

SOCIETIES' PROCEEDINGS

JOINT DISCUSSION No. 2.

ROYAL SOCIETY OF MEDICINE—SECTION OF
LARYNGOLOGY AND SECTION OF MEDICINE

December 3rd, 1937

Chairman—C. A. SCOTT RIDOUT, M.S. (President of the Section of
Laryngology)

Discussion on the Value of Bronchoscopy in Diagnosis and Treatment

V. E. NEGUS: When I was asked to speak at this discussion it appeared to me necessary to review all the cases of which I had satisfactory records. I have done so and have traced most of the patients with whom I have dealt since the beginning of my endoscopic work in 1924.

The first and obvious value of bronchoscopy is the removal of foreign bodies, but it would be useless to expect success if endoscopic practice were confined to this type of case. Of my first 100 bronchoscopies only 5 were foreign-body cases, while 95 were for the examination and treatment of lung suppuration and neoplastic diseases. For various reasons the proportion has altered; of a total of 173 patients 49 were referred on account of actual or supposed foreign bodies in the bronchi; and of 570 bronchoscopic examinations 97 were for the detection or removal of these objects, while the remaining 473 gave practice to make this type of work easier.

The laryngologist has another source of instruction, in the œsophagus. I have records of 160 cases of carcinoma examined or treated, and of many others with various non-malignant complaints.

The conclusion is that all types of peroral endoscopic work have a value as regards the removal of foreign bodies. Of 49 foreign-body cases, 44 had a complete cure. Six objects were coughed up, 4 after bronchoscopic examination and 2 during their journey to

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hospital ; this is a proportion too low to allow of delay in bronchoscopic examination, in the expectation of spontaneous cure. In 5 unsatisfactory cases peculiar circumstances prevented the attainment of a perfect result. Two required lobectomy because of failure to remove the foreign body in a lung disorganized by suppuration ; in such cases there should be no hesitation in referring the patient to a thoracic surgeon, but much may be done to improve the local and general conditions by preliminary bronchoscopic treatment.

The next, and more extensive, field of bronchoscopy is connected with lung suppuration, when foreign bodies are not the cause of the disease. Of these I have notes of 67 patients, for whom 372 bronchoscopic examinations or treatments were required. Cases of lung abscess show the largest proportion of successes ; of 35 cases, 13 were cured and another 13 materially improved. Twelve patients required some form or other of external operation.

Most abscesses begin within a bronchus, as a result of partial or complete blockage by a foreign body, a lump of coagulated pus or infected blood-clot, or a plug of viscid mucus, as occurs in massive collapse.

The walls of the bronchus are swollen, granulations appear, and the ciliary stream is impeded. Infection is set up in the air passages beyond the point of obstruction and secretions collect, at first mucoid and later purulent. As the bronchi then contain pus the condition may well be called one of bronchial abscess ; it is remarkably amenable to bronchoscopic treatment and, in my opinion, it is wrong to neglect this probable means of cure. Even when this intrabronchial condition is followed by breaking-down of the walls, with the production of a parenchymatous or true lung abscess, cure may still, on occasion, be obtained without external operation. The same observation applies to primary parenchymatous abscesses which have ruptured into a bronchus.

It is the well-established abscess with thick walls and an absence of ciliated epithelium in its lining, that calls for external drainage or lobectomy ; even then preliminary bronchoscopic aspiration will make conditions safer for operation. Without a direct examination and a trial of bronchoscopic treatment, it is impossible to say which cases will respond. It is also impossible to determine whether a foreign body is present ; the object may be radiologically invisible in opaque, collapsed and sodden lung tissue. If a foreign body is found and removed, cure of the suppuration may be expected, even after many years' duration, as illustrated by sixteen such cases with fourteen successes.

Bronchiectasis, whether unilateral or bilateral, responds much less well to bronchoscopy, and cure cannot be looked for. Improvement, however, may be attained, as in fifteen out of twenty-three

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cases treated by myself. Some patients with bronchiectasis, for whom lobectomy is not indicated, are enabled to live useful and comfortable lives by regular courses of bronchoscopic treatment.

A number of cases of neoplastic disease are referred for bronchoscopic examination or treatment and much may be done for these patients. Not only can a reliable diagnosis be established in cases of doubt, but useful treatment can be carried out. Amongst the patients examined a small proportion will be found with neoplasms of a type capable of cure. I have only two amongst fifty-one patients, but the successful result in these justifies the other examinations; it is only by direct inspection that the favourable cases can be discovered. One patient had a simple fibroma; she was well for six years, but then suffered from a fresh neoplasm of different type. The other had an adenocarcinoma, invading the muscle of the bronchial wall, and in his case cure seems to be permanent.

Squamous-celled carcinomata are amenable to palliative treatment. The symptoms they produce are due not so much to the presence of growth in the lung as to mechanical obstruction of the bronchi. Removal of this obstruction re-establishes ventilation and drainage of the lung in parts beyond the growth. The best results are obtained in carcinomata affecting the upper lobe. Clearance of the lumen may be attained by removal of masses of growth with biting forceps, by the insertion of radon seeds directly into the neoplasm, or by the introduction of a container loaded with seeds. The latter can be left in place for a week and, if of suitable design, it should not be coughed out. There are certain cases with collapse in portions of the lung where the diagnosis lies between obstruction by an intrabronchial growth, a mediastinal neoplasm, or an aneurysm.

Bronchoscopic examination allows a correct opinion to be given. I have records of seventeen such cases, with pressure on the bronchial walls. The question is one of importance, as similar signs and symptoms may be due to intrabronchial obstruction, amenable to treatment.

There remains the question of unexplained hæmoptysis. Bronchoscopy is often required to establish a diagnosis; in many cases new growth may be found, and in others granulations caused by localized suppuration. There are, in addition, a few in which no gross changes are found and, possibly, no more is seen than a small rough patch, from which bleeding occurs, similar to the area in the septum of the nose in cases of epistaxis.

L. S. T. BURRELL said that, to the physician, bronchoscopy was an extension of the examination of the larynx by laryngoscopy. In a case of hæmoptysis of unknown origin it was a matter of great importance to have a bronchoscopic examination. Students

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should still be taught to regard hæmoptysis of unknown origin as tuberculous, but there were other causes. He did not think that frank hæmoptysis was ever due to a bleeding spot in the throat, but it might be due to a fibroma in the bronchus. Mr. Negus had referred this evening to a case which he (the speaker) had seen some years ago. The patient was a young woman who had hæmoptysis; she was in a sanatorium for fourteen months, but no evidence of tuberculosis could be found. After the fourteen months in a sanatorium, lipiodol was put into the trachea and X-ray examination showed a blocked bronchus. Mr. Negus, on bronchoscopic examination, discovered a fibro-adenoma which was the cause of the hæmorrhage. He removed it, but several years after the operation carcinoma of the bronchus developed and the patient died. Even the polypoid and apparently innocent growth might contain some malignant cells. These cases of growth—fibroma or adenoma—were rare, and when they were met with it was important that they should be recorded.

