SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF LARYNGOLOGY.

May 3, 1929.

President—H. BELL TAWSE, F.R.C.S.

FURTHER REPORT OF CASES PREVIOUSLY SHOWN.

Growth on Palate — Basal-celled Carcinoma — (Shown March 4, 1927).*—H. BELL TAWSE, F.R.C.S. (President).—In April 1927, a tube (25 millicuries) of radium was buried in the growth for twenty-four hours. Within three months the tumour had disappeared and the surface had healed.

The area is still visible as a whitish scar. Twelve months later slight recurrence took place. Patient was lost sight of till a few weeks ago. The growth has markedly increased. She has chronic asthma and some cardiac dilatation.

Is a further application of radium worth while, or is destruction by diathermy indicated?

Mr STANLEY GREEN said that the radium treatment should be repeated. When rodent ulcer had recurred on external surfaces, and after healing then again reappeared, the reapplication of radium had a good effect.

Mr WALTER HOWARTH said he thought that diathermy was more useful in these cases. Radium was not usually very effective in recurrences, even though it might have destroyed the primary growth. Applied to secondary growths, radium seemed to disseminate cancer cells through the bone and, though there might be a good temporary result, a diffuse carcinomatosis would probably occur later at some distance from the site of application of the radium. The diathermy spark, on the other hand, would cause necrosis of the bone wide of the cutting edge and so tend to destroy any outlying cancer cells.

From previous experience he would regard radium as contra-indicated in cases of rodent ulcer in which bone was involved.

Mr RIDOUT said he would treat this with diathermy.

The PRESIDENT, in reply, said that but for the gloomy report of the physicians on the patient's heart and lungs he would have employed diathermy, but under the circumstances radium seemed to be indicated.

Tumour of Larynx—MICHAEL VLASTO, F.R.C.S.—This has been shown twice previously.† The report made to the Morbid Growths Committee by Dr G. W. Nicholson is as follows:—

"The sections show an excessive amount of hyperplasia of the squamous epithelium over a considerable area. At one spot this has proceeded to

* See *Proc. Roy. Soc. Med.*, 1927, xx (Sect. Laryng.), 42

† *Proceedings*, 1927, xx. (Sect. Laryng.), 46. *Proceedings*, 1928, xxi. (Sect. Laryng.), 97.

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efinite invasion of the submucous tissue to a considerable depth, with the production of a small, but otherwise typical squamous-celled carcinoma.

"One section consists of malignant granulations, the epithelium of which shows a considerable amount of polymorphism with atypical nuclei."

Cases and Specimens.

Ulcerative Condition of Throat and Nose. ? Actinomycosis. Case for Diagnosis—MORTIMER WOOLF, F.R.C.S.—This patient is a butcher, and for the last two years he had had an affection of the throat, with much ulceration and much overgrowth; it has spread up the Eustachian tubes and has affected the larynx and nose. The patient is very deaf. The palate seems to be disappearing at the posterior part. As a guess, I have diagnosed actinomycosis. A scraping has been taken to see whether a mycelium is present, and the result reported at the next meeting. The condition seems to be too widespread to be epithelioma. In my experience epithelioma is a local condition spreading towards the centre, rather than a symmetrical condition spreading outwards. Again, there is almost too little pain to indicate a diagnosis of tubercle, and there are large masses of glandular swellings on both sides of the neck. The patient has had large doses of iodides. The condition is now stationary. Is radium treatment likely to do harm, or to do good?

Mr HERBERT TILLEY said that about fifteen years ago there had been a case at University College Hospital which Dr Lieven, of Aix la Chapelle, considered to be one of syphilis of the hard and soft palate. Blood taken from the patient's arm, however, had been Wassermann negative, as was the blood in the case under discussion. Yet, in spite of the negative reaction, Dr Lieven felt certain that the lesion was one of tertiary syphilis. No improvement had followed antisyphilis treatment, and disease extended. Eventually the *Bacillus mallei* was isolated by the pathologist in University College Hospital, and the diagnosis of chronic glanders was established. Later, other lesions appeared in the skin, and the patient died (*Lancet*, October 1903). The case now shown might be of a similar kind. At present the condition resembled epithelioma, but the long history and extensive distribution seemed to negative that idea.

Mr FRANK ROSE said that his impression was that this was a case of neoplasm, and this impression was strengthened by the presence of the mass of hard glands in the neck.

Mr H. BELL TAWSE (President) said that if he had been asked to give a diagnosis, without seeing a microscopic section, he would have had no hesitation in saying that this was malignant disease. The fact that it was bilaterally symmetrical did not exclude that view, and the stony hardness of the glands supported it. He had had a similar case in which the condition had gone on for nine months, and then the patient had died. The microscope had confirmed the diagnosis of malignancy.

Mr MORTIMER WOOLF, in reply, said that apart from the local condition, the man seemed to be in good health.

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Societies' Proceedings

Skiagrams of a Large Diverticulum of the Œsophagus at its Lower End—A. J. WRIGHT, F.R.C.S.—The patient, a boy, when first seen two years ago at the age of 7, gave the history of inability to swallow solid food from birth. Attempts to do so always resulted in vomiting. He was undersized and ill-nourished. X-ray examination and œsophagoscopy disclosed a stricture in the lower third of the œsophagus. This was dilated with bougies, with a resulting temporary improvement in the swallowing. The dilatation was repeated one year later, and it was only recently that, on taking a skiagram in the recumbent position, the diverticulum was discovered.

Mr Wright showed other skiagrams of cases of malignant stricture of the œsophagus in order to demonstrate the mapping out of the stricture obtained by taking the picture with the patient in the horizontal position.

Mr STANLEY GREEN said that he had been doing X-ray work for thirty years and he thought that this method constituted a great improvement.

Mr F. H. WESTMACOTT said that he had seen a similar case, under Mr Burgess, in the Manchester Royal Infirmary. The patient was a woman, who, from childhood, had always had difficulty in swallowing. Her mother, who had the same difficulty, had gradually wasted away from starvation. The patient, under Mr Burgess, was so greatly distressed that she had threatened to commit suicide and had, in fact, once cut her throat, but had been saved. Mr Burgess had opened the stomach and dilated the cardiac end of the œsophagus. He had pulled down the œsophagus, which he found to be elastic, cut off the pouch and attached the gullet to the cardiac end. The operation had proved to be successful, and the patient could now swallow well and was putting on weight weekly. The present case might be treated in the same way.

Mr E. WATSON-WILLIAMS asked whether Mr Wright raised the patient's pelvis. He himself had found it difficult to get an exact definition of the lower border of the œsophagus stricture, even by that means.

Mr WRIGHT (in reply) said that he thought only one case of the kind had been operated upon that had had a fatal result. This boy was just about holding his own, so he (Mr Wright) did not advise operation at present. In reply to Mr Watson-Williams, he thought the mistake was in not getting the patient to swallow the material while actually lying down.

Carcinoma of Upper Part of Œsophagus Treated by Radium—SOMERVILLE HASTINGS, M.S.—On 29th November 1928, a man, aged 65, was admitted to hospital complaining of difficulty in swallowing, increasing during the last three months. A crateriform ulcer, about the size of a florin, was seen on the posterior wall of œsophagus, with its upper border about three-quarters of an inch below the lower border of the cricoid. The œsophagoscope could be passed beyond it and the rest of the œsophagus appeared to be normal.

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A portion removed for microscopic examination was described as a squamous carcinoma.

As the physician reported adversely on the cardiac condition, a radical operation was considered inadvisable, and the use of radium was decided upon.

On 14th December 1928, an incision 4½ in. long was made along the anterior border of the sterno-mastoid, from the sterno-clavicular joint upward. The infrahyoid muscles and larynx were separated by blunt dissection from the sterno-mastoid and great vessels. On reaching the fascial interval, between the œsophagus and the pre-vertebral muscles, the small hard growth could be easily felt, but no glands were encountered anywhere. Eight radon tubes, containing a total of 22 millicuries, were inserted transversely in the pre-vertebral fascia behind the growth, the silk threads attached to them were buried in the wound, the skin was sutured, and two extra sutures were inserted and left untied to close the wound after the removal of the radon tubes, which was carried out on 20th December, six days later. The wound healed by first intention, but an attack of erysipelas of the face supervened, for which anti-streptococcal serum was administered.

