toxins, and in these circumstances general or local manifestations of toxæmia might follow.

Dr DOUGLAS GUTHRIE said he had been informed by a distinguished physiologist that the epithelium lining the tonsil crypts was here and there defective, even in normal subjects, so that the lymphoid tissue lay exposed in the lumen of the crypt.

Mr T. B. LAYTON asked Dr Guthrie how his pathologist had managed to get a "normal" tonsil; and, further, asked what was a "normal" tonsil. He submitted that the only normal tonsil was the inflamed tonsil. This

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was a paradox; but it was a paradox that had to be faced, since a structure was normal when it was performing its functions, and the function of the tonsil was to react and to resist the invasion of the upper air passages by harmful organisms.

Mr PETERS, in reply, said that after the ninth year of life all tonsils were septic; tonsils which were the seat of parenchymatous inflammation approached nearest to normal.

Lupus of Palate and Epiglottis—DAN MCKENZIE, M.D. (President).—This patient was shown here about four years ago, after the destruction of a lupus patch on the hard palate by diathermy. Three months ago the patch recurred in the same place and a new patch was discovered on the epiglottis. The former area was again destroyed by diathermy coagulation, while the latter has been treated by galvano-puncture.

Sir ST CLAIR THOMSON said that every patient with lupus in the upper air passages was a threatened individual, and if he sank below the top grade of health tuberculosis would develop and he would die from it. If, however, such a patient kept fit he might never have a recurrence and might live on indefinitely. There had been a small boy in King's College Hospital whose larynx was so stuffed with lupus that he had to wear a tracheotomy tube from the age of 8 to that of 13, during which time the lupus had completely healed. He (Sir St Clair) then took out the tracheotomy tube. He did not see the patient again until after the War, when he returned to hospital because of a development of lupus in the nose. He had fought through the War with distinction, and was then aged 28. This case showed that lupus could be arrested over a period of years and yet recur.

In another case a young woman had had lupus in the nose arrested by means of the galvano-cautery. She was a woman of the working class, and he warned her with regard to the condition. One day she came back with a recurrence. In the meantime she had married, and he (the speaker) told her she ought not to have children. She returned two years later with extensive disease. She had had a child. There was active tuberculosis in her lung, and in two or three years' time she died. Therefore a lupus patient might be temporarily cured, but under the strain of life might have recurrence and pulmonary tuberculosis.

In a third case a young woman of the leisured class had been treated by the late Sir Felix Semon for lupus of the palate and larynx. At the age of 18 there was such severe stenosis from the healed lupus that a tracheotomy was required. She was warned as to the condition, and she went to the Alps for several winters and led an open-air life. She married and had a child. She was now aged 38, was quite well, played tennis, and went to the Engadine each winter for winter sports. She still had to wear a tracheotomy tube. The case proved that extensive lupus of pharynx, mouth and larynx, might be arrested and the patient remain in excellent health over an indefinite number of years.

Sir JAMES DUNDAS-GRANT said that it was sometimes difficult to make a diagnosis between tuberculosis of the larynx and lupus of the

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larynx. He had seen recovery in some cases, but others became worse. One step towards promoting recovery was the removal of the lupus condition in the nose when such was present. It was important to look critically at the inferior turbinate bodies, even should there be no symptoms, and remove any diseased or even suspected portion of those bones.

Papilloma of the Larynx. Specimen—DAN MCKENZIE, M.D. —The interest in this specimen lies in the fact that it was removed from a boy, 8 years old, by the indirect method.

The risk in using cocaine in children led to a trial of stovaine, 5 per cent. in water, with a few drops of adrenalin, and a satisfactory anæsthesia was obtained. The successful outcome was, however, chiefly due to the exemplary coolness of the patient.

Mr H. J. BANKS-DAVIS asked what was the objection to the use of cocaine in children. There was a greater likelihood of symptoms of poisoning occurring with 5 per cent. than with 10 per cent.

Sir ST CLAIR THOMSON said that in children the use of cocaine in the nose was dangerous in any strength unless every care was taken to localise it. It was less dangerous in the larynx. In the days when these cases were more numerous he had frequently dealt with laryngeal papilloma in children, aged from 6 to 10 years, who, after their confidence had been gained, would sit still while the growth was removed under cocaine and had not shown any marked toxæmia. He shared the opinion that a 10 per cent. or even 20 per cent. solution might be less dangerous than one of only 5 per cent.

Dr P. WATSON-WILLIAMS said he did not altogether agree with Sir St Clair Thomson, his experience being that, though the application of cocaine was open to risks if not made with great caution to prevent any of the drug being swallowed, even strong solutions might be employed, not only for adults, but in younger patients who were certainly under the age of puberty. He felt that the dangers of cocaine were sometimes overstated; used with precaution it was one of the safest and most efficient local anæsthetics for surface anæsthesia of the nose and throat. The dangers of some of the substitutes were greater, although put forward on account of their supposed safety. He himself had never had bad results from the use of cocaine in children.