Carcinoma of the bronchus usually showed itself first either by a slight hæmoptysis, or a blocking of a bronchus and consequent collapse of the lung. In these cases lipiodol would show the blocked bronchus, and that was strongly suggestive of carcinoma, but bronchoscopy would clinch the diagnosis. Often the condition had gone too far for operation by the time the physician saw the patient. Eighteen months ago a patient who had had indigestion for many years was sent to hospital for X-ray examination of the gastro-intestinal tract. One film happened to include the lower part of the thorax and revealed a carcinoma of the right lung. Mr. Tudor Edwards removed the lobe, and the patient made a very good recovery.

He had been much impressed by the great increase in the scope of the thoracic surgeon, in successfully removing not only the lobe, but, if necessary, the whole lung. Bronchoscopic examination might enable the surgeon to decide whether or not the growth was operable.

Mr. Negus had referred to abscess of the lung, and also to what he called bronchial abscess, in which there was a pent-up collection of pus. Bronchoscopy was not of very great value in the diagnosis of abscess, because the diagnosis was usually fairly simple otherwise, but it was of value in distinguishing between a simple abscess and one which was the result of the breaking-down of carcinoma. He had seen one or two cases of the latter made very much worse by operation. Treatment of abscess by aspiration through a bronchoscope sometimes led to a cure and saved the patient the risk of operation.

Nor was the bronchoscope of great value in the diagnosis of bronchiectasis, which was now diagnosed largely by X-rays and

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lipiodol or other opaque substance ; but bronchoscopy might reveal the presence of a foreign body as the cause. For treatment, bronchoscopic aspiration was valuable for many of these cases, and the fact that some patients returned again and again for aspiration whenever they felt the need of it showed that the relief given was sufficient to make them undergo the discomforts of the procedure.

He had seen one or two patients desperately ill who, on postural drainage, had been unable to cough up the bronchiectatic abscess. After bronchoscopy some pus had come out of the bronchial tubes and cleared them, so that the patient could carry on with the postural drainage.

G. EWART MARTIN : It is a debatable subject as to whether endoscopy should remain in the hands of the laryngologist or become a specialty on its own account. An endoscopic examination should never be performed without a previous complete examination of the pharynx, hypopharynx, and larynx. Bronchoscopy is inaccurate without a training in monocular vision.

In America bronchoscopy has become a specialty in itself, and therefore more endoscopic examinations are carried out there, and the removal of foreign bodies from the chest is more widely reported. In this country it seems that either insufficient use of the bronchoscope is made in diagnosis and treatment, or we are falling behind the standard set up during the first few years of the specialty.

Team work is essential ; the physicians and radiologists are the senior partners to the endoscopist, and in treatment the thoracic surgeon must also take his share in the partnership.

THE USES OF THE BRONCHOSCOPE

Foreign bodies in the air passages.—Only by bronchoscopy can foreign bodies in the bronchus be removed. Diagnosis may be easy, as in two very similar cases which came under my care. Both children had inhaled a squeaker from a whistle, and each discovered that he could amuse his travelling companions on the journey to Edinburgh by squeaking on forced expiration.

The possibility of the presence of a foreign body as a cause of many chest symptoms is too often forgotten. I have never been able to explain why so many more foreign bodies are removed (from the chest) in the bronchoscopic clinics in Philadelphia than in all our clinics in this country. The only explanation seems to be that in this country the inhaled foreign bodies are coughed up or partly forgotten.

The diagnosis of a foreign body may be difficult. This may be illustrated by a case which I have previously reported, in which

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I removed a mutton bone, half an inch by one inch, from the right bronchus of a patient whose only complaint was intermittent cough and whose chest was reported clinically and radiologically clear.

Bronchoscopy is essential in the diagnosis of many lung lesions, as is demonstrated by the following cases :—

I.—*With Hæmoptysis as a Symptom.*

This case is of interest not only to the physician but also to the medico-legal expert.

H.N., aged 54. History of a motor accident two years before when he had a dislocation of the hip and a fracture of two or three ribs on the left side and hæmoptysis. He was in bed for about two months; when he began to go about again he had frequent attacks of hæmoptysis. On two or three occasions he was readmitted into hospital but nothing was found in the chest, which remained clear both clinically and radiographically. The patient was examined on various occasions by medical referees, with regard to compensation, and this was continued on account of the hæmoptysis. He was referred for bronchoscopic examination and this was carried out under avertin. A minute polypus was discovered at the mouth of the middle lobe bronchus on the right side. This was removed for pathological report and was found to be a definite spheroidal-celled carcinoma.

II.—*With Cough and Hæmoptysis as Symptoms.*

Mrs. R., aged 49. History of attacks of hæmoptysis for many years. The chest was clear both clinically and radiologically and it was thought that this was a case of early pulmonary tuberculosis. The patient was sent abroad for one year. The chest was found to be clear but the hæmoptysis continued. Bronchoscopy revealed a small nævus at the carina extending down the medial wall of the right bronchus. Although this could have been eradicated by diathermy it was thought best to leave it alone on account of its position and for fear of after-contraction which might narrow the bronchus. The attacks of hæmoptysis are now at wider intervals.

III and IV.—*Two Cases having Cough as the only Symptom.*

History of a cough for many years—coming on in spasms—very little sputum and occasional hoarseness. Clinical and radiological examination of the chest was negative. Both patients had marked paroxysmal attacks of coughing leaving them almost prostrate. Bronchoscopic examination showed, in both cases, that the whole of the middle line of the bronchus embodying the musculo-trachealis was raised on coughing in a collar-stud formation passing forward on to the anterior wall of the trachea, keeping up a spasm of coughing. It is interesting to note that in one of these cases Sir John Fraser performed cervico-dorsal ganglionectomy and that there has been no return of the symptoms.

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V.—*With Hæmoptysis and Cough as Symptoms ; Radiologist's Report Leading to a wrong Diagnosis.*

Patient first seen six years ago. The radiologist reported a carcinoma of the upper lobe bronchus with an occlusion of the bronchus. Patient had a cough for some time and was spitting up blood. Clinically the chest showed a dullness over the right middle lobe. Bronchoscopy did not confirm these reports, but instead revealed a large abscess connected with an aberrant small bronchus opening into the right eparterial bronchus. This abscess was aspirated and was found to have chronic thickened walls. The patient has had further bronchoscopic drainage at intervals during the last six years.

Treatment with a bronchoscope is only a further advancement in diagnosis. It is the best method of treating many forms of lung abscesses.

Bronchiectasis.—Since 1922 I have been carrying out the method of bronchoscopic drainage referred to in previous reports, using in many cases the introduction of a boric solution, or normal saline solution, as a means of dilution if the pus is too thick to be evacuated by normal suction. In these cases bronchoscopy is the ideal treatment—allowing free drainage of the lower part of the lung so that daily postural coughing may be carried out. In some cases it is necessary to dilate, or even over-dilate, the narrowing above the various cavities in the bronchi. I have been able to report a number of complete cures out of about two hundred cases. In almost every case of bronchoscopic drainage the patient has been benefited. Some patients return voluntarily and ask to be bronchoscoped again whenever they notice that there is a damming-up of secretion shown by the return of the bad odour to their breath. A few, after one examination, have been considered unfit for further treatment.