On 6th January 1929, the œsophagus was again examined. No growth of any kind was seen and the mucous membrane appeared to be normal, but the previous situation of the growth could be made out with difficulty by the slightly paler colour of the mucous membrane. The patient had put on 6 lb. and was swallowing perfectly.

Mr J. A. GIBB asked how Mr Somerville Hastings gauged the number of radium tubes to be placed in the growth. He (the speaker) had a similar case which he could treat in the same way and he would like some guidance.

Mr F. H. WESTMACOTT said that a fortnight ago he had treated in this way a growth the size of a filbert nut in the post-cricoid area. He had laid it bare, and put in six radon tubes with platinum covers, about 1 cm. apart, each tube containing 1·2 millicuries. The patient had progressed favourably. He (the speaker) had left a small opening in the wound for drainage in case leakage occurred, but he had taken them out a week later as the wound had healed, with the exception of the lower end. On tenth day, however, the patient had had a profuse hæmorrhage and died from ulceration of the carotid artery. Care must be taken not to place a tube near the carotid. He wondered whether that artery should be tied at the time of operation, as he had had a similar occurrence three years ago in a case which he had treated in the same way. The patient in that case also had died from ulceration of the carotid, and after death a radon tube had been found in the vessel wall.

Sir JAMES DUNDAS-GRANT said he would suggest Mr Trotter's plan of detaching the sterno-mastoid and stitching it down over the bundle of vessels so as to separate them from the pharynx.

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Mr WESTMACOTT said that he had done this, but even then the radium tube was so near the vessel wall that the artery had ulcerated within ten days' time.

Mr F. J. CLEMINSON (replying for Mr Somerville Hastings) said that the needles or tubes were spread over an area larger than the growth. It was four months since the patient had been examined by the œsophagoscope, so that the condition at present could not be reported; an inspection would be made a month later.

The whole question of carcinoma in the post-cricoid region and the epilaryngeal region had assumed a more rosy aspect recently; it had been found that epilaryngeal growths of considerable size would disappear under radium treatment. If one carried out the stages of the operation for lateral pharyngotomy, as described by Trotter, up to the point at which the pharyngeal wall was ready to be incised, and then, instead of incising, placed the radon or radium tubes in position the results were likely to be remarkably good. He had seen that morning a case of carcinoma of the aryepiglottic fold. Six weeks ago its size was about that of the terminal joint of the index finger, and it had been treated in this way. The growth had disappeared when examined, for the first time, a fortnight after the insertion of the tubes. The tendency was to use a smaller dose over a longer period of time, rather than a larger dose for a shorter time.

Pachydermia Laryngis.—D. R. PATERSON, M.D.—Male, aged 40, Greek, formerly a seaman, became hoarse ten years ago after influenza. First seen six years ago when region of glottis on right side was occupied by fleshy swelling. Iodide of potassium given without result. Patient came under observation again nine months ago, with stridor, for which tracheotomy was performed. The laryngeal swelling was much larger and the anterior half was greyish-white in colour; some movement on phonation; left cord fleshy looking. Wassermann (several times), negative. Pieces removed by punch, reported on by pathologist: "diffuse growth with much hyaline or keratinised epithelium; gives impression of being more of a thickening, as in pachydermia, than a neoplasm."

Dr D. R. PATERSON said that the appearance, when the patient was first seen six years ago, was that of hoar frost covering the upper surface of the right vocal cord. Later, this had extended to the under surface, and later still the cord appeared to be a fleshy cushion with the underlying tissue involved and a white irregular warty covering. Subsequently its enlargement became so great as to necessitate tracheotomy. Rosenberg had first described this condition as "pachydermia with white swellings of the larynx," and more recently *Finder* has recorded a case under the title "Keratosis of the Larynx" (*Sitzungsbericht: Oto-laryg. Gesell.*, Berlin, 1924). Very few cases were found in the literature. *Finder* regarded the diffuse form of keratosis as very rare, though the variety with circumscribed areas of snow-white colour was more often met with. The ætiology was altogether obscure; the change was usually limited to one cord, and was

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not always confined to regions of squamous epithelium, but invaded parts lined with the ciliated form. The local appearance usually raised the question of malignant disease. Treatment was without result.

Sir JAMES DUNDAS-GRANT said that this growth had the characters of a very large wart, and might be named pachydermia verrucosa gigans. It was so pendulous that there should be no great difficulty in relieving the dyspnœa by removing the greater part with a view to microscopical examination, which might clear up the question of malignancy and possibly enable the patient to breathe without the tracheotomy tube.

Mr W. STUART-LOW said he advised that the growth should be removed as thoroughly as possible.

Mr C. S. RIDOUT asked whether there was any reason against doing thyrofissure here and removing the cord. Considering the symptoms, that would seem to be a wise procedure.

Dr JOBSON HORNE said he would not have described the case as one of pachydermia laryngis. There was a definite growth in the region of the glottis on the right side, apparently above the cord. As the outcome of a chronic laryngitis, associated with this growth of long-standing, hyperplasia of the mucosa had taken place. He advised removal of the growth.

Mr HERBERT TILLEY said he had never seen an epithelioma so definitely mobile as this, and he would not hesitate to treat the case by laryngofissure.

Dr PATERSON, in reply, said that "keratinised" was the term used by the pathologist, and the amount of keratinization was explained by the thick layer of horny epithelium. He (the speaker) was inclined to agree that the best treatment was to split the larynx and excise the growth. He had several times punched pieces out with Krause's curette, but free removal was not possible by that means.

Plasmocytoma of the Nasopharynx — MICHAEL VLASTO, F.R.C.S.—Patient, male, aged 57, was being treated by his dentist in February, 1929.—The dentist remarked that there was something growing at the back of the throat.

Projecting from beneath the free border of the soft palate on the right side could be seen a pinky-red tumour. It appeared to be coming from the right posterior choanal region, and at first was taken to be a choanal polypus. The colour, however, was not that of a polypus and no connection could be made with the right nasal fossa.

A piece of the tumour was removed for microscopical examination.

Under general anæsthesia, the tumour was found to be firm, smooth and sessile with a pedunculated projection under the free margin of the soft palate. The site of attachment appeared to be the right lateral pharyngeal wall in front of the Eustachian tube.

Dr Elworthy believes the tumour to be a plasmocytoma rather than a small-celled sarcoma.

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Dr JOBSON HORNE said the case was too important to be passed over without some appreciation. For many years past he (the speaker) had repeatedly expressed the opinion that sarcoma was a term used rather too freely with reference to growths in the nasopharynx, and that not a few of such growths thus named "sarcomata" were not malignant, with the result that credit was sometimes taken for curing malignant disease when such disease had not existed! This case supported his view that the nomenclature of growths in the nasopharynx required revision.

Mr NORMAN PATTERSON said he would advise radium treatment for this case. It would do no harm and might cause the disappearance of the growths.

Mr FRANK ROSE said he would not advise treatment by radium. He hoped Mr Vlasto would not treat this case with radium; he would advise the entire removal of the growth if possible; its exact nature could then be more easily ascertained. It might be removed by a snare.

Epithelioma of Tonsil: Treatment by Selenium and Radium—E. WATSON-WILLIAMS, M.C., F.R.C.S.E. Ed.—Patient, male, aged 80, came in November 1927, complaining of pain in right ear for six weeks, worse on swallowing and recent trismus. A gland the size of a chestnut had been present for two years, fixed to sterno-mastoid. The right tonsil showed a hard ulcer. Biopsy report, "epithelioma"; Wassermann negative. In this case of a frail old man no operation could be considered. Treatment was begun with injections of selenium (5 c.c. of 1/2000 twice weekly), relief from pain following the first. In all 250 c.c. were given. The gland decreased in size, but the ulcer tended to get slightly larger. On 2nd March 1928, under general anæsthesia I inserted five needles containing each 10 mgm. radium, 0.3 mm. platinum screen, for twenty-four hours (1200 millicurie-hours); a brisk reaction occurred. Two months later a small indolent ulcer was present in the upper pole of an otherwise apparently normal tonsil, but severe pain necessitated opium. From that time the condition improved; in September 1928, healing was complete. To-day the tonsil region shows only slight scarring; the gland remains small; the patient has no pain and has given up opium.

The PRESIDENT asked what was supposed to be the effect of the selenium part of the treatment.