Mr PETERS said that the proximity of vascular tissue might be a factor in the relative toxicity of application to the nose and to the larynx in children. The adult membrane most sensitive to cocaine was the membranous urethra. If, under the microscope, a drop of weak cocaine solution was applied to the web of a frog, the vessels contracted; if a crystal or a strong solution was used, the vessels contracted and then dilated.

Mr POPPER drew attention to percaine, a new local anæsthetic which acted on mucous membrane by application. He had used it extensively and successfully. Percaine was claimed to have approximately ten to twelve times as powerful an anæsthetic action as cocaine, although it had only twice the latter's toxicity. But in the correspondingly weaker

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solutions of percaine used—1 per cent. and 2 per cent.—that left one with a greater margin of safety than with 5 per cent. and 10 per cent. cocaine solutions.

In reply to a query by Dr Patrick Watson-Williams, Mr Popper said that he had not heard of any deaths from percaine poisoning, and that, as this drug was used by infiltration, for extensive abdominal operations on the Continent, the risk attending its use by application to the nose and throat was probably negligible.

Sir JAMES DUNDAS-GRANT asked whether members found that stovaine produced exudation on the membrane after it was applied. It was a remarkably good anæsthetic in the nose.

One could brush a 20 per cent. solution of cocaine into the larynx, especially if adrenalin was added, but he did not think it was safe to use cocaine as a spray; there was risk of intoxication of the patient. It was best applied on non-absorbent rather than absorbent cotton-wool, thereby minimising the risk of poisoning, the liquid being only on the surface, not saturating the interstices as it did when absorbent cotton was used.

The PRESIDENT (in reply) said the worst cases of cocaine poisoning that he had seen had been in young people. His view was confirmed by that of foreign operators, who used cocaine more generally than British practitioners did, but who were very cautious about its employment in the case of children. Cocaine should never be used without adrenalin. It was his (the speaker's) habit to paint the operation area first with pure adrenalin before using the anæsthetic, as that blanched the surface and minimised absorption.

Skiagrams (taken at the Royal Portsmouth Hospital) of Skull after Excision of Bone for Spreading Osteomyelitis—DAN MCKENZIE, M.D.—The patient was operated on in 1926, and was shown here after recovery in November of that year.*

The skiagrams were taken a month ago in order to determine whether any regeneration of bone had taken place.

Dr LOGAN TURNER said that a case had been reported in 1921 by the late Dr Maclay, of Newcastle-on-Tyne, who had removed all the left half of the frontal bone and a broad strip from the right side. The condition had been spreading osteomyelitis. Three months afterwards there had remained only a small area the size of a florin, in which the dura mater was exposed. There was thus marked regeneration of bone in a short time.

Myeloid Sarcoma of the Superior Maxilla. Treatment by Surgery, Diathermy and Radium—L. GRAHAM BROWN, M.D., F.R.C.S.—Mrs P., aged 35, reported at hospital on 11th October 1929. Following a blow two and a half months previously a semi-solid swelling, increasing in size, occurred at the inner portion of the lower margin of the left orbit—with proptosis and œdema of lower eyelid. Slight tenderness on palpation. Left nasal fossa greatly stenosed by

* *Proceedings*, 1926, xx., 223 (Sect. Laryng., 7).

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œdema. Left antrum dark on transillumination, and skiagrams [shown] revealed density of upper part of antrum, with blurring of lower orbital margin. The Wassermann reaction was negative.

Operation—23rd October 1929.—Through a Caldwell-Luc incision a large dark vascular growth was removed. This had penetrated the anterior bony wall of the antrum, slightly invading the overlying soft tissues of the cheek, and had filled the upper part of the antral cavity extending backwards to the posterior ethmoidal region and upwards into the orbit through its bony floor.

Fifty mgrms. of filtered radium were inserted into the upper part of the antral cavity and retained for forty-eight hours.

Pathologist's report on a section of the growth [shown] was "myeloid sarcoma."

30th October 1929.—Diathermy gently applied to the suspected areas of invasion of soft tissues and a further 100 mgrms. of radium inserted for twenty-four hours.

This combined treatment caused a fairly severe reaction in overlying skin and orbital contents, but this gradually abated and patient was able to leave hospital a fortnight later.

10th January 1930.—Patient readmitted to hospital. Left eye greatly inflamed and proptosed. Inspection of cavity operated upon revealed considerable sloughing of its walls, especially in the post-ethmoidal region. Cleansing treatment was adopted.

15th January 1930.—*Ophthalmologist's Report*—Disc blurred, veins full, exudation in retina around disc. Pressure on retinal vessels behind eye, but circulation not stopped and vision remains fair.

7th March 1930.—Routine irrigation of the infected cavity gradually brought about amelioration of the condition, and to-day the left eye appears practically normal. The cavity is clean and cicatrising well.

In view of the indeterminate nature of the malignancy of the growth, I consider that the drastic treatment adopted was justifiable.