In modern chest surgery the operations of lobectomy and thoracoplasty have become much easier to perform, but there is no doubt that in many cases of lung abscess in which the chest has been opened radically the abscess would have been cleared up by bronchoscopic drainage. In cases of bronchiectasis, removal of the infected lobe would effect a certain cure, but in the majority of cases, unfortunately, the disease is not limited to one lobe but extends to three—the middle and lower lobe right, and the lower lobe left. In these cases the removal of one lobe would not effect a cure, nor would the removal of the whole lung. Pneumothorax in these cases has also failed. Phrenic evulsion has proved successful in a few cases, but only where the lower lobes have been affected.

The bronchoscopist should be the final judge as to whether the patient's chest is in a fit condition to warrant an external operation.

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Bronchoscopic treatment of tumours of the lung.—The simple tumour of the bronchus, with its accompanying symptoms of cough and occasional hæmoptysis, calls for bronchoscopic treatment. Many cases have been published at various centres on this subject.

In lobar pneumonia and in bronchopneumonia recovery by absorption is usually expected. For some unknown reason in a few cases recovery takes place slowly by organization, and this may go on to the formation of pus—that is, to a lung abscess. If, however, this slow organization is recognized early and bronchoscopic examination is carried out, the establishment of drainage, the permission of better aeration, or the removal of pus, will allow of a rapid recovery and will prevent the disease from becoming chronic or a bronchiectasis being established.

Thus closer co-operation between the physician and the bronchoscopist is necessary but unfortunately the general practitioner has yet to learn that in the use of the bronchoscope we have a diagnostic and therapeutic means which cannot be disregarded in the treatment of chronic non-tuberculous diseases of the chest.

H. V. MORLOCK : From experience of some 4,500 bronchoscopies, in 1,100 patients, I hope to be able to show the actual value in these cases. These 1,100 patients have fallen into three large groups, namely those with (1) pulmonary suppuration ; (2) new growths, innocent and malignant ; (3) unexplained hæmoptysis ; and also into smaller groups, such as those having collapsed lobes, tuberculous patients, and asthmatics.

Dealing first with pulmonary suppuration, I will discuss bronchiectasis now, and abscesses later.

Even if there is a diversity of opinion about the value of treatment of bronchiectasis by bronchoscopic lavage, there can be no doubt that every case of bronchiectasis should undergo a diagnostic bronchoscopy. The reason for this is that in a number of cases the bronchiectasis is secondary to some intrabronchial disease, which can only be diagnosed by bronchoscopic vision, and to treat the secondary bronchiectasis, without first considering the ætiological factor, is irrational.

We have carried out this diagnostic bronchoscopy in 240 cases of bronchiectasis, and have found six malignant new growths ; six innocent new growths ; one foreign body ; one lung stone, eroding the bronchus and causing obstruction ; four fibrotic stenoses, of unknown ætiology ; two left middle lobes, which were the site of the bronchiectasis, a point of importance if lobectomy was being considered. Thus, in 8.5 per cent. of the cases, the diagnostic bronchoscopy has yielded a result of importance.

There is only one radical treatment of bronchiectasis, and no other treatment at present known will cure the patient, but many patients are unwilling to take the risk involved in the operation of

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lobectomy. A smaller number are unsuitable subjects for lobectomy because of the bilateral nature of their disease.

We have treated 115 patients by postural drainage and bronchoscopic lavage. Unless they were suffering from bilateral bronchiectasis, they were all advised to consider submitting themselves for lobectomy before we undertook bronchoscopic treatment.

The procedure we adopt is to carry out a bronchoscopic drainage at weekly intervals, and then as the condition improves, to lengthen the interval between treatments, up to six weeks. Finally the patients decide to come to the clinic when they feel the need of treatment. All show an initial improvement, and the majority have so progressed as to be able to lead a useful life. During the six years under consideration, four patients have died whilst under treatment, four more left off treatment and subsequently died. Of the 107 still receiving treatment and remaining well, not one is cured, and it must be expected that in the course of another six years, some more of them will die from their disease. This fact does not detract from the value of bronchoscopic drainage as a valuable palliative treatment for those patients who are unwilling to submit to lobectomy, or are unsuitable for it.

It has been suggested that these patients would have done just as well on postural drainage alone. The answer to this suggestion is that the majority only come up for treatment when they feel the need for it, and we do not believe that, after having undergone some thirty to seventy bronchoscopies they would, of their own accord, present themselves for further treatment unless they were deriving benefit from it.

Abscesses.—In abscess of the lung, the necessity for a preliminary diagnostic bronchoscopy is even greater than in bronchiectasis, for the following reasons: (1) A causative factor may be found. (2) If a lung abscess is to heal by medical treatment, the bronchus through which it drains must be free, and this can be known only by bronchoscopic vision. (3) In the medical treatment of a lung abscess, postural drainage is an important factor, for unless the exact bronchus through which it drains is known—and it can only be known by direct vision—a faulty position of drainage may be chosen.

For these reasons, we have carried out a diagnostic bronchoscopy in 163 cases of abscess. We have found eight malignant tumours and one innocent one. In all the cases we have been able to ascertain the position and condition of the bronchus through which drainage takes place.

The diversity of opinion on the treatment of lung abscesses is well illustrated by the discussion at the last meeting of the British Medical Association in Belfast, when one speaker, without quoting his experiences, condemned bronchoscopic treatment. Another,

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with the experience of only a few cases, was not without enthusiasm, while the surgeons were advocating earlier operative interference. To those who have had experience of lung abscesses this diversity of opinion is not surprising, for there is no one single therapeutic measure which can be considered to be the method of choice in every case of lung abscess. Each method has its value, and the real problem is to know in which case to employ it.

In order to learn in which cases bronchoscopic treatment would be of value, we decided to use it in all the cases which came to us, and after having dealt with 117 cases, we consider that we are able to suggest which cases will respond to this treatment, and which are best dealt with by other measures. The cases which respond to bronchoscopic treatment are those with single abscess cavities. Their position, or their duration, does not appear to influence the results to a great extent, but what is of significance is the amount of inflammation in the surrounding lung tissue. The greater the amount of inflammation, the smaller the chance of success. When this surrounding inflammation is very extensive and intense, a carbuncle-like condition of the lung is produced, in which secondary abscesses and bronchial dilatation appear. This condition is sometimes called bronchiectatic abscess; in such cases bronchoscopic treatment is of little value.

We have treated ninety-eight single abscesses, including our early cases, some of which we would now consider unsuitable for bronchoscopic treatment. Seven patients died during treatment; in three an empyema developed, and these were dealt with surgically; fourteen failed to improve; one was improving, but discharged himself; seventy-three recovered. These results, although not entirely unsatisfactory, leave much to be desired, and now that we know which cases respond to treatment, we should be able to improve upon them.

We have had eighteen cases of bronchiectatic abscesses. The first thirteen we attempted to treat, and in five of these we succeeded in rendering the patients afebrile, but were unsuccessful in dealing with the residual bronchiectasis. The later cases we have not attempted to treat bronchoscopically, but have called in our surgical colleagues to deal with them.

New growths.—Perhaps the most valuable service which is rendered by bronchoscopy is the help which it gives in the diagnosis of bronchial new growths. Without its aid the diagnosis of this condition is always one of assumption, until a late stage in the disease, when secondary glandular involvement has taken place.