Dr D. R. PATERSON said the pharynx of this patient seemed to be very satisfactory, and the scar was small and mobile. He had seen an excellent series of cases at Birmingham General Hospital which had been treated by radium; the results were better than those he had seen elsewhere. Previously he had taken a gloomy view of radium treatment of epithelioma of the pharynx, but he now felt much more hopeful about it, especially since longer exposures were possible and there were effective means of protecting surrounding tissues from damage.

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Mr WATSON-WILLIAMS, in reply, said that the first part of the treatment was by injections of selenium, for the relief of pain; a purpose for which one could generally rely on this remedy in malignant disease. He had used it regularly for ten years, with very satisfactory results, though the number of cases was very small in which when used alone it appeared to effect a complete cure. Under selenium treatment the ulcer had become *cleaner, but had not decreased in size; the gland had become much* smaller. At the present time the patient did not desire an operation, and he (the speaker) thought the patient was right. His chance of living two or three years was probably as good without an operation as it would be after one.

Lupus of the Nasal Septum—HAROLD KISCH, F.R.C.S.—Patient, female, aged 34. History of four weeks' left-sided nasal obstruction, and occasional bleeding for a few months. Frontal headaches at times. On examination there was a diffuse infiltration of the left side of the septum, and a tendency to bleed on manipulation. The remaining portions of the nose, pharynx, larynx, nasopharynx and mouth were normal. A portion removed for examination showed chronic inflammation only. The Wassermann reaction was negative. Further sections were then made, and giant-cell systems were found. No tubercle bacilli have been demonstrated.

Mr W. STUART-LOW said that the epiglottis showed some early evidence of implication, thus confirming the diagnosis of lupus. The upper edge was congested, reddened, and somewhat swollen.

Dr D. R. PATERSON asked whether any member had had experience of the use of diathermy in cases of lupus of the nose.

Mr W. J. HARRISON said he had operated on several cases of that type by diathermy, and the results were very satisfactory. The operations had been carried out under local anæsthesia. Frequently several applications were necessary before the whole area was treated. There was an interval of a week to ten days between each application.

Mr O. POPPER asked whether Finsen light through a suitable speculum could not be applied in this case. He had sent to the skin department of the University College Hospital a case of lupus of the skin around the ear, and the result of the light treatment was remarkably good.

Mr TILLEY said that treatment of nasal lupus by diathermy had been carried out successfully, especially in France. In the cases which he had seen in Paris, local anæsthesia had been employed.

Mr KISCH, in reply, said he disagreed with Mr Stuart-Low: he had examined the epiglottis and larynx, and could not satisfy himself that there was any pathological condition present. He had used the benzyl cinnamic ester as he had had considerable success with it in cases of lupus. He had intended to treat this patient by diathermy.

A New Endorhinoscope or Salpingoscope—Shown by P. WATSON-WILLIAMS, M.D.—A drawing of the endorhinoscope image, as seen in a case of right antral sinusitis, was exhibited.

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With the instrument passed through the right nasal passage, a definite stream of mucopus was seen escaping from the right middle meatus, passing outwards and downwards, and forming a sign characteristic of antral discharge. The diagnosis was subsequently confirmed by the suction syringe before this sinus was opened and drained intra-nasally. A diagrammatic scheme or outline of the right and left images was shown, together with the findings of the stream of pus from the antrum.

The endorhinoscope (modelled on Holmes' salpingoscope) affords an excellent upright view of the regions under inspection and gives a wide field.

A Safety-pin removed from the Left Bronchus by a Fortunate Manœuvre—FRANK ROSE, F.R.C.S.—The pin (open) lay point up, as shown by a skiagram.

An attempt (at which I was not present) was made to remove it, but the point dug in and the operator desisted.

When making my own attempt at removal and passing the bronchoscope up and down the left bronchus I could see only mucus. Then the guard of the pin came into view, from which I inferred that the bulk of the pin lay in a secondary bronchus. I seized the guard, which was all that was visible, and pulled on it, but nothing happened, because the point of the pin was engaged and firmly fixed in the bronchial wall. Still holding the pin in the forceps, I pushed it downwards and outwards towards the chest wall; I then rotated it on its axis and pulled gently, and it came out closed. The pin (shown) has not been touched since it was removed. I wondered whether the procedure would succeed in another similar case; I am inclined to regard its success in this instance as due to sheer luck. Chevalier Jackson mentions sixteen separate methods of extracting an open safety-pin, but this is not among them.

Dr D. R. PATERSON said that this was a recognised method of closing a safety-pin. Grasping the pin by the guard and pushing it down into the semi-rigid secondary bronchus would bring point and guard together, and the chances were that a half-turn round would make them engage.

Bilateral Abductor Weakness in a Woman—MILDRED WARDE, F.R.C.S.—Mrs E. T., aged 29, had bronchitis in 1918, followed by hoarseness, which has persisted ever since, but has become worse during the last few months. She has lately had attacks of breathlessness and difficulty in swallowing solid food. She was admitted to hospital in March 1929, for investigation, as she looked ill when first seen.

On Examination: Thin; malar flush; looked "drawn." Stridor on deep inspiration, voice husky. *Larynx:* Right cord fixed in adducted

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position. Left cord can be abducted through about 20° and actively adducted. *Sensation:* It is possible to touch the epiglottis, arytenoids and aryepiglottidean folds with a probe without causing retching.

General Examination: Chest normal, as examined clinically and by X-rays.

Central nervous system normal, except for larynx.

Electrocardiogram gave no evidence of involvement of the vagus.

When last examined (29th April 1929) the right arytenoid appeared to rotate slightly on adduction, though up till then no movement had been detected.

Sir JAMES DUNDAS-GRANT said he thought there was a paresis of the left half of the palate, and that the left vocal cord was rather further away from the mid-line than was the right. Apparently there was some change in the nucleus ambiguus, about which Mr W. M. Mollison had recently read an interesting paper. He (Sir James) thought that the left fifth nerve was involved, where the descending part came close to this nucleus. The condition was in an early stage, but later events would probably prove the correctness of his view. The hypoglossal nucleus had not yet been reached.

Paresis of Left Vocal Cord? Chondroma of Larynx—LESLIE POWELL, M.B.—Patient, E. M., female, aged 57, has complained since November 1928, of discomfort in throat. Described sensation of "A piece of flesh rising," no pain. No difficulty in swallowing. First seen 24th January 1929. On examination the left vocal cord did not move as freely as did the right. A nodule the size of a split pea was seen below—but separate from—the anterior end of the left cord. An X-ray examination of the chest was made to discover, if possible, the cause of the paresis. Nothing abnormal was found except some hypertrophy of the left ventricle.

Present Condition: The nodule remains unaltered. The paresis has somewhat diminished.

The PRESIDENT said he thought the nodule was a papilloma or a fibroma, and might be removed through Haslinger's directoscope. He did not think the left vocal cord was fixed, though it was somewhat limited in movement. He did not regard the condition as malignant.

Dr D. R. PATERSON asked whether there was any connection between the subglottic growth and the impaired mobility of the cord. It might be a coincidence, but the possibility of malignant trouble could not be altogether ruled out.

Mr POWELL, in reply, said he did not think that the symptoms were due to the nodule which had been simply discovered during routine examination; they were probably neurotic. The movement of the left cord had somewhat improved since he had first seen the patient. He thought the growth might well be left alone.

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ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY.

May 3, 1929.

President—SOMERVILLE HASTINGS, M.S.

Chronic Deafness much improved by the Use of a Catheter—SOMERVILLE HASTINGS, M.S. (President).—Miss F., first consulted me in February 1922, for deafness in the right ear, of twenty years' duration, and in the left ear, of nine years' duration. She complained of throbbing noises in each ear. The deafness was variable in degree and paracusis was marked. She had had a septal operation performed ten years previously, but was still a mouth breather at night. I found both ear drums thinned and atrophic, and middle-ear deafness on each side. The tone range was normal, but the hearing for Politzer's acoumeter normally heard at about twenty-five feet, was, on the right, one inch, and on the left, three inches. I have seen this patient at frequent intervals since. She has used plaster over the lips at night, and a nasal spray, and is now breathing through her nose much better than before. She has had several courses of vaccines and I have on various occasions passed a Eustachian bougie but without noting any improvement, and her hearing to-day is almost exactly what it was when I first saw her. I have catheterised both ears about twenty times, and have obtained almost without exception the following results: On the right there is no appreciable improvement, but on the left the hearing improves from three inches to about thirty-six inches, as measured by the acoumeter, and remains in this improved condition for about twenty-four hours. Occasionally marked improvement in hearing results from yawning.