Dr P. WATSON-WILLIAMS said that more than twenty years ago, in a case of myeloid sarcoma of the corresponding superior maxilla in a girl, he had removed the greater part of the superior maxilla without an external incision. He had made an incision along the gingivo-labial fold and freely exposed the maxilla, so obtaining sufficient access. He also had been able to save the palate; it was a great gain if that could be done with safety. Healing had not taken place very rapidly, and the region being kept open afforded opportunities for observation of the operative field over a lengthy period. This case was watched with some anxiety, but, supported by Sir St Clair Thomson's opinion, he had stayed his hand and the condition had cleared up. The patient had married and had a family. There was no deformity and there had been no recurrence.

Mr T. B. LAYTON said there was much to be said for the intentional removal of the hard palate. If a growth began within the maxillary sinus

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one could not be absolutely certain of getting clear of it. It was necessary to watch the case over a long period and to deal at once with early recurrences. A hole through the palate permitted examination. Through it a portion of any suspicious area could be removed and examined under the microscope. The hole in the palate was not a great disadvantage in these days of modern prosthetic dentistry. He believed he had learnt this view from Mr Douglas Harmer and was now in favour of it.

Mr MUSGRAVE WOODMAN said that he could bear out Mr Layton's remarks. Some years ago he had shown some operation photographs at a meeting of the Section, and had drawn attention to the importance of having a window in the hard palate. In his earlier cases he had left the hard palate untouched wherever possible, and had relied on inspection of the operation area through the nose, but that had proved to be insufficient, as one could not control the operation area for a recurrence through such a small aperture.

Mr GRAHAM BROWN (in reply) said that when he operated on this case he did so purely with the idea of exploring the region. Therefore he began with an incision under the upper lip. He then found that the growth was coming from the roof of the antrum, and with the incision he obtained very good exposure, taking away the growth little by little, working to the ethmoid region, and upwards into the orbit. He satisfied himself that he was removing practically the whole growth, which, he thought, might be carcinoma of the antrum. After putting in radium he waited for the report, which was that the growth was myeloid sarcoma. Fearing recurrence he thought he would deal further with it. Therefore he put in 100 mgrms. of radium and applied diathermy to the areas under suspicion. At no time was there a question of his having to remove the hard palate, as the growth could be seen not to reach the floor of the antrum.

Intrinsic Carcinoma of the Larynx treated by Radium—ARCHER RYLAND, F.R.C.S.Ed.—R. H., aged 48. History of hoarseness of gradual onset and of six months' duration.

On examination. — The left vocal cord was found to be the seat of a neoplasm, with a suspicion of subglottic extension. Portion of growth removed for microscopical section. Dr G. Scott-Williamson reported "Typical squamous epithelioma."

21st January 1930.—A window resection of the thyroid ala was carried out, and seven needles, each containing 1 mgrm. of radium element screened by 0·5 mm. platinum, were placed upon the deep perichondrium and secured in position. The radium was left in for seven days, and a total dose of 1176 mgm. hours was administered.

A prophylactic exposure of the tracheal wall was carried out at the time of operation, but the insertion of a tracheotomy tube never became necessary.

[Section shown.]

Chronic Osteomyelitis of the Frontal Sinus and Ethmoidal Cells—MICHAEL VLASTO, F.R.C.S.—Patient, a boy, aged 16, first seen

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at West London Hospital, 13th April 1928. Seven weeks previously he had had "an abscess opened above the left eye." This was "lanced" four weeks later.

On examination a suppurating wound was found in the region of the left frontal sinus, from which granulations were sprouting. Dead bone could be felt with a probe at the bottom of the wound. There was a considerable amount of proptosis, with slight limitation in movement of left eye. Pus and granulation tissue in left nasal fossa. No constitutional signs, but patient looked ill.

21st April 1928.—Left frontal sinus and ethmoidal region exposed through usual incision. Extensive disease of floor of sinus and of ethmoidal cells. In the light of after events it seems obvious that the operative removal was not sufficiently radical, and that a mistake was made in closing the external wound and draining entirely through the nose.

Following the above treatment the proptosis considerably diminished, but pus continued to exude externally through a sinus and into the nose.

16th June 1928.—The scar was reopened and more diseased cells and granulation tissue were removed. The possibility of malignancy suggested itself, but the material reported upon later was purely inflammatory.

Early in July 1928 the sinus had nearly healed, but there was still enough pus in the nasal fossa to justify the fear that the inflammatory process was not at an end.

November 1928.—Wound again reopened and a diverticulum of the frontal sinus (upper and inner) was found filled with granulation tissue. More diseased bone was removed and, for the first time, the external wound was left widely open and packed with iodoform gauze.

For fifteen months afterwards patient's local condition remained much improved. Still some pus in the nose and still a very small sinus. Treatment consisted in frequent irrigations of frontal sinus through breach in outer wall of nasal fossa.

21st January 1930.—Wound again reopened and very free removal of disease carried out from outside and from within the nose. Again the diseased area seemed most marked over the partition between the right and left frontal sinuses.