It is true that radiology is helpful in the diagnosis of this condition, particularly after the introduction of lipiodol, when an obstructed bronchus may be demonstrated; more recently this has also been demonstrated by tomography. Nevertheless, the

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true nature of the obstruction can be ascertained only when it has been seen through the bronchoscope and a piece removed and examined microscopically.

We have examined 191 cases of new growth, and in over 10 per cent. of these cases the growth was not suspected before the bronchoscopy, because the presenting symptoms had suggested an abscess or a bronchiectasis, and occasionally because the sputum was positive for the tubercle bacillus. It is not very uncommon for a new growth to light up an old tuberculous focus. In other cases, a pleural effusion or an empyema had masked the physical and radiological evidence of the growth.

In another 5 per cent. of cases, the physical and radiological examinations were negative, but the presence of an unexplained cough, stridor, or hæmoptysis, in a male patient over 40 years of age, suggested the possibility of a new growth and the desirability of a bronchoscopic examination. This group is of importance, because if these cases are to be successfully dealt with by lobectomy, they must be diagnosed early, before they have progressed far enough to give physical and radiological evidence of their presence.

Of the 191 new growths, 161 were seen at bronchoscopy, and in the majority a piece was removed for microscopical examination. In five other cases the growth was only seen by means of the retrograde telescope, to be high up in the upper lobe bronchus. In these cases, it was impossible to obtain a piece for examination. In twenty-five cases the growth was not seen, but the findings were so characteristic that a diagnosis of malignant disease was confidently made, and verified by the subsequent course or *post mortem* examination. These characteristic findings are:—

- (1) The distortion of the bronchial wall due to pressure from without.
- (2) A plaster-of-Paris appearance of the bronchial wall.
- (3) A complete loss of the normal characteristic respiratory mobility of the bronchus.

From the point of view of cure the introduction of intrabronchial radon is quite useless; we have treated some ninety cases without one single success. It is true that a few of the patients have survived for two or three years with this treatment, but probably equally many live so long without any treatment. Intrabronchial radon is useful in helping to keep the bronchial lumen patent and thus avoid asphyxia and pulmonary suppuration behind the growth, which previously made the death of these patients so distressing.

Innocent new growths.—The most interesting and satisfactory group with which we have dealt has been the innocent tumours,

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because they can only be diagnosed by bronchoscopy, and once diagnosed, they can be successfully treated. We have dealt with thirteen such tumours, all of which were unsuspected before they came to us. They are either pedunculated or sessile, of the same colour as the mucous membrane, and often finely nodular on the surface.

As regards their histology as we have pointed out elsewhere, and other authors have done the same, there exists considerable difficulty in establishing their true nature, and they are often confused with malignant conditions. We found seven adenomas, all of these were at first considered to be malignant, but subsequent sections confirmed their benign nature, also one fibro-adenoma, two papillomata and three polypoid conditions probably of inflammatory origin.

We have been successful in removing all these tumours by intrabronchial diathermy or radon. In our experience, intrabronchial diathermy is superior, because it leaves much less fibrosis than the radon. In two cases the growth has recurred, the recurrence being successfully treated.

Hæmoptysis.—Hæmoptysis without any definite physical or radiological signs, is always a source of considerable worry, both to the patient and the doctor, because both are equally conscious that it may be the first symptom of a serious disease, and any investigation which will help in establishing the diagnosis is well worth while undertaking. We have bronchoscoped 107 such cases, and have found: fourteen unsuspected cases of dry hæmorrhagic bronchiectasis; three innocent new growths; four malignant new growths; two lung stones, ulcerating the bronchial wall; one tracheal ulcer of unknown ætiology; giving a positive finding in 22 per cent. of cases.

We would suggest that these results demonstrate that bronchoscopic investigation is a necessary investigation in a large percentage of the cases of chronic non-tuberculous diseases of the lungs.

V. E. NEGUS (in reply) said that abscess due to breaking down of carcinoma was difficult to diagnose bronchoscopically, as there might be growth in the parenchyma of the lung with no carcinoma visible in the bronchus. Two such cases he had treated as lung abscess, and it was only later that carcinoma was discovered.

With regard to the coughing-up of foreign bodies, four of those cases were bronchoscoped by himself or a colleague, and the patient coughed up the foreign body before a second attempt could be made.

With reference to the cure of bronchiectasis, he congratulated Dr. Martin on his success; he had not himself achieved it.

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ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY

February 4th, 1938

President—F. J. CLEMINSON, M.Chir.

Discussion on Otitis Externa

DR. H. MACCORMAC: Otitis externa implies an eczematous or infective condition of the external auditory canal, but in dermatological practice it is rare to meet with an eruption thus confined, and I shall therefore extend the meaning to include the more widely spread eruptions of the ear and behind the ear, firstly because of their frequent association with true otitis externa, and secondly because they bear directly upon ætiology and treatment.

I shall confine my observations to the two more common processes, impetigo and eczema. Impetigo is the result of streptococcal—or, in the view of some authorities, staphylococcal—infection of the skin, a delicate blister forming, which on rupturing leaves a superficial raw surface, with subsequent crust or scab formation, this crust presenting a remarkably superficial aspect as if stuck on to the skin. In a fully-developed eruption a mixture of blisters, raw surfaces, and crusts is often seen, representing different types of lesions in different stages of development. The eruption frequently spreads from the face to the ear. Another variety, with which members of the Section are more specially concerned, is secondary to the purulent discharge from middle-ear disease, in which the eruption, originally on the ear, may subsequently spread widely, to involve the face, hands, and arms—that is any part of the exposed skin.

The lesions respond rapidly to 1 per cent. ammoniated mercury ointment, to ultra-violet light, or to an ointment containing prontosil. Here we have a straightforward problem, the accidental infection of previously healthy skin by an ascertained micro-organism; all we have to do is to apply a parasiticide in a concentration sufficient to kill the parasite, but not so strong as to irritate the skin, and rapid and complete cure is the result. Upon these features of impetigo, and its response to suitable treatment, I desire to lay particular stress, because it is often insisted upon by otologists and dermatologists that in the second category, the more chronic eczematous processes—or, as I shall propose to call them, the varieties of seborrhœic dermatitis involving the ear—the most important ætiological factor is an invading micro-organism including such diverse parasites as the streptococcus, *B. pyocyaneus*, the

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pityrosporon, or other monilias. This finds strong support in the opinion of an eminent French dermatologist, Dr. R. Sabouraud, who describes the retro-auricular intertrigo as the epidermic streptococcal lesion in its most frequent localization.*

This view, I suggest, is not confirmed by the therapeutic test, for if the various organisms, the cocci, bacteria, and pseudo-yeasts, were the primary and essential cause of the eczematoid eruptions, the response to suitable antiseptics should be rapid and complete, which is contrary to clinical experience. Further, so far as the yeast-like organisms are concerned, it has been shown by Dr. Allan Bigham† that they are present in normal skins more frequently than in the abnormal. They are thus, it would seem, secondary or contributory factors living in an already diseased tissue, differing fundamentally from the relationship of the streptococcus to impetigo.

If we reject the theory of an infective origin and take another view, classifying these conditions as manifestations of seborrhœic dermatitis, it may be asked what evidence is forthcoming to support this hypothesis. The definition of what we mean by seborrhœic dermatitis is far from easy, for it is a protean dermatosis whose characteristics clinicians have had much difficulty in determining.