Is this a suitable case for tympanic ventilation by the modified mastoid operation?

Sir JAMES DUNDAS-GRANT said that the important question was whether the membranes were relaxed. From the appearance of the left one there seemed to be considerable relaxation, and results might be more lasting if that were counteracted by the application of contractile (not flexile) collodion. The right membrane was hidden by cerumen.

Dr P. WATSON-WILLIAMS said that when there was a fixed malleus the difficulty was that one tended to stretch the membrane in the effort to produce a more normal condition. This patient even found that she could auto-inflate her Eustachian tube, and then, as after catheterisation, there was an improvement which lasted several hours. She seemed to fill the middle ear and then make tense the already flaccid part of the membrane. One could not overcome the flaccidity. A favourable result might be secured by removing the tympanum, or at least by establishing a permanent

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opening in the membrana tympani. The factor played in hearing by the membrana tympani was relatively small.

Mr ALEX. R. TWEEDIE said he regarded the case as nasopharyngeal in origin.

The patient was of the narrow-faced type, with impaired nasal passages, with an "indolent" action of the palate, and an "indolent" chronic rhinitis.

Certainly the membrane was flaccid and lying against the long process of the incus, and the malleus was not normally mobile, but bearing in mind the report of so much improvement after inflation, he suggested that an intranasal operation (resection of the septum and removal of the middle turbinals) would afford a normal and constant aeration of the tympanum instead of that artificially and temporarily produced inflation.

Dr DAN MCKENZIE said that in operating on the mastoid or in the depths of the meatus, in the case of a dry middle ear, it was impossible to ensure that the operation wound would remain aseptic, though in a proportion of cases recovery would no doubt occur without serious suppuration. If suppuration should occur, they knew quite well what it meant. That was the difficulty in operating on the middle ear in dry deafness. If it were possible to sterilise the deep meatus, he thought most of such cases could be operated upon with confidence, otherwise one must hesitate about undertaking these cases.

The PRESIDENT said he regretted that there was cerumen present in the ears; he had not seen the patient for some months before the meeting. In her case, the internal hearing was good.

Facial Paralysis occurring during Mastoid Operation; Decompression of Facial Nerve; Complete Recovery—E. WATSON-WILLIAMS, M.C., Ch.M.—D. M. S., female, aged 22, suffered from chronic left mastoid disease.

18*th July* 1928.—Radical mastoid operation performed on ear in my presence. Before the end of the operation the left corneal reflex was lost, and at its conclusion paralysis of the left side of the face was observed. Two days later the paralysis was seen to be complete. There had been a question of direct damage during the operation, but inspection of the cavity negatived the idea that the nerve had been actually divided by an instrument. It seemed probable that the canal wall had been fractured, compressing the nerve directly (or from hæmorrhage).

In view of the poor recovery that often follows when the paralysis occurs during operation, on 1st August 1928, I cut away the wall of the canal over, in front of, and behind the nerve from the aditus, downwards for a distance of 1 cm. In doing this the external semicircular canal was unfortunately exposed, and possibly damaged. A transverse fracture of the facial ridge was found at the level of the lower margin of the aditus. The nerve having been well freed, and no manifest discontinuity being discovered, a strip of temporal muscle was swung round and made to lie over the exposed part, and

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held in place by packing, after lining the whole wound with a skin graft. For several days there was intense vertigo—minimised by lying with the left ear uppermost—and nystagmus to the right. These disturbances gradually diminished, though ten days later the patient was very giddy on attempting to stand, and for several weeks there was giddiness on sudden turning of the head. Otherwise the convalescence was uneventful. An improvement in facial tone was seen in the middle of September (six weeks later); at the end of ten weeks there was voluntary movement of the corner of the mouth. In the middle of November the ear was completely healed, the labyrinth gave normal responses to caloric and rotatory tests, and all voluntary facial movements were normal. In January 1929, emotional expression was again symmetrical.

Mr A. R. TWEEDIE asked what was the object of the muscle graft.

The PRESIDENT said he had seen injury to the facial nerve on more than one occasion, but the pathology of the injury had never been so clear as in the case now shown. He understood that the object of the muscle graft was to prevent pressure on the nerve by scar tissue.

Mr E. WATSON-WILLIAMS, in reply, said that at the second operation he had cut away bone superficial to the facial nerve, and in front and behind, so that at the end the nerve was running along a bony ridge exposed at the bottom of the wound. The muscle strip was turned down to cover the nerve so as to protect it from trauma during convalescence, and to limit as far as possible the formation of scar tissue round it; if the nerve fibres had been crushed or divided, the chance of regeneration would be much diminished supposing that scar formation should be excessive. The muscle flap had been left attached above.

Chronic Deafness—H. NORMAN BARNETT, F.R.C.S.—E. S., female. Deafness and tinnitus since 1913, but much more marked for past three years. Has had various treatments abroad and in this country. Troubled by rheumatism in various forms, otherwise healthy. Examination showed both tympanic membranes to be affected, left more so than right; deflection of nasal septum but not sufficient to necessitate resection; chronic nasopharyngitis also present. Hearing tests showed slight nerve deafness on right side, and all air-borne sounds very much diminished in length and indistinct, left worse than right.

Right: B.C. – 3 : R. – : T.F. (256) – 15 : W. $\frac{6}{160}$: con. 8 ft., wh. 6 ft.

Left: B.C. normal : R – : T.F. (256) – 15 : W. $\frac{1}{160}$: con. 6 ft., wh. 4 ft.

Diagnosis.—Chronic middle-ear deafness. Predisposition owing to deflection of nasal septum and chronic nasopharyngitis.

Treatment.—Four weeks vaporisation with hot iodine vapour, ionisation with potassium iodide, and re-education of centre by means of binaural speaking-tube.

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Result.—Halfway through treatment conversational range was: right 25 ft., left 18 ft.; whisper, 20 ft. and 14 ft. respectively. At end of course conversational range was practically normal. Tinnitus much better.

Has not been seen for a year.

Protrusion of the Meninges from the External Auditory Meatus, simulating Aural Polypus—H. NORMAN BARNETT, F.R.C.S.—Female, aged 33, in apparently good health. Had had scarlet fever in childhood: history of aural discharge, dating from early life.

On examination, large polypoid mass found protruding from right external auditory meatus, with nothing to distinguish it from an ordinary polypus, except a very fine blood-vessel on the surface; in view of the history, this opinion would be strengthened.

Patient was admitted to hospital on 24th February 1929, and operated upon two days later. The mastoid route was adopted and the polypus examined at its entrance to the middle ear. It was found to be tubular, and, on slitting it, some clear fluid came away, thus confirming the origin of the protrusion. The tube was therefore followed, and was found to traverse the middle ear and enter the inner ear, where it pierced the skull and ended as a covering for a small brain abscess containing about an eggspoonful of pus. This was drained and a tube left in. The mastoid bone was found to be diseased, and, as the functional structures of the middle ear had been destroyed by the meningeal protrusion, a complete mastoid operation was performed. Rise of temperature to 100.6° F. day following operation, but none afterwards. The tube and stitches were removed three days after operation, and convalescence proceeded satisfactorily, except that partial facial paralysis developed from concussion, as a result of working close to the line of the nerve when the tube was being followed. This is diminishing under application of electrical massage. Case still under treatment.

The course of events was, no doubt, an initial suppurative otitis media in early childhood, which infected the mastoid bone and spread, thus destroying the part where the meninges subsequently protruded. The history of the case affords another example of the wisdom of exploring the mastoid when there is a chronic incurable discharge from the middle ear, even if there be no other sign of mastoiditis.

The PRESIDENT asked whether any labyrinth tests had been carried out, and where the protrusion of the meninges took place, also whether the labyrinth was destroyed.