The boy's condition at present is little better than it was before the last operation.

Dr FITZGERALD POWELL said that he had had an obstinate case in which he had discovered a small hole in the septum between the two sinuses. He found he could get a probe through the septum, and a skiagram had shown the probe in the other sinus, on which he had then operated. After the operation the original condition had cleared up.

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Mr VLASTO (in reply) said that he had considered the possibility of the other sinus being affected. The last skiagram had been taken a week previously, but after conversations with some members of the Section he thought there might still be some diseased bone present on the left side.

Morbid Condition of Palate and Cranial Nerve Palsies. Case for Diagnosis.—MICHAEL VLASTO, F.R.C.S.

Male, aged 63. There is a white pathological area occupying almost the whole of the hard palate. Here and there in this area there are islets of nearly normal mucous membrane. In addition to this condition there are lesions in the central nervous system, which will be reported upon at the Meeting.

Blood Wassermann and Khan tests negative.

ADDITIONAL NOTES (Dr REDVERS IRONSIDE).—The left optic disc is normal. The fields of vision, pupils and external ocular movements are normal and there is no nystagmus. There is anæsthesia to cotton-wool and pin-prick over the distribution of the left trigeminal nerve, with diminished corneal reflex and weakness of the masseter and pterygoid on the left side. There is left facial paralysis of the peripheral type. The pharyngeal reflex is extremely sluggish; otherwise the cranial nerves are normal and the central nervous system presents no other abnormality.

The PRESIDENT said that six weeks previously he had seen a similar appearance on the palate of an old man and the condition had proved to be a flattened papilloma. Here one could see what looked like papilloma protruding like bristles from the surface.

Mr E. WATSON-WILLIAMS said that treatment of the patient with potassium iodide might be tried for a month; he was not sure that the negative Wassermann reaction should be regarded as excluding syphilis. He had seen a similar sort of condition in patients with syphilis. Syphilis might explain the nerve lesion, supposing the association was significant and not merely accidental.

Mr VLASTO (in reply) said that no satisfactory diagnosis had yet been made. He was still in doubt as to the pathology of the palate condition, and as to whether or not the cranial nerve palsies had any connection with the palatal condition.

Bilateral Spasm of the Larynx—MICHAEL VLASTO, F.R.C.S.—Male, aged 64. The condition has been coming on gradually for two years. There is considerable stridor, with accumulation of saliva in the mouth, and there is also some difficulty in talking.

The vocal cords are normal in form and colour and are seen to be closely approximated. During inspiration there is very little outward excursion.

Dr Ironside reports that there are no physical signs in the central nervous system. He throws out the suggestion that the condition

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might be a sequela to encephalitis lethargica. There is, however, no history of such an illness.

Sir JAMES DUNDAS-GRANT said he thought that there was a functional element in the case. When asked to inspire with his mouth open, the patient did so, and then produced a grunting stridor with expiration. This could be produced voluntarily, and therefore also by suggestion or auto-suggestion.

Mr GRAHAM BROWN said that when he had examined this patient earlier in the afternoon, the man had apparently been caught off his guard. The cords had opened in the normal manner and he had pronounced the vowel "e" in a satisfactory way. Then he quickly changed his attitude and began an artificial kind of stridor. There was said to have been a severe nervous breakdown five years ago. Though the Wassermann reaction was positive, the condition seemed to him to be functional aphonia.

Mr VLASTO (in reply) said he had satisfied himself that the pupils reacted to light. He was inclined to accept the diagnosis of a functional spasmodic condition of the larynx.

Papillomatous Condition of Larynx—H. J. BANKS-DAVIS, M.B., F.R.C.P.—Patient, male, aged 57, a solicitor's clerk. Hoarseness of about five years' duration. A year ago a large pedunculated tumour was removed by the direct method.

Pathological report.—Simple dendritic type of papilloma.

The larynx has been cleared out twice, and there is recurrence. Should a thyrofissure be performed? I think the growth will ultimately prove to be malignant, although it may not be so yet.

Sir ST CLAIR THOMSON said that there should be no hurry to perform laryngofissure for what might be an innocent condition, and could be successfully attacked through the mouth. He saw some of these cases after operation, and patients were often left with stenosis, which was worse than the original simple growth. He thought that the condition in the present case was innocent. There were two separate growths, possibly enchondromata.

Mr BANKS-DAVIS: An enchondroma cannot be removed through the mouth.

Dr BROWN KELLY said that he regarded this as a benign growth and advised against external operation—at least until the large pedunculated portion had been removed and examined. As to the risk of its becoming malignant, he recalled the great investigation by Sir Felix Semon which proved that benign growth in the larynx very rarely underwent a transformation of that kind.

Mr F. A. ROSE said he had a patient now attending St Bartholomew's Hospital, a woman who, to his knowledge, had had papillomata of the larynx for twenty-two years. They had been removed repeatedly. On ten occasions they had been examined microscopically, and there had been no sign of any change from innocency.