I will, however, suggest that the key-type is represented by an eruption which affects the scalp, presternal, and interscapular regions, where it may persist in a relatively inactive phase causing little or no inconvenience. Not infrequently other areas are simultaneously or subsequently involved, especially the flexures behind the ears, the axillae, groins, and intergluteal cleft. A further stage is characterized by eczematization, when the eruption assumes the qualities of an eczema, sometimes including the face, which then becomes swollen and œdematous. Having for the purposes of the argument rejected the theory of infection, it is necessary to seek elsewhere for some common factor, and I suggest that a perversion of the functions of the glands in the skin may satisfy these requirements. The evidence is inferential rather than direct. Thus the key-type of seborrhœa affects the scalp, presternal, and interscapular regions, where the sebaceous glands are most densely distributed. Further, the ringworm infections of the head die out spontaneously at, or shortly after, the establishment of puberty. This is most reasonably explained on the assumption of a physiological alteration in the secretion of the sebaceous glands attached to the hairs, which inhibits the growth of the ringworm fungus, and, as it may be speculated, by reason of some disturbance of functions, later on invites the seborrhœic eruptions. Some

* "Entretiens dermatologiques", Paris, 1912, p. 295.

† *Brit. J. Dermat.*, 1937, xlix, 74-9.

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confirmation of this theory is found in the remarkable fidelity of seborrhœic eczema, to the hair-bearing regions—the scalp, beard, and eyebrows ; and in the presence of the tiny red follicular spots, which are observed in presternal seborrhœa as the originating lesion of the more extensive sheets and patches of eruption. Nothing so far has been said of the nature of the eczematous reaction which is so often superimposed on the seborrhœic process. In his masterly analysis of seborrhœa Civatte* has emphasized the importance of an intercellular œdema which, as the microscope reveals, dissociates the cells of the rete malpighii. This intercellular œdema is a characteristic and essential phenomenon in all forms of eczema, and by its further development in seborrhœa the typical eczema reaction is established. Thus the seborrhœoides are predisposed, by reason of their structure, to eczematization. This theory, with all its manifest defects, is at least useful as a working basis for treatment. It envisages three separate factors : (1) An essential dermatitis, possibly of glandular origin ; (2) a contributory infection with a group of organisms varying from streptococci up to the monilias ; and (3) an actual or threatened eczematization. In each individual case the degree and importance of these several factors demand separate consideration.

The skin is often spoken of as a gas-tight and water-tight envelope which covers the body, protecting it and preventing desiccation from evaporation of the body fluids. It is, of course, far more than this, for it is one of the largest organs of the body, charged with many and important functions. It is logical therefore in the treatment of skin diseases to endeavour to heal the eruption by external agents, both chemical and physical, which act directly upon the lesions, and this, with certain notable exceptions, forms the basis of dermatological therapeutics. For practical purposes these remedies may be divided into three classes : First the simple protective and soothing ; secondly the selective, which may be so called because of their specific effect on certain diseases ; and thirdly the parasiticide, including antiseptics.

In the treatment of otitis externa the soothing or protective agents are indicated where eczematization is present either in a pronounced or moderate degree, as in most forms of eruption of the meatus. Oily calamine lotion is the most generally useful : it can be applied either directly, or on cotton-wool saturated with the solution. The residual powder is cleaned off with liquid paraffin—and this applies especially to the meatus. A simple remedy of this kind may appear inadequate where bacterial contamination is detected, seemingly demanding the use of antiseptics or similar active agents. In this connection two cases may

* *Brit. J. Dermat.*, 1924, xxxvi, 471.

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be quoted. The first refers to a medical practitioner who developed a boil in the external auditory meatus, complicated by cellulitis with high fever. This was followed by a chronic discharge from the ear contaminated by *B. pyocyaneus*. In spite of the application of various antiseptics and vaccine treatment the discharge and local irritation persisted for four months, when the antiseptics were discontinued and calamine liniment with ichthyol prescribed. In two days the condition was cured. The second case refers to a patient who stated that his ear-drums had been ruptured during the war. He was seen in 1932 with a discharge and eczema of the right auditory meatus following his war injury. During the whole period since the injury he had faithfully applied various drops and antiseptics without effect. Calamine liniment with ichthyol was ordered, and within a few days the condition was completely cured and has remained so ever since.

These two patients are without parallel in my practice, for the average case of otitis externa is far from being so responsive. They taught me the significance of over-treatment, a lesson I have since endeavoured to keep in mind when treating similar conditions.

The selective agents include tar and sulphur. In retro-auricular dermatitis crude coal-tar is often an effective remedy. It is prescribed in zinc paste, a drachm to the ounce ; or perhaps more conveniently dissolved in acetone and used as a paint. In the latter form it may be applied to the folds of and behind the ear. Its disadvantage lies in the dirty appearance that it produces. In general terms it can be said that where tar is indicated, X-rays are useful. X-rays are not used alone ; they are complementary to the local applications and probably act in two ways—by diminishing the itching and by acting on the glands in the skin. Their effect in modifying itching is important, because many eczematous conditions of the ear are maintained by the constant rubbing and scratching of the affected skin. Relatively small doses are sufficient, and can be repeated at two to three weeks' intervals. Sulphur has been mentioned, but it is perhaps best avoided because, although useful in some cases, it tends in others to precipitate the eczematous response, thus aggravating the disease.

Finally a word may be said on the use of antiseptics. The association of the streptococcus with retro-auricular dermatitis may demand special treatment, but it is essential to use the remedy in a form and manner which avoids irritating the underlying dermatitis. Silver nitrate, 1 per cent., dissolved in sweet spirit of nitre seems to meet these requirements ; alternatively 1 : 5,000 acriflavine solution may be used, applied on gauze.

Dr. G. EWART MARTIN : Otitis externa is purely a skin complaint which, but for the curiosity of its position, would come under the

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care of the dermatologist : when the auricle is involved the dermatologist is consulted, and when the meatus is infected the otologist has to diagnose and treat.

Every skin infection has two causal factors : (1) The invading organism. (2) The receptivity of the individual.

(1) In the production of an otitis externa, apart from a blood-borne infection, there must be an initial lesion of the skin surface to allow of the entry of the organism. This can be brought about by direct injury on the part of the patient himself by scratching the ear, or by the use of a hairpin or a match-stick to remove wax. Injudicious drying, or rubbing, of the ear may be the cause of the initial injury. Syringing the ear with either too hot or too irritating a lotion, or damage by the point of the ear syringe, may be the primary factor in the production of an otitis externa.

(2) The second factor is possibly the patient's physical condition, though dermatologists are convinced that certain individuals are more prone to skin affections than others, while heredity, climate, and habit all play their separate parts.

No benefit will be obtained by discussing at length the various types of otitis externa, as, for example—

(i) The acute circumscribed external otitis or furunculosis of the meatus which is almost always confined to the fibro-cartilaginous portion of the meatus.

(ii) The diffuse otitis externa, which may be either acute or subacute ; the invading organism is usually the streptococcus. This very often goes on to an erysipelas of the auricle in which the whole canal is involved.

(iii) Croupous and hæmorrhagic external otitis which, fortunately, are rare, though cases of the former very often occupy the beds in a fever hospital for weeks.