Mr HAROLD KISCH said that he had some difficulty in following out the course of events in this case; it was a rare condition. The exhibitor had said that the polypus was found to be tubular, and, on slitting it, some clear

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fluid came away, thus confirming the origin of the protrusion. He (the speaker) presumed that what was meant was that cerebrospinal fluid came away. What proof was there of that? Mr Norman Barnett did not say if he put a probe up this tube, and it was difficult to understand, if the fluid was cerebrospinal, why it did not continue to flow, seeing that the tube was in connection with the subdural space. Also, the exhibitor had said that the polypus went through the internal ear, through the petrous bone, and that it formed the outer wall of an abscess. But, if that were so, there should have been pus in the tube, not clear fluid. For polypus to have come through and destroyed the internal ear it must have come through the petrous bone, an unusual occurrence. Describing the course of events, Mr Barnett had said that there had been an initial suppurative otitis media which had infected the mastoid bone and had spread, thus destroying the part where the meninges subsequently protruded, and he said the polypus came through the mastoid. It could not, however, come through the internal ear and the mastoid. It was difficult to understand how this could have been anything but an ordinary polypus.

Mr E. WATSON-WILLIAMS said that in the *Bulletin d'Oto-rhino-laryngologie*, 1924, there was a report of a similar case in which the suppurative process had destroyed the posterior wall of the inner ear, and direct communication had been established so that cerebro-spinal fluid passed through the posterior wall of the petrous bone, through an apparently carious internal tympanic wall, and out through a perforation in the tympanic membrane. Apparently the route taken by the disease in that case had been similar to that in the present one.

Mr NORMAN BARNETT, in reply, said that a few months ago he had reported a similar case in which there was an ordinary temporo-sphenoidal abscess. The present case was different. There was destruction of a portion of the petrous part of the temporal bone, through which the membrane came. A probe was passed, and the fluid was found to be cerebrospinal. If the protrusion was an ordinary polypus, where did the pus in the abscess come from, and what was the origin of the clear fluid in the tubular protrusion? On tracing this protrusion inwards, one came to the meninges of the brain, with which it was continuous, and having examined that and gone further in one found pus in the brain. Whether there was a septal margin cutting off the pus he did not know, but it was a small abscess and pus had not found its way into the tube, probably because cerebrospinal fluid came away more easily. [The PRESIDENT: The cerebrospinal fluid was coming from the meninges, not from the sinuses? It was meningeal fluid which was coming out?] I presume so; I could not dogmatise. [Mr TILLEY: Did Mr Norman Barnett apply tests for cerebrospinal fluid?] No.

Discussion on the Treatment of Chronic Deafness.

Mr HAROLD KISCH.

I propose to refer only to non-suppurative types of middle ear deafness. Clinically, these cases may be divided into three groups, namely, those in which the deafness is due to: (1) The results of

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attacks of acute inflammation; (2) Eustachian tympanic catarrh; (3) otosclerosis. Mixed forms, however, may occur.

In (1) the deafness is caused by adhesions in the middle ear which obstruct the movements of the ossicles. The diagnosis is made on the history, on the appearances of the drum and middle ear, and on the absence of nasopharyngeal catarrh. Two extra factors may add to the deafness in this group, a functional element, and a concomitant nasopharyngeal catarrh. The functional element is important. It is by no means uncommon for patients to state that they have been completely deaf in one ear owing to a previous attack at the time of which they were told that hearing would be quite lost in that ear. The ears in these cases may be found, on examination, to have a considerable degree of hearing, but the patient, having ceased to listen, does not hear. These cases probably furnish an explanation of the results in cases of re-education of the hearing by such methods as the electrophonoide; aural massage and instruction to use the ear will often help. Occasionally both ears are involved, and then the condition simulates hysterical deafness. It is important to recognise the occurrence of a concomitant Eustachian catarrh, as the relief of this condition will materially aid the hearing.

The treatment of the cases in this group consists in the prevention of deafness at the time of the acute attack. The hearing should be tested after the catarrh has subsided, and if it is not perfect, regular aural massage should be carried out. The ordinary treatment of the condition is by inflation of the middle ear and by aural massage, of which massage is the more important.

I have had no help from fibrolysin or similar drugs.

Should the ossicles be much bound down and hearing not improved by massage, removal of the incus can be tried. I always do this through the mastoid route. Considerable improvement in hearing has been obtained in three cases out of six. The difficulty is to estimate the amount of fixation of the stapes, as, if the ossicles are firmly pressed, no improvement will result.

(2) The Eustachian-Tympanic Group. This is of great importance as the group to which the majority of cases of chronic deafness belong, and in which improvement can be obtained in a large number of cases by rational treatment. The Eustachian tube is affected to a variable extent; the pharyngeal orifice may alone be affected or the inflammatory swelling may extend along the tube to the mucous membrane of the middle ear. The middle ear suffers by insufficient ventilation and difference in pressure on the two sides of the drum, resulting in changes in the middle ear causing deafness. The cause of the condition is the presence of nasopharyngeal catarrh. Diagnosis is made from: (*a*) The history of the case; (*b*) the appearance of the drum; (*c*) the appearance

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of the external auditory meatus; (*d*) the presence of nasopharyngeal catarrh; (*e*) the improvement which occurs on inflation and massage. Hearing in all cases may not be markedly affected, but a feeling of clearness and alteration in tinnitus differentiates it from true otosclerosis, where no alteration occurs; (*f*) the usual tuning-fork tests. The treatment of the condition consists first in (*a*) that of the naso-pharyngeal catarrh and then in (*b*) local treatment of the tube and middle ear.

It is impossible here to discuss the complete treatment of naso-pharyngeal catarrh, but I should like to make a few points: (1) The examination of adults at a nose, throat, and ear clinic shows that of those who had not had their tonsils enucleated 95 per cent. had septic tonsils, or the remains of tonsils, present. A minute amount of septic tonsil left may cause the continuance of catarrh. (2) A considerable number of adults had adenoids, or the remains of adenoids, present. (3) Chronic catarrh of the maxillary antrum is common. (4) Chronic catarrh of the frontal sinus is far more common than is usually supposed. (5) Ethmoidal and sphenoidal disease accounts for a certain number of cases, and deflection of the nasal septum may be a factor in causing or maintaining nasal catarrh. The rectification of the septum is of little use unless the septic focus in the tonsils, or elsewhere, is dealt with. (6) Local treatment of the ear. A considerable percentage of these cases will show improvement immediately after operation and without any further treatment. But to obtain the best results local treatment by inflation and massage should always be carried out.

With regard to inflation, simple inflation of the ears is all that is required. In my experience the use of hot air or vapours gives no better results.

Ionisation, in my hands, has been of no use. As long ago as 1914 I treated a considerable number of cases by zinc ionisation, using accurate controls, and I found no real advantage in the method. This was to be expected, as physically the transmission of ions through the tympanic membrane is unlikely.

So-called re-education of the hearing is to my mind "not proven."

I have used iodine intensively through the mouth in a large number of cases. Up to 30 minims of the French tincture have been given three times a day, but I cannot say that I have found it of any practical use. Diathermy is still on trial. It certainly helps to diminish the tinnitus in some cases.

The basis of the treatment of this condition lies in the treatment of the nasopharyngeal catarrh.

Up to what age is one justified in removing septic tonsils or performing other nasal operations? The oldest patient whose tonsils I have deliberately removed on account of this condition was 67,

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and the result fully justified the procedure. I have removed tonsils in many cases in which the patient's age was about 60, and I have never regretted so doing.

With regard to operations on the ear for this condition. Many years ago I showed some cases before the Section in which I had made an opening into the promontory and covered this opening immediately with a skin graft. The result was by no means unsatisfactory, but it is an operation of some difficulty, and, although no disaster occurred, it is obviously a procedure involving danger. I have also removed the incus in some of these cases, but, up to now, have not been satisfied with the results.

(3) Finally, with regard to otosclerosis. This condition need only be mentioned here to differentiate it from the foregoing groups. The points of importance are: (1) Family history; (2) age and nature of onset; (3) appearances of the drum; (4) wide appearances of external meatus with absence of cerumen; (5) a wide Eustachian tube; (6) absence of nasopharyngeal catarrh; (7) complete absence of improvement by massage and inflation; (8) usual tuning-fork tests.