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Societies' Proceedings

May 2, 1930.

President—DR DAN MCKENZIE.

Post-mortem Specimen from a Case variously reported on as Granuloma, Lymphosarcoma, Endothelioma. Treated by X-rays and Radium. Death from Hæmorrhage—NORMAN PATTERSON, F.R.C.S.—Male, aged 24. Admitted to hospital 30th August 1928. Had been treated for six weeks for septic tonsil. *On examination*—Region of right tonsil occupied by hard swelling, which was ulcerated. In upper part of right anterior triangle there was a large, freely movable swelling. *Microscopic report*—"Granuloma." Wassermann reaction negative. Transferred to X-ray department for treatment. Readmitted to aural ward 23rd September 1929. Large swelling right tonsil, involving also right half of soft palate and extending to tongue and posterior pharyngeal wall; centre ulcerated. Movements of tongue restricted. Swelling right side of neck had subsided, but large mass over left sternomastoid. X-ray treatment continued with some temporary improvement.

2nd October 1929.—Pathological report on a fresh piece of tissue: "Less like granuloma and more like lymphosarcoma."

30th October.—Eighteen radon needles inserted—six 4 cm., nine 3 cm., three 2 cm. 1·5 millicuries per cm.

During 1st and 2nd November five needles came out spontaneously. On 3rd November thirteen remaining needles removed. After this treatment there was marked œdema of palate followed by sloughing. Patient was fed mainly through an œsophageal catheter. Up to 21st November general condition seemed to improve a little, then hæmorrhage occurred from right tonsillar area, controlled by manual compression. On 28th November hæmorrhage returned. No bleeding point could be found. Pressure kept up by house surgeon for one and a half hours, but on removing this bleeding recurred. I was called to the patient, and as no bleeding point could be discovered, the external carotid artery was tied. Afterwards one pint of blood was injected intravenously. Patient again improved slightly.

5th December.—Further brisk hæmorrhage. Mr Charles Donald kindly saw the case and, under great difficulty, carried out an operation on the left side of the neck. There was much scar tissue, several veins were torn, and it was practically impossible to identify structures. A vessel, which was considered to be the external carotid artery, was tied. Shortly after the operation the patient succumbed.

Post-mortem.—An erosion was found in the right lingual artery. A ligature was found on the right external carotid and another on the left internal carotid. The final pathological report on the tumour was "endothelioma."

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The PRESIDENT said that this patient had been treated for tonsillitis, and he (the speaker) had certainly, on one occasion, made the same kind of blunder. In his own case everything had pointed to quinsy, but the condition proved to be sarcoma.

Mr NORMAN PATTERSON, in reply, said he had not yet come to a decision as to whether radium or diathermy was the better treatment in these cases, but the pendulum was now decidedly swinging towards diathermy, which had given some brilliant results. After radium treatment a case would do well for some six weeks or months and then there would be a recurrence, perhaps in some anomalous position.

Nasopharyngeal Fibroma removed by Diathermy. Subsequent Radium Treatment.—E. WATSON-WILLIAMS, M.C.—Albert W. was sent to me in March 1929 complaining of epistaxis six months previously and again recently and obstruction of the right nostril for eighteen months. On examination I found a firm fleshy fibroma filling the right posterior choana and pushing down the soft palate. This was removed with Luc's forceps introduced through the nostril, and apparently the removal was complete; bleeding was brisk on grasping the tumour near the base, but ceased soon after removal. The tumour grew from the basisphenoid, near the choanal margin, and after removal the bone seemed to be exposed.

Early in March 1930 he returned with symptoms worse than before, dating from Christmas 1929. He now complained that the right side of the face had been growing larger than the left for two years, and the asymmetry was obvious but had escaped notice on the previous occasion. Mr R. R. Simpson, of Hull, kindly lent me his diathermy knives [shown at the last Meeting], but at operation I found it was impossible to engage the base properly. I therefore covered the end of an ordinary nasal polypus snare with drainage tube, passed the hoop of wire round the tumour, tightened it at the base, and passed the diathermy current through the snare, drawing it tight as it cut. The tumour was severed easily and bloodlessly and removed through the pharynx. Prolongations were then found to pass into the middle and inferior meatus of the nose and a fourth lobe, previously hidden, delivered itself into the choana. These were removed piecemeal with forceps.

20 mgm. radium, with 0·5 mm. platinum screen, was inserted a fortnight later, to attempt to prevent any recurrence. At that time there was no sign of any tumour tissue in the nose, inspection of which was unusually easy owing to the expansion produced by the tumour.

Microscopic Section of a Papilloma of the Vocal Cord showing an Encapsulated Foreign Body—W. STIRK ADAMS, F.R.C.S.—Miss W., aged 19, had no history of any laryngeal symptom before 20th November 1929. On this date she was singing in chapel

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and forcing a high note, when her voice suddenly went, her throat felt "funny," and she stopped singing. After the service her friends noticed that her speaking voice was husky, and it remained so until March 1930, when I removed a single papilloma from the edge of the right vocal cord, at the junction of its anterior and middle thirds.