(iv) The various infections due to fungi usually grouped under the title otomycosis. These infections are possibly mixed, there being first a mild staphylococcal infection followed by the invasion of a fungus—the infection may be confined to the walls of the bony meatus, but it may spread over the drumhead. Possibly *Aspergillus niger* is the most common infective fungus and the most often missed.

Eczematous otitis externa, however, demands fuller discussion. It may be acute or chronic.

The acute stage is possibly of short duration ; there may be a tense glossy redness of the lining of the external auditory meatus with a varied amount of oozing, sometimes hæmorrhagic. Each case probably goes through all the phases of the eczema reaction and may be seen in any one of the stages, thus accounting for the various descriptive findings. Itching is not usually continuous but recurs every few hours and is exaggerated when the patient is at

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rest or over-heated. Scratching tends to aggravate the condition. The inflammation usually flares up and dies down several times before healing takes place. In most cases the initial stage is rarely seen as the patient only seeks advice when the condition has become chronic. The condition may last for one week, months, or even for years, but in most cases eventually heals without scarring. The organisms found are the usual simple organisms found on the skin, namely the staphylococcus, diphtheroids, a Gram-negative coccobacillus, and a streptococcus.

In chronic cases the appearance of the meatus varies from that of a scaly dermatitis to a marked lichenification leading to a stenosis of the meatus, and almost amounting to a condition of elephantiasis.

Two factors are necessary for the development of the eczema reaction: (a) A specific irritant, and (b) a skin which is idiosyncratic with regard to the irritant in question. The term "irritant" is a relative one, for in almost all cases the irritant in a given case is not a universal irritant; its irritant properties being dependent on the degree of skin idiosyncrasy. Such irritants may be physical, chemical, or bacterial—using the last term in its widest sense—and while they usually come in contact with the skin from outside, they may reach it by way of the blood-stream.

With bacterial irritation preliminary chemical injury or mechanical trauma is an important adjuvant in initiating the eczema process. The skin idiosyncrasy or hypersusceptibility to the "irritant" is usually strictly limited to one substance or possibly to a few substances. It may be congenital or acquired and, while usually shown by the entire skin surface, it may be limited to a localized area. The development of idiosyncrasy has been shown to be due to previous contact with the irritant, but this has been demonstrated only in a few cases. In the majority of cases no reason is evident for the change in the skin response. The essential feature of the eczema reaction, when contrasted with the recognized reaction to injury, is its persistence for long periods, in other words the lack of any immediate tendency to progress towards healing.

Eczema of the external auditory meatus, in its acute and chronic stages is not accompanied by deafness unless the meatus is blocked. There is no pain unless the ear has been scratched or secondarily infected, but there is an intolerable itch, with a constant feeling of fullness, and a wet, sticky, uncomfortable ear or—when the eczema is chronic—a dry scurfy irritable meatus with a thickening which extends to the auricle.

If we are right about our supposition of the causal factor of the various groups of otitis externa, then acute otitis externa or furunculosis possibly follows the same seasonal periodicity as an acute otitis media, while eczema of the external meatus should be endemic.

I have reviewed all the cases in my own department of the

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Royal Infirmary, Edinburgh, during the last four years, and also the cases seen in private practice during the same time. It might have been more beneficial to have taken the cases over a longer period, but during this time we have tried to separate the two groups of cases as much as possible.

TABLE I.—CASES OF OTITIS EXTERNA UNDER MY CARE IN THE EAR, NOSE AND THROAT DEPARTMENT OF THE ROYAL INFIRMARY, EDINBURGH.

1934	..	..	..	..	..	..	..	..	268
1935	..	..	..	..	..	..	..	..	206
1936	..	..	..	..	..	..	..	..	207
1937	..	..	..	..	..	..	..	..	271
Cases of Acute Otitis Externa or Furunculosis :—									
1934	..	..	..	..	..	..	..	..	119 (46%)
1935	..	..	..	..	..	..	..	..	112 (54%)
1936	..	..	..	..	..	..	..	..	107 (51%)
1937	..	..	..	..	..	..	..	..	152 (56%)
Cases of Eczema of the Meatus were :—									
1934	..	..	..	..	..	..	..	..	95 (35%)
1935	..	..	..	..	..	..	..	..	62 (30%)
1936	..	..	..	..	..	..	..	..	69 (33%)
1937	..	..	..	..	..	..	..	..	81 (29%)

TABLE II.—FOR COMPARISON WITH TABLE I. CASES OF ACUTE OTITIS MEDIA, CHRONIC OTITIS MEDIA AND OTITIS EXTERNA REPORTING FOR THE FIRST TIME DURING THE SAME PERIOD.

	Acute otitis media.	Chronic otitis media.	Otitis externa.
1934	.. .. 244	217	268
1935	.. .. 247	229	296
1936	.. .. 205	255	207
1937	.. .. 216	270	271

TABLE III.—CASES OF OTITIS EXTERNA.

Furunculosis.		Dermatitis of the auricle.	
Private cases	R.I.E. cases	Private cases	R.I.E. cases
31%	51%	58%	32%
There was one private case of <i>Aspergillus niger</i> .			

TABLE IV.

Monthly Total No. of Cases.	1934.			1935.			1936.			1937.			Average for four years.							
	Otitis Ext.	Eczema.	Furuncles.	Acute O.M.	Otitis Ext.	Eczema.	Furuncles.	Acute O.M.	Otitis Ext.	Eczema.	Furuncles.	Acute O.M.	Otitis Ext.	Eczema of Meatus.	Furuncles.	Acute O.M.				
Jan. ..	21	7	8	46	24	6	14	33	12	4	6	21	15	3	8	29	18	5	9	32·25
Feb. ..	25	11	9	36	16	6	8	35	23	8	12	26	18	3	14	20	5	7	10·75	26·75
March ..	19	7	9	27	18	4	10	24	23	8	12	24	16	4	12	21	19	5·75	10·75	24
April ..	23	8	11	15	13	2	6	23	18	4	8	18	10	—	10	22	16	3·5	8·75	19·5
May ..	22	9	7	18	15	4	8	17	14	2	11	17	17	7	8	19	17	5·5	8·75	17·75
June ..	19	8	10	10	8	1	6	17	22	7	12	22	26	10	12	16	18·75	6·5	10	16·5
July ..	26	7	17	12	24	4	17	17	12	6	2	11	25	10	12	14	21·75	6·75	12	13·5
Aug. ..	28	10	13	19	18	11	8	15	16	6	7	14	28	9	10	13	22·5	9	9·5	15·25
Sept. ..	21	13	9	10	19	5	12	12	8	3	5	13	27	11	12	11	18·75	8	9·5	11·5
Oct. ..	26	9	9	15	11	3	6	17	25	6	16	12	29	10	15	15	22·75	7	11·5	14·75
Nov. ..	19	2	11	17	22	8	10	16	17	10	6	14	25	7	15	16	20·75	6·7	58	15·75
Dec. ..	19	4	6	18	18	8	7	21	17	5	10	13	35	7	24	28	22·25	6	11·75	20
Total ..	268	95	119	243	206	62	112	247	207	69	107	205	271	81	152	214				

TABLE V.