The treatment up to now has been unsatisfactory. I now come to what is really the main object of my paper. Do we, as aurists, pay sufficient attention to the prevention of deafness? Do we, as teachers of clinical medicine, sufficiently impress on our students that certain kinds of deafness are preventable, and ought to be prevented? The two kinds to which I refer are: (1) Deafness due to inflammation, and (2) deafness due to nasopharyngeal catarrh. A great deal might be done by drawing the attention of students and practitioners to the necessity for ascertaining whether the hearing has been completely restored after acute attacks of inflammation, and to the methods that can be used for improving the hearing. In the Eustachian tympanic group every case of nasopharyngeal catarrh should be looked upon as a potential case of deafness, and steps should be taken to deal with this catarrh. Whether it is due to septic tonsils, adenoids, nasal sinusitis, or any other contributory causes, such as damp housing or unfavourable climatic conditions, should be investigated.

W. S. Thacker Neville.

In my practice in England, chronic deafness has been due to chronic suppurative otitis media—chronic catarrhal otitis media and otosclerosis. I have treated catarrhal otitis media with inflation of air; with hot air, using Mahu's apparatus (following Portmann) with insufflations of oil of terebinth, balsam of Peru, and tincture of benzoin vapourised; by massage of the tympanic membrane with an electric motor; by diathermy and by ionisation.

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In cases of chronic suppurative otitis media I have improved the hearing by employing ionisation with zinc sulphate, and I employ this method in every case of chronic suppurative otitis media before operating. I also in a few cases have exposed the ears to ultra-violet light, using a quartz rod on a Kromayer lamp or a speculum on a carbon lamp. In a case of polypus I have used electrolysis with two needles and crystals of chromic acid.

By this means I have improved the hearing without performing a mastoid operation. This adoption of physical methods does not mean that I rely on these methods alone. Hearing is frequently improved by excision of tonsils and by operations to cure sinusitis and so to remove a focus of infection. It is often necessary to correct a septal deviation and remove the hypertrophied part of a turbinate, and to remove adenoids in adults. Until these defects are corrected, and until dental sepsis is excluded, the adoption of physical methods is not to be considered. For example, one patient with otitis media and vertigo was treated with ionisation, local ultra-violet rays and diathermy and his hearing for a watch increased from 1½ in. to 14 in. Then the tonsils, which were septic, were removed, and the hearing increased to 40 in. The vertigo was due to a toxin acting on the labyrinth and disappeared almost completely after the tonsillectomy. In this paper, I propose to discuss the treatment for what seems to be a hopeless case of deafness, which I formerly would not have attempted to treat and in which the patient would consequently have resorted to non-medical electricians.

For several years I have been treating such cases by means of diathermy applied to the ears. I have been guided in this by Lerroux-Robert, and Hollender and Cottle. Hollender and Cottle published their article in the *Archives of Otolaryngology*, iii., 3rd April 1926, at which date I procured the apparatus and began to watch its effect. Hollender and Cottle apply one electrode on the mastoid and the other on the cheek and have proved by experiments that when electrodes are placed on the external auditory meatus there is an increase of temperature under the skin but only a very slight rise under the bone and under the muscle, but that when electrodes are placed on the mastoid and cheek there is a rise of temperature of two to three degrees in the tympanic cavity within five minutes; furthermore, that the temperature rises to 100° F. under the bone and in the brain.

The theory on which the use of diathermy is based is that by producing localised heat in deep tissues, the blood supply is augmented and this leads to the absorption of effusions, softening of exudates and fibrous tissue, and relaxation of muscle spasms.

Besides following Hollender and Cottle's technique, I have followed

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Lerroux-Robert who places electrodes in the meatus as well as on the mastoid. Following Lerroux-Robert, I have used this treatment in tubal catarrh. I have also used it in cases of acute exudative otitis media. This discussion is not concerned with that condition, but I shall quote one case to show that fluid is absorbed more quickly and hearing improved more rapidly than by catheterisation alone.

Lerroux-Robert says that diathermy is indicated in cicatricial otitis following suppuration, and in adhesive otitis following an acute catarrhal otitis or chronic catarrhal otitis with calcareous deposits. He considers that high frequency with vacuum electrodes acts on the subjective phenomena better than diathermy. Lerroux-Robert says that just as diathermy acts on inflammatory thickenings and calcareous incrustations of large joints, so it will act on cicatrised and sclerosed tissues in the ear, rendering the cicatricial tissue soft and so allow the ossicles to partially regain their mobility.

The other methods which I employ in the treatment of chronic deafness, and, more especially, for that of tinnitus, are (1) the use of the Zund-Burguet apparatus and (2) ionisation with sodium silicate applied with the negative pole. In the latter treatment I have followed Landrey and Franquet, of Rheims, who, having tried both potassium iodide and sodium silicate have had better results with the second. I employ Friel's speculum with a platinum electrode. 2 ma., negative pole.

After ionisation, the meatus is red and the vessels on the tympanic membrane stand out prominently.

I have found hearing improved and tinnitus diminished under this treatment.

Finally, I find that lip-reading can be learnt by adults and renews the patient's interest in social life. Thus the re-educative treatment of Zund-Burguet is carried out by human voices, for such a person will catch part of a sentence with the ears and visualise the rest. Lip-reading is psychologically beneficial in making a deaf person more cheerful, as he consequently ceases to be a recluse. Therefore I advise all my deaf patients to learn lip-reading, but they look on this as a last resort and often oppose the recommendation.

The results obtained by the use of diathermy and the Zund-Burguet apparatus may not be shown by improvement in response to the tuning-fork tests but are evidenced by such statements as "I can now hear a motor-car passing behind me in the street," or "I could hear the front door bell ring," or "My friends say I am much better."

Illustrative Cases.

I. *Deafness: Improvement under Zinc Ionisation.*

S. D., a man aged 22, came in January 1929, complaining of deafness and copious ear discharge of many years' standing. Diagnosis: double suppurative otitis media, with polypus (left ear). A 60-in. watch was heard

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by the right ear at 3 in., and by the left ear on contact. Treatment: weekly ionisation with zinc sulphate, and electrolysis of polypus on two occasions and crystals of chromic acid on the granulation tissue, and also with ultra-violet light from a carbon lamp, with a speculum in the ear. About ten treatments given. The result (19th March 1929) was that the right ear was dry and the left ear moist. The right ear heard a 60-in. watch at 12 in., and the left ear heard it at 5 in.

II. *Deafness and Giddiness: Cure effected by Tonsillectomy after Improvement by Diathermy, Zinc Ionisation, and Ultra-Violet Light.*

W. B. D., a man aged 42, complained of deafness in the left ear and giddiness. He heard a 60-in. watch at $1\frac{1}{2}$ in. Rinne −, Schwabach −2″. Diagnosis: otitis media with granulation tissue in posterior superior quadrant. Treatment: diathermy, ultra-violet light by means of a quartz rod on a Kromayer lamp, and, finally, zinc ionisation and acriviolet drops. Granulation tissue and discharge disappeared. Hearing for the 60-in. watch increased to 14 in. Rinné became positive. Then, as the tonsils contained pus, I performed tonsillectomy under local anæsthesia, after which the hearing for the watch increased to 40 in.

III. *Otosclerosis: Improvement by Diathermy and Zund-Burguet Electrophonoide.*

Mrs J., aged 33, complained of deafness, tinnitus, and giddiness. Mother deaf. Submucous resection of the septum in 1913. Tonsils normal.

Hearing: a 60-in. watch was heard at 5 in. by the right ear, and at 1 in. by the left ear. Tuning-fork tests showed otosclerosis. Eustachian tubes were wide open. Treatment: diathermy and Zund-Burguet electrophonoide. The patient wrote from London asking for the name of a specialist who could give the same treatment to one of her friends, as she herself had found such great improvement.

IV. Mrs S. B., aged 45, complained of deafness and tinnitus. Tuning-fork tests showed middle-ear deafness. Eustachian tubes narrow. Nasal examination revealed chronic ethmoiditis. Treatment consisted in performing a double Sluder's ethmoidectomy followed by politzerisation and diathermy, and finally by ionisation with silicate of soda. These various forms of treatment extended over a long period. Before treatment, a 60-in. watch was heard at $8\frac{1}{2}$ in. by the right ear, and after treatment, at $10\frac{1}{2}$ in., and there was a great improvement with regard to the tinnitus after the ionisation; the other forms of treatment did not affect the tinnitus at all.