Pathologist's report: "An encapsulated foreign body is present in the subepithelial tissues."

Patient had worked in the mica shops of the General Electric Company for eleven months before her voice went. Opinions are asked on the possibility of this foreign body being mica dust.

Dr JOBSON HORNE said that in his opinion a foreign body was not present. The all-important point in the history of the case was the very sudden onset in the loss of the singing voice. The notes stated that there was no history of any laryngeal symptom before 20th November 1929. On that date the voice suddenly went whilst forcing a high note. Lesions sudden in onset were vascular in origin. The case apparently did not come under observation until some months later. If the larynx had been seen at the time of the accident the vocal cord would, in all probability, have presented a congested appearance—round and red like a sausage, caused by an effusion of blood. He (Dr Jobson Horne) was of the opinion that what had been mistaken under the microscope for a foreign body was the remains of that effusion of blood, and that the fact of the patient's having worked in mica shops had no causal relationship with the condition observed in the larynx.

Mr F. A. ROSE said he agreed with Dr Jobson Horne that the history was of the kind usually heard when a blood-clot formed. Apart from that there was a difficulty in reconciling what the microscope revealed and the presence of any mineral there. It was difficult to imagine a grain of sand or a mineral substance which would submit to being cut into thin slices with the razor and appear in the serial sections. Moreover, one would expect a foreign body to be surrounded by a round-celled infiltration. This, however, lay in a space surrounded by connective tissue and elastic fibres, and, with the exception of a multinucleated cell at one end, there was here practically no round-celled infiltration. Another feature was the situation of the nodule, namely at that part of the cord where singers' nodules occurred and where little blood-clots formed as a result of straining. Why should a foreign body choose such a spot to embed itself?

Mr LIONEL COLLEDGE said he thought the so-called "foreign body" consisted of crystals formed from blood-clot.

Laryngeal Cyst—R. A. WORTHINGTON, F.R.C.S.—A. S., male, aged 40. Patient has noticed voice getting "thick" at times during the past three months. No pain, no dyspnœa, no difficulty in swallowing. There is a pale ovoid tumour growing from the right posterior surface of the epiglottis and concealing the anterior two-thirds of the glottis. Cysts are said to be more common on the anterior surface of the epiglottis.

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I propose to remove it with forceps; it can probably be pulled away by the direct method.

Thyrolingual Cyst apparently undergoing Spontaneous Destruction—DAN MCKENZIE, M.D. (President).—The patient, a clergyman, aged 40, who had resided in China for many years, had noticed a painless lump over the thyroid cartilage for six weeks.

A diffuse, flattish, firm swelling, rather soft in front, could be felt, and from its lower border a hard, string-like cord passed down in the middle line and was lost in the episternal notch. The skin over the tumour was red and adherent.

The appearance of the swelling, its recent origin, and the adhesion of the skin raised the question of malignancy, but we finally decided that it was a thyrolingual cyst and removed it by operation through a mesial incision on 28th March 1930. The mass consisted of a slab of tough fibrous tissue about 3 in. by 2 in. square. In its centre was an oval cavity containing about a dram of a pus-like fluid lost at operation.

Microscopic sections by Dr F. H. Teale [on exhibition] surprised us by showing no trace whatever of any epithelium. The oval cavity contained granulation tissue only and cultures showed no growth.

The suggestion is that the inflammatory action was of long standing, that it had produced the hard fibrous mass, and that it had destroyed and caused the absorption of the epithelial elements of a thyrolingual cyst. The suggestion is plausible but rather startling, as the spontaneous destruction and removal, in the body, of a congenital malformation seems not to have been hitherto recognised. Thyrolingual cysts are, however, known to be peculiarly liable to inflammatory changes, sometimes acute.

Ulcer in Tonsillar Regions: Case for Diagnosis—M. VLASTO, F.R.C.S.—Male, aged 36. Seen at West London Hospital, 4th April 1930. In January he had complained to his doctor of soreness on right side of throat. A gargle was prescribed and he completely recovered. The trouble recurred a fortnight later, and has increased up till the present. Associated with the sore throat latterly, glands have appeared on both sides of neck, chiefly on right side.

Condition on examination.—A large sloughy ulcer is present in the right tonsillar region. This involves the tonsil and the adjacent pillars of the fauces.

Considerable adenitis present on right side; also a few glands on left side. Owing to the man's age, the appearance of the morbid condition, and the fact that the glands were not hard, a confident diagnosis of gumma was made. Wassermann and Kahn tests negative. Provocative Wassermann test also negative. On 11th April a piece of the morbid tissue and an enlarged gland were removed. No cough. Chest normal.

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Mr J. F. O'MALLEY asked whether the swelling had been complete in contour when Mr Vlasto saw it, or broken down and ulcerated. It looked rather like a gumma, but he was inclined to regard it as a sarcoma or endothelioma.