	In the Royal Infirmary.			In private.	
	Total.	Male.	Female.	Male.	Female.
Furunculosis	.. 490	265 (54%)	225 (46%)	52%	48%
Eczema	.. 307	172 (56%)	135 (44%)	54%	46%

The ages of cases vary from 2½ years to 76 years, the general age being 36. The organisms vary (staphylococcus, diphtheroids, Gram-negative coccobacillus and streptococcus).

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There is, of course, in these statistics, a large source of error, because the otologist sees only a very small proportion of the cases of external otitis, except in acute furunculosis when pain drives the patient to the specialist. In these cases the condition is quiescent for a long period and then recurs, very often more aggravated than previously. Among them were doctors, nurses, housewives, school teachers, clerks, bus conductors, miners, engine drivers, shop assistants, commercial travellers, labourers, chauffeurs, telephone operators, and soldiers, therefore a sedentary life or an active life can have little to do with the occurrence. Occupation plays little or no part. The usual age is from 30 to 36.

Furunculosis increased during the beginning of the swimming season, that is in July, otherwise it followed the same seasonal course as acute otitis media. Eczema of the meatus showed itself more active in August, probably again due to the increased use of swimming baths and sea bathing. There was no proof that general debility had much bearing on furunculosis.

The period of treatment varied from seven days to two years.

TREATMENT

(1) *The cleansing of the external auditory meatus.*—Syringing with warm boric lotion is the best means of removing epithelial débris, or watery—and very often bad-smelling—discharge from the meatus. Strong antiseptics increase irritation. Weak lysol or carbolic lotion may harm many who have an idiosyncrasy to it. In a few cases it may be necessary to cocainize the meatus before removing the crusts, especially when the meatus is narrow and the auricle thickened. Hydrogen peroxide, if used to moisten the crusts in an otitis externa, only seems to irritate, and very often leads to eczema of the meatus. It should never be left in the ear.

(2) *The application of a suitable non-irritating antiseptic or other local treatment.*—The treatment of acute and chronic cases must naturally differ.

Acute otitis externa or furunculosis.—In the Royal Infirmary, Edinburgh, it has been our practice in furunculosis not to incise, unless in extreme cases, believing that incision will only act as a further point of access for the invading organism. After the meatus has been cleansed and the extent of the furunculosis defined, the meatus is packed with $7\frac{1}{2}$ per cent. solution of aluminium acetate in water. This acts as a dehydrant and also has a slight anæsthetic action. The use of a compress of a solution of magnesium sulphate over the ear, in conjunction with the aluminium acetate packs, gives comparative relief from pain. The pack is removed after twenty-four hours, when it is found that the furuncle or furuncles have burst. Aluminium acetate gives rise to desquamation in the ear. It has been found best not to syringe out the ear

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after the first or second aluminium acetate pack, but to reinsert the pack without syringing until the third day. The pack is changed to 10 per cent. ichthyol in glycerine on the third day. Usually at the end of the third or fourth day the meatus is normal. As furuncles come in crops treatment must be continued until the meatus is healthy. It has been found beneficial to paint the ear with 2 per cent. gentian violet in water.

Treatment by packs of a suitable antiviral, either in liquid form or in a paraffin or vaseline basis, has proved effective, but not in the later stages.

Ointments tend to clog up the ear, demand more cleansing, and often give rise to a superficial thickening of the drum. When the auricle is affected the necessary antiseptics can best be applied as an ointment, such as ichthyol in a diluted paste base, or 2 per cent. sulphur and salicylic acid in vaseline, or ammoniated mercury ointment.

Eczema of the meatus.—In the early stage, gentle syringing with boric lotion will clean the meatus, but great care must be taken not to damage the deeper parts of the skin for fear of a secondary streptococcal infection. The ear can then be packed with aluminium acetate for twenty-four hours, and later with 10 per cent. ichthyol in glycerine. In the chronic stage the ear has to be cocainized before the scales can be removed by syringing, and it is then painted with 2 per cent. silver nitrate in spirit of nitrous ether. If the case is first seen when the meatus is narrow and the auricle glazed, enlarged, and thickened, an attempt must be made to dilate the meatus by packing with ichthyol or argyrol in glycerine until there is room for removal of the scales.

No case can be counted as cured unless the ear has remained dry, unitching, and non-scaly for two years.

(3) *Treatment of the cause.*—General treatment has been addressed to constitutional disturbances, idiosyncrasies, and any neuropathic upset. In acute furunculosis which has become chronic, vaccine therapy, and injections of various remedies—such as manganese—have proved effective. In eczema of the external meatus the administration of vitamins A and D seems to be the only general remedy.

Mr. ERIC WATSON-WILLIAMS said that otitis externa almost disappeared from the realm of difficulty if hydrogen peroxide were rigidly excluded from the ear and indeed from the otological department altogether.

The skin of the ear was not quite the same as the skin of the rest of the body. It was provided with cerumen to keep it waterproof. Therefore, except when syringing for foreign bodies, water should on no account go into the ear.

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For local application to the very resistant case with infiltration, he used Bonney's paint (1 per cent. of brilliant green and of crystal violet in 50 per cent. alcohol). It stained the patient's bed-linen, and it was essential to cover the ear.

In most cases of otitis externa, local treatment was not more important than general treatment.

In impetigo if it were made a rule to give the children iron for a month the result was to shorten and simplify the treatment of the ear very greatly.

Another troublesome condition not often seen now was a gouty otitis externa: local treatment was not indicated, but if the gout was brought under control, the ear trouble would cease. Manganese was a modern fashionable remedy. *Mist. ferri arsenicalis* gave quite as good results.

Mr. RITCHIE RODGER said that in the chronic eczematous processes involving the ear, the dangers were the use of too strong preparations and the scratching of the irritating itching ears. If those two things could be eliminated most cases would clear up very quickly. He had found little difficulty in getting the cases under control with a simple ointment of zinc oxide and salicylic acid, 5 gr. of each, in lanoline, which seemed better than vaseline for the purpose.

With regard to furunculosis, he agreed that they must go beyond the local application. Many patients had had boils elsewhere, indicating a diminished resistance to the staphylococcus. He had generally used collosol manganese, with iron and arsenic given internally as well.

Mr. W. S. THACKER NEVILLE said that in seborrhœic eczema silver nitrate followed by ultra-violet light was worth employing. The best treatment for furunculosis was diathermy. Both ears were treated with diathermy to prevent the vertigo, which would occur if one ear was treated. After such treatment the furuncle became swollen and soft and, on the night after the treatment, this resulted in pain which might necessitate the use of morphia unless the furuncle was opened. The drawback to diathermy was that it necessitated the use of lint soaked in saline and also the employment of pressure. He had lately employed a Siemens short-wave 6-metre machine and with this it was possible to focus the heat and there was no need to apply pressure, as the glass covering the electrodes merely touched the ear. Such heat was the perfect heat for a furuncle, and it was possible to use it no matter how tender the ear was.

Mr. J. F. O'MALLEY said that he had always found cases of seborrhœic eczema associated with seborrhœa of the scalp, and any attempt to treat the local ear trouble would be futile unless the scalp

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were treated simultaneously. To treat the scalp satisfactorily an effective shampoo had to be used. In the early stage when the ear trouble was fairly active the shampoo should be used twice a week for five or six weeks. The most effective shampoo was soft soap dissolved in spirit.