V. Dr M., aged 58, suffering from catarrhal otitis media, heard a 60-in. watch with the left ear at $2\frac{1}{2}$ in. The right ear was completely deaf. Rinne +12, Schwabach −2″. High and low notes heard perfectly. The left ear was treated with catheter and insufflation of vapours. The result was that the watch was heard at 42 in., but the treatment produced tinnitus which prevented the patient from sleeping. For this, diathermy was administered and effected a cure.

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Royal Society of Medicine

The Symptomatic Treatment of Deafness.

Dr Dan McKenzie.

The idea of trying medical diathermy first occurred to me when I learned that it was being used, apparently with benefit, in fibrositis and rheumatoid arthritis. The claim had even been made by Nagelschmidt that diathermy could dissolve articular concretions, and that under its influence sclerosed tissue became soft and supple.

I ought perhaps to say that I do not claim to be the first to whom this idea occurred, for in our own country, as well as in France and America, a number of other investigators had been working along these lines before I began to do so.

Medical diathermy consists, as you know, in the passage of a high frequency current between two flat electrodes, generally of equal size, the current being supplied by them to the body in such a way as merely to warm—not to injure—the tissues. For our purposes, two plate electrodes, an inch by an inch-and-a-half in superficial area, are placed, one on the mastoid or auricle, and the other on the opposite cheek below the malar eminence, the electrodes being in such a position as to lie in parallel planes, or facing each other. If they lie obliquely, so that one part of either plate is nearer to its neighbour than the rest of the plate, the skin is apt to get burned.

The electrodes are wrapped in a thick pad of lint soaked in lukewarm saline solution (10 per cent.), and are held in place by a rubber-band round the head, supported, if necessary, by sandbags. Contact must be close and accurate. In order to obviate the consequences of vertigo the patient is best treated lying down. Séances last from twenty minutes to half an hour, and are repeated every day or every other day for at least six times. If, at the end of the course, no improvement is obtained, the treatment is not continued. If improvement has taken place, the treatment has usually been stopped for some weeks and resumed again if the patient desires it. Or it may be given once a week for a prolonged period. French writers emphasise the advisability of brief, intensive courses followed by vacant intervals. Otherwise, it is said, a kind of "use and wont" is established and the symptoms remain unrelieved.

This method is that which I have evolved for myself, but there are many other plans.

The amount of current passing rarely exceeds 500 ma. and quite often it does not reach that figure on the meter. For one uses just that amount of current, whatever it may be, which gives rise to a comfortable sensation of warmth, and no more. Several precautions have to be taken, in addition to that mentioned above, in order to avoid scorching the skin. The current is raised from zero very

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slowly, the patient being asked to say when the warmth becomes perceptible, and to give warning at once if at any time he feels the skin under the electrodes becoming too hot.

In addition to cutaneous sensations he should also pay attention to deep sensations. It sometimes happens, for example, that an aching is felt in the mastoid bone. If so, the temperature is probably too high, and the current should be reduced or even cut off for a few minutes. It is, of course, conceivable that the internal ear might be damaged by too high a temperature, although I have never heard of such an accident.

The cutaneous sensibility, as a matter of fact, is the safest guide to the temperature of the deeper parts. That being so, the temperature of the moist pads under the electrodes is important. For, if the pads when first applied are very hot, the skin temperature becomes unbearable before the internal structures are sufficiently warmed. On the other hand, if the pads are too cold, the deep structures may perhaps become dangerously hot before the skin gives any warning.

The heating of the tissues, by the way, in the path of the current is cumulative, that is to say, the temperature keeps on rising throughout the séance, but it does so very slowly: so slowly, indeed, that at the ordinary sittings it never even approximates to a dangerous height. A thermometer placed inside the mouth and under the cheek electrode, towards the end of the usual sitting, registers only between 101° and 102° F.

Finally, the patient is not allowed to touch the apparatus when it is in action, and he should never be left alone.

Immediately following the sitting, an increase in the tinnitus is frequently complained of, but experience shows this to be a not unfavourable sign in most cases. (We refer again to this later on.) Some vertigo is also usual and the patient had better remain lying still for a few minutes after the current is cut off. On several occasions a typical acute coryza has appeared during the course of the diathermy applications and the suspicion has occurred to me that the warming might have lowered the patient's resistance.

Results.—The following figures are obtained from an analysis of forty-six cases treated during the last eighteen months. The majority were of the dry progressive type, simply because this type supplies us with most of our cases; but I wish to emphasise the fact that the treatment was symptomatic, that is to say, it was not confined to any one type or class of case. I admit that some selection was made, *e.g.*, it did not seem worth while to try diathermy in cases of senile deafness, and I did not include any suppurating ears, also I confess I have been timid about trying it in the Menière syndrome, although French observers report benefit in that group.

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In five of the forty-six cases the deafness and tinnitus entirely disappeared after from two to six séances. In four of these, the symptoms existed for a few weeks or months only, but in one they had been present for five years. In this case the hearing before treatment was 22 ft. for the voice in one ear, and 3 ft. in the other; the tuning-fork at the meatus being – 21 in. and – 23 in. respectively. There was no tinnitus. In three of the others there was tinnitus, in one of these it had followed acute antro-tympanic suppuration and a cortical mastoid operation.

"Great improvement" was obtained in five. The duration in those was two months, nine months, five years, seven years, and ten years, respectively. The improvement in hearing was striking, and in one seems to be still progressing under a continuation of the diathermy. In this case intravenous iodine was also tried (see later).

In this group also, as in the last, the best results were obtained when the disease was of short standing.

These numbers taken together show 20 per cent. of improvement.

I may say that all the cases were tested before and after inflation and the results noted before diathermy was tried. In most, but not in all, improvement after inflation proved to foreshadow improvement after diathermy.

Of the remaining thirty-six cases, thirteen showed some temporary improvement, twenty-one showed no improvement, and in two the tinnitus was made so much louder by the diathermy that the patients declined to proceed with the treatment.

The average duration of the symptoms in the "temporary improvement" group was much less than that in the "no improvement" group. Anomalies, however, were encountered. Thus, two cases of two weeks' and three weeks' duration showed "no improvement," in one the patient complained of the "numb" feeling that often marks the early stages of a progressive deafness before serious loss of hearing appears, a sensation usually amenable to treatment by diathermy. Another anomalous case showed "cure" in one ear and "no improvement" in the other, although both were only affected slightly and for a short time.

The lesson to be learned from these results as a whole is that we should counsel practitioners to watch for the onset or continuance of deafness and tinnitus after colds in the head, influenza, and so on, as well as after acute otitis media, and to submit patients so affected to the action of diathermy during the early weeks of the symptoms.

As to the effect of diathermy upon continuous intractable tinnitus, a few words may be said. The noise, as we have seen, is often louder after the exposure, but it usually subsides in an hour or so, to be followed frequently, though not invariably, by a quietening that lasts

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sometimes for twelve hours at a time. The general effect is a much greater variation in the obtrusiveness of the sound. At times it is as loud as ever, or louder. At other times, it becomes so stilled as to be almost inaudible. The effect varies widely in different individuals and I have been unable to discover why. I may add that the intervals of unusual quiescence are very welcome to patients who have been suffering from the distressing symptom for any length of time. I have not come across any case, however, in which loud, longstanding tinnitus has been cured, but many patients find even the very moderate improvement which they experience grateful and encouraging.

Several patients have observed that the diathermy made the noises worse and the hearing better.

My second report concerns *The Intravenous Infection of Massive Doses of Collosol Iodine*, which was suggested to me, about nine months ago, by Dr H. I. Shaheen Bey, of Cairo, who reported that he had obtained encouraging results in chronic dry deafness and tinnitus.

The treatment sounds rather heroic, from 200 to 400 c.c. (6 to 13 oz.) of collosol iodine being run into a vein once a week as in transfusion. But, curiously enough, it seems to produce no apparent general effects. There is no sign of shock, *e.g.*, rigors and pyrexia, as with so many other intravenous remedies; there is no subsequent iodism, and we soon found that it was quite safe to let the patients return home immediately after each injection. The iodine seems to pass through the body in the colloidal state, as no blue coloration was obtained when testing the urine with starch, subsequent to the administration.

An unforeseen difficulty did arise, however, and in several cases it proved to be so great as to lead to a discontinuance of the treatment. This was, that in two or three cases the intravenous administration was promptly followed by coagulation in the veins selected, just like that which occurs in the injection treatment of varicose veins. Thus one superficial vein after another became blocked, as we were driven to seek new avenues, until there were no more available. I should be glad to hear of any method of preventing the coagulation, as it put a stop to an extensive trial of the remedy. Warming the liquid was tried, and flushing through the vein with normal saline after the iodine had passed in, but neither was successful in preventing it.