Mr R. A. WORTHINGTON said that in this kind of case, of which he had seen a few examples, he thought the best treatment was to put radium into the tonsil and subsequently treat the glands with deep X-ray therapy.

Dr JOBSON HORNE said he considered that the prognosis was bad whether radium was used or not. He regarded the condition as a malignant rodent ulcer. There might occur a severe hæmorrhage and death.

Mr T. B. LAYTON asked whether a report of Kahn negative and Wassermann negative justified the case being regarded absolutely as non-syphilitic. Also, was one to accept a negative Wassermann reaction after a provocative injection of an arsenic preparation as conclusive evidence that a case could not be syphilitic? He did not think either a negative Kahn or a negative Wassermann was absolutely conclusive, and in this case he would give iodide of potassium before anything else. If there was a malignant growth, the iodide might help the effect of deep X-ray therapy. Did Mr Vlasto think that diathermy should be used in the case? The depth of the ulceration was such that he would be apprehensive about using diathermy to that extent. X-ray therapy seemed the preferable treatment.

Apropos of this case he wished to correct a mistake in the *Proceedings* (1930, xxiii., Sect. Laryng. 33), where, owing to an error in typescript, he was credited with saying that 80 per cent. of tertiary syphilitic lesions did not give a positive Wassermann reaction at all. The number should be 20 per cent.

Mr NORMAN PATTERSON said he agreed that the ulceration in this case was too deep for diathermy and there was much glandular involvement, which could not be dealt with surgically. Deep X-ray therapy seemed to be the only course left and, having his own case in mind, he would advise that treatment.

Mr J. F. O'MALLEY, in further comment, said he strongly advised radium in preference to X-rays, in view of an experience he had had in the previous year in an almost identical case in which the condition had cleared up extraordinarily under radium. It was difficult to say beforehand, dogmatically, what kind of case would respond to radium treatment. The degree of malignancy of these growths differed considerably — some responded well to the treatment and some did not.

Mr T. B. JOBSON thought that the physiological test of iodide of potassium should be tried before applying radium, in spite of the negative reactions to the Kahn and Wassermann tests.

The PRESIDENT said he thought the glands in the neck were too hard for gumma. In his opinion the condition was malignant. If so, he agreed that the lesion was too extensive for treatment by diathermy. The case seemed to be a suitable one for radium treatment.

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Mr ANDREW WYLIE said he would advise trying iodide of potassium for at least two weeks—it could not do the patient any harm. The previous operation on the glands would have made them harder than they would otherwise have been.

Dr JOBSON HORNE, in further remarks, said, with reference to treatment, he had not mentioned iodide of potassium as he had assumed that would be administered, notwithstanding the fact that the usual tests for syphilis had been negative. Iodide of potassium was a wonderful drug, and was not intended solely for the treatment of syphilis. He would commence with 5-grain doses of iodide of potassium with a little quinine, and gradually increase the dose to 10, 15 or 20 grains according to tolerance.

Mr VLASTO (in reply) read the detailed pathological report. Reviewing the tissues as a whole the pathologist (Dr Elworthy) regarded the condition as a primary pharyngeal lymphosarcoma. Whilst appreciating the standpoint of those speakers who considered the morbid condition to be, clinically, a gumma (this had, indeed, been his own confident original diagnosis), he (Mr Vlasto) did not agree with this diagnosis at the present time. The negative serological and flocculation tests, coupled with the fact that no improvement followed after the single dose of salvarsan convinced him that the diagnosis lay elsewhere.

He was inclined to adopt Mr Patterson's suggestion to treat the case by deep X-ray therapy and not by radium.

Postscript.—The patient has now been having potassium iodide for three weeks and several applications of deep X-ray therapy have been made. The result of this treatment is that the sloughing process has almost entirely disappeared and a relatively small—but still appreciative—amount of healing appears to have taken place. The case will be shown again at a later Meeting of the Section.

Cyst of Floor of Mouth—DAN MCKENZIE, M.D. (President).—Child, aged 8 years. Swelling first observed six months ago, when it was half its present size. It occupies the floor of the mouth under the tongue and is symmetrically disposed, the frenum linguæ forming a gentle linear depression in its middle line. It is about the size of a bantam's egg.

The situation of the cyst in the middle line, its yellowish colour, and the age of the patient suggest a dermoid.

What is the best way of getting the cyst out? If it can be removed from the inside, I will remove it in that way.

Dr DOUGLAS GUTHRIE said that he was showing, by way of contrast with the President's case, a water-coloured drawing of a cyst beneath the tongue in a child aged 2 months. It consisted of a curious pointed swelling on either side of the middle line, apparently the result of obstruction in the duct of each sublingual gland. The swellings disappeared spontaneously without operation.

Mr NORMAN PATTERSON asked whether the possibility of a thyroglossal cyst had been considered. The contents of this swelling were fluid,

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unlike the condition usually met with in dermoid cysts. Again, dermoid cysts pitted on pressure. Thyroglossal cysts appeared in the mouth, but far forward.