There were two phases of the local ear condition which were always obvious, namely, active weeping raw spots, and, simultaneously, patches undergoing scaly change. The treatment he had adopted was calamine lotion and afterwards a combination of Lassar's paste, ammoniated mercury ointment, and liquor carbonis detergens, making a thin ointment with liquid paraffin. If the scaly trouble was persistent he added salicylic acid.

Mr. T. B. LAYTON said that he had only seen acute hæmorrhagic otitis externa in influenza, but he believed that it was always secondary to an inflammation of the middle ear passing up from the nasopharynx. If one thought of the condition purely as an otitis externa, one might not realize that it was possible for the trouble to pass backwards into the mastoid, antrum, and even to the bone.

With regard to Mr. Martin's group of croupous otitis externa, he had only once seen a case of diphtheria of the outer ear; a membrane spread out to the pinna. He believed that in all the other cases it was a question of a potentially virulent bacillus growing as a saprophyte. In a moist external auditory meatus the moisture was usually the result of discharge from the middle ear. Very often in these cases it was not a question of the virulent Klebs-Löffler bacillus, and he did not think that the patients should be sent to a fever hospital until a virulence test had been carried out. In the out-patients' department a small amount of education of the mother should make it perfectly safe to prevent the spread of infection. If the organisms were in the nose as well it was, of course, a different problem.

He thought this form of croupous otitis externa differed very little from the otitis externa which was secondary to otitis media. It was important to remember that all these skin organisms needed moisture in which to grow. If the ear was kept dry their growth was inhibited, but a liquid was required to keep it dry, and for this purpose he found glycerine the most useful. At the same time, in cases of otitis externa secondary to otitis media there was a considerable amount of epithelial débris, and sometimes this was very difficult to mop off the surface of the drum-head; moreover, by mopping, the organism might be driven through the perforation and give rise to secondary infection of the middle-ear cleft. The mechanical technique required to remove this débris in such a way as not to do more harm than good was a very delicate procedure. Hydrogen peroxide he thought of value but great care must be

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taken to remove all of it afterwards and then to dry the ear. He agreed with Mr. Thacker Neville that in cases of furunculosis the mental factor was important. He believed it to be the most important of all.

Mr. HORACE MATHER agreed that the wholesale use of peroxide was a most disadvantageous thing, but the real trouble was the fact that peroxide contained sulphuric acid, which is put in commercially, to prevent the peroxide returning to water. It was the sulphuric acid which was the mischievous element, and if only the sulphuric acid was diluted immediately before use with bicarbonate of soda, the peroxide could be used with perfect safety without any trouble to the skin of the meatus.

Mr. A. TUMARKIN said it seemed to be taken for granted that if an ear was syringed it was thereby cleaned completely, whereas in fact, the inferior margin of the tympanic membrane formed an acute angle with neighbouring structures and the lack of thorough cleansing in this region might lead to re-infection of the tissues. For clearance by syringing he used 70 per cent. spirit. If one wanted to dry the ear ether was by far the best thing to use. He was glad that one of the speakers had mentioned the great importance of the scalp in seborrhœa.

The following case was shown :—

Chronic Labyrinthitis.—E. A. PETERS.

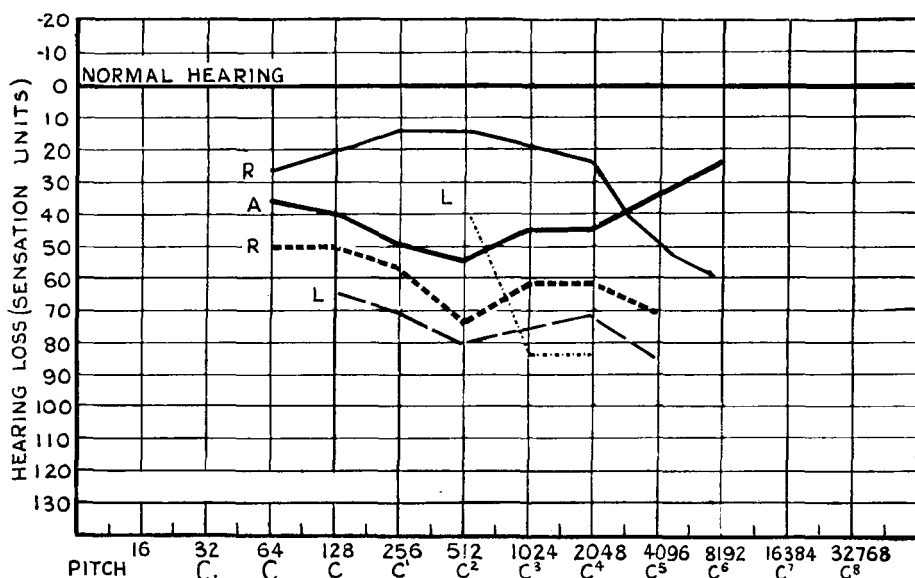
(This case was reported in *Journal of Laryngology, Rhinology and Otology*, 1913, 101.) G.H. (now aged 84). In 1912 chronic labyrinthitis with vertigo. Drainage of perilymph of left external semicircular canal by insertion of one end of a strand of silkworm gut into the left external canal and the other between the bone and dura mater. Recovery from vertigo. Perilymph has been seeping through the wound until three months ago. Vertigo has now reappeared.

Condition on admission (May 2nd, 1912).—There has been gradual loss of hearing, and for the last two years vertigo has been present and has increased; patient has a tendency to fall backwards; sometimes he has been unable to cross the room unaided. Hearing: 12/60; T.F. 128 — 9 secs. Labyrinths show diminished sensitivity to rotation; nystagmus is slight and erratic.

At the operation the antrum was opened by a post-aural incision and the posterior approach made to the external canal was uncapped and a silkworm gut strand passed into the canal and the other end passed into the posterior fossa extradurally. A skin-graft was applied. Slow but uneventful healing took place with continuous seepage of perilymph. *September, 1912*—Hearing: 14/60; T.F. 128 — 7 secs.

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Present condition.—The patient complains that since the ear became dry the vertigo has reappeared, but the type is not so severe as before and there is no definite direction. He can walk a mile. Left ear: Antral cavity dry. The tympanic membrane is seen with injected malleus and is thickened; it is mobile. The audiometric graph shows considerable loss of conduction in the left ear and a labyrinth about 15 decibels inferior to the right. This evidence indicates that there has been a chronic labyrinthitis on both sides, with greater involvement of the left. Drainage of the left external



Line at "A" indicates reading of audiometer when testing a person of normal hearing with the D-80904 bone conduction receiver.

Continuous line indicates perception *via* membrana tympani; Interrupted line, perception *via* bone conduction.

canal was effective in the first instance, but now the seepage has ceased and vertigo has reappeared in a modified degree.

Rotation test: Nystagmus cannot be detected on extensive testing, nor does the patient feel giddy on completion of rotation.

I submit that the case shows:—

(1) That drainage of the perilymph has relieved the vertigo without destroying the hearing.

(2) It is doubtful whether this relief is due to drainage of a labyrinthitis or of a condition arising from insufficient drainage which in the ear resembles glaucoma in the eye.

(3) The cessation of seepage into the outer ear accompanied by a relapse of vertigo suggests that the drainage into the extradural space was insufficient. This attack of vertigo was not severe.