Seven cases were completed, each having a weekly injection of gradually increasing doses. Two of them were subsequently treated with diathermy also, one with definite and apparently progressive improvement, as already noted, the other without any change.

Of the other five, two showed improvement. A report of the tests of one of these taken at the Central Throat and Ear Hospital is appended.

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The intravenous injection of such large quantities of iodine is not easy. It takes up a considerable amount of time, and the running in of the liquid has to be carefully watched. But it seems to be worthy of further trial. As with diathermy, early cases seem to answer best, but that, so far, is all that one can say.

RESULTS OF HEARING TESTS BEFORE AND AFTER TREATMENT WITH COLLOSOL IODINE.

Miss P., aged 17. Injections.—23rd March 1928, 40 c.c.; 31st March, 80 c.c.; 7th April, 120 c.c.; 14th April, 200 c.c.; 22nd April, 200 c.c.; 28th April, 200 c.c.

	Before injections (19.3.28).		After injections (5.5.28).	
	Right Ear.	Left Ear.	Right Ear.	Left Ear.
Watch . . .	Contact only	Contact only	3 in.	4 in.
Whisper . . .	16 in.	6 in.	12 in.	18 in.
Conversational voice .	1½ ft.	1½ ft.	25 ft.*	25 ft.
Air conduction . .	−11	−36	− 8	−15
Bone conduction . .	+18	+18	+16	+13

* These tests had to be applied in the out-patient department where there was not sufficient room and where there were extraneous noises.

MR E. WATSON-WILLIAMS

said that he had two points to bring forward. The first was to ask members to try the administration of parathyroid gland in cases of otosclerosis. About eighteen months ago he had noticed that one of his otosclerotic patients suffered from bad chilblains. On his questioning his next three otosclerotic patients, they all said that they suffered very much from chilblains. Without professing to understand disturbances of calcium metabolism, he thought their might be some connection between the osteoporosis and the "chilblain diathesis," and he, therefore, began to give parathyroid gland to two of these patients. The first result was that the chilblains were cured, but, later, both patients stated that the tinnitus was much diminished. This opened a new field to him, for up to that time he had found nothing which exercised a really beneficial effect on the tinnitus due to otosclerosis. He had recently published a paper* giving the results of treatment of a number of cases, all of them typical cases in which no one would dispute the diagnosis, and all had been under observation for at least six months since the report contained in that paper. The dose he used was a grain and a half daily, in three doses —or for a big man two grains—of Armour's preparation (dried gland). The "official" dose was $\frac{1}{20}$ gr. He began in all cases with a small dose, and, finding tolerance, rapidly increased to the dose mentioned;

* *Lancet*, 1929, i., 814.

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the small doses appeared to produce little effect on the symptoms of otosclerosis. The larger doses did not produce unsatisfactory symptoms, though in several cases the treatment had to be intermitted on account of earache, and in one or two flushing was complained of, after taking the tablets. In a certain number the effect seemed to diminish after three or four months' treatment; he then found that a small dose of calcium glycero-phosphate was useful. It was interesting to note that several patients whose treatment he had stopped because they did not appear to be getting benefit, all returned asking that it might be resumed, as they felt better in themselves, and thought they definitely heard better during the course.

This led to his second point. Deafness was a symptom. The only useful test of clinical success in treatment was that, for ordinary conversation, patients and their friends were sure that they heard better. So often patients seemed to hear tuning-forks, acoumeters, etc., much better after treatment; yet if ordinary conversation was not better heard, the treatment had been of no practical value, at all events to the patients. On the other hand, many patients seemed to hear no better by the ordinary consulting-room tests, yet they and their friends thought that the hearing was definitely improved; for example, the habit of saying "What?" might be dropped. In such cases, in spite of an apparently negative result indicated by the tests, the patient had received real benefit.

Did those who used elaborate apparatus make any tests to exclude the psychic effect that the latter might produce? For example, had anyone treated a series of patients with the apparatus concealed from the patients by being in another room?

Dr G. Cathcart.

As one who knows personally the heavy handicap of chronic deafness, I am delighted to observe how much time is being devoted to-day to considering the treatment of this malady as opposed to the lengthy discussions of the pathology of deafness to which we have in the past listened so often and which have not advanced the treatment of deafness in the least, but have only led those whose chief aim is to advance the study of pathology to say that it is useless to attempt the treatment of chronic deafness.

I will add to this discussion a few words on a method of treating chronic deafness to which I have devoted much time during several years past, namely, the Zund-Burguet Electrophonoide method.

Looking through my case records I find that I have treated a total of 623 cases of chronic deafness by this method alone. These 623 cases are divided as follows: 209, chronic otitis media; 158, nerve deafness; 172, otosclerosis, and 84, mixed deafness. These

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subdivisions are admittedly arbitrary to a certain extent, and other otologists might classify them somewhat differently. Nevertheless, they were all cases of chronic deafness which had not been alleviated by the ordinary methods of treatment. My results are as follows:—

Of the 209 cases of chronic otitis media, 141 were improved and 68 showed an improvement so slight as not to warrant continuation of the treatment; of the 158 cases of nerve deafness, 116 were improved and 42 showed little or no improvement; of the 172 cases of otosclerosis, 90 were improved and 82 showed too slight improvement to warrant continuance, and of 84 cases of mixed deafness, 49 were improved and 35 showed little or no improvement. Thus, out of a total of 623 cases of chronic deafness of various types, 396 were improved after treatment by the electrophonoide method and 227 cases either did not improve or improved so little that treatment was not continued. The percentage of improvement after treatment by the electrophonide method is therefore 63.56.

THE PRESIDENT

said that the public expected a great deal to be done in the treatment of chronic deafness, and otologists did their best to meet that demand. He had been impressed by the difficulties encountered in the estimation of hearing. Mr Thacker Neville had reported cases in which he had been unable to find improvement in hearing, yet the patients themselves were convinced that they were better. This discrepancy was probably due to the method of testing. He (the speaker) had found cases in which, tested by watch or acoumeter, there was considerable improvement, but the patients were not satisfied, because, they said, they did not hear better. A more reliable method was required for estimating hearing capacity.

MR A. LOWNDES YATES

said that in this discussion no speaker had commented on the condition of the external ear.

Wax was frequently absent from the external auditory meatus in cases of chronic deafness, and if one selected 100 cases in which wax was absent and 100 cases in which wax was present, it was generally possible to say that the percentage of cases who would get well was very greatly higher in the group among those with wax in the ears than among those in which wax was absent. If wax was present in excess, it was the exception rather than the rule to find that on removal of the wax the hearing did not return to normal. The theory which fitted these facts was that the wax acted by preventing evaporation from the middle ear and that, if wax was absent and mucus was present in the middle ear, the mucus became more

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viscid as a result of evaporation, and the deafness was correspondingly increased.

He had obtained benefit in his cases from ionisation of the external auditory meatus, but ionisation of the Eustachian tubes often yielded excellent results.

Mr Watson-Williams had drawn attention to the calcium metabolism in otosclerosis. The blood-clotting time had been taken in a considerable number of these cases by himself and others, and it might be of interest to mention that this was found to be raised and also that there was as a rule an increase in the calcium content of the blood. The general administration of ultra-violet light had, in some cases, improved the calcium content and the clotting-time, but although this was evidence that there was some alteration in the calcium metabolism there was some difficulty in arriving at the nature of this alteration.

In cases of chronic deafness the chief difficulty appeared to be to find out which cases were in the period of curability and which had passed this period, for the clinical signs and symptoms were very similar in both groups and at present there existed no criterion, in cases of chronic deafness, as to which cases were likely to be cured.

ABSTRACTS

EAR.

Morphological Changes in the Inner Ear caused by the Abnormal Positions of the Fœtus in Utero. A. PRECECHTEL (Prague). (*Zentralblatt f. Hals-, Nasen-, und Ohrenheilkunde*, 1928, Vol. xiii.)

In this paper the author discusses the possibility of the development of anatomical and pathological abnormalities in the internal ear and central nervous system secondary to the persistence of abnormal positions during