Mr LESLIE POWELL thought that the cyst could be taken out through the mouth. Tracheotomy might have to be performed, though the use of intratracheal ether might obviate that procedure.

? Tuberculoma of the Fauces.—W. S. THACKER NEVILLE, F.R.C.S.Ed.—Patient, male, aged 27, farmer.

On examination.—Whole soft palate and uvula covered with soft red tumours, resembling a mass of granulations. Posterior wall of pharynx red and polished. Both maxillary sinuses dark on trans-illumination, septum deviated to the right so that right nostril was almost obliterated.

The uvula was removed by means of a diathermy snare and sent to a pathologist for microscopical examination. The following day a submucous resection of the septum and a double Caldwell-Luc were performed.

The sinuses were normal, the darkness on transillumination being due to great thickening of bone in the canine fossæ. The palate was treated by the diathermy needle. Wassermann reaction negative. The section was considered by one pathologist to show chronic inflammatory tissue alone, by another to be either syphilitic or tuberculous, whilst a third decided that it was tuberculous.

Papilloma of Uvula.—W. S. THACKER NEVILLE, F.R.C.S.Ed. —Male, aged 26, complains of sore throat intermittently since November 1928, when he had diphtheria; has been off work for three months because of the discomfort in his throat.

On examination a long uvula was seen, at the end of which was a round keratinised growth. The tonsils projected slightly beyond the faucial pillars and showed signs of chronic infection. The uvula was removed by Bordier's diathermic snare. At the same time the tonsils were removed under local anæsthesia.

Pathological report.—Simple papilloma (Sinclair Miller).

Dr DOUGLAS GUTHRIE said he had had a case of extreme length of uvula. The patient had been resident abroad beyond the reach of medical treatment, and the uvula was so long he could hold the tip between his lips. It caused him annoyance by entering the larynx and giving rise to coughing and spasm. The basal part of that uvula had been normal in appearance, but beyond it there had been a fine strand of tissue over 2 in. in length and terminating in a small disc-like papilloma. The appearance recalled an illustration in St Clair Thomson's text-book except that the pedicle was much longer. Removal has been simple.

Bronchiectasis cured by Aspiration—W. S. THACKER NEVILLE, F.R.C.S.Ed.—As this patient came two or three weeks after a tooth had been extracted and was coughing up pure pus, I concluded

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that he had aspirated a tooth. The bronchoscope showed pus coming from the left bronchus. I was unable to find a tooth. X-rays showed an object looking like a foreign body, but the radiologist said it was a gland. I aspirated with a motor through a bronchoscope four or five times. Then I had the patient inverted by leaning over a high stool.

The bronchoscope removes the coagulum and allows of the free exit of pus. It is not now my practice to wash out, and in this I follow Chevalier Jackson. My case is now quite cured.

Mr V. E. NEGUS said he did not consider that bronchiectasis was the correct title for this case; the reports seemed to indicate a lung abscess. Even without postulating the presence of a tooth, it was easy to understand that some clot due to the extraction had entered the upper lobe bronchus and caused an abscess. Aspiration removed the septic clot which had been lying there and afterwards the lung abscess was able to drain freely. It was not correct to say that the bronchoscope did not necessarily cure the condition, because if these cases were treated by postural coughing only they were not so likely to get well. There was much swelling, with formation of granulation tissue, and probably a septic clot was lying in the bronchus. After the septic material had been removed by bronchoscopy and small suction tubes had been passed, and after 10 per cent. silver nitrate had been applied to the granulation tissue, the patient could drain the abscess by postural coughing.

Mr LESLIE POWELL said he had recently treated a lung abscess in this way by aspiration and no postural treatment had been carried out. The patient began to get well right away, so that evidently the improvement was due to the aspiration. He had been in the surgical wards for some time without having received benefit. He was now walking about happily.

Mr JAMES ADAM said that in a case of lung abscess in which a clot had been inspired bronchoscopic aspiration was indicated. He had long ago given up bronchoscopic lavage, which was a means of spreading pus into bronchioles previously unaffected. There was no remedy for bronchiectasis so good as systematic inversion. In his own case he induced the patient to cough once an hour while leaning well over a high stool. By this means the quantity of pus could be reduced within a week from 15 ounces during twenty-four hours to 5 ounces during the same period. He had had a case—in a girl aged 13—in which many examiners had missed the diagnosis of bronchiectasis and double maxillary sinusitis. In August 1922 he had opened both antra and performed bronchoscopic aspiration. Afterwards inversion was carried out hourly in the patient's home. In November 1929 no pus was present in either antrum, nor was any being coughed up. There was no typical facies or clubbing of the nails. In these cases the bronchoscope was of no use unless followed by inversion treatment which enlisted nature in the promotion of a cure.

Mr THACKER NEVILLE (in reply) agreed that aspiration was important, and that it removed the coagula of pus. In passing the bronchoscope one had to use numerous swabs to stop the cough reflex. The patient could carry out inversion three times a day.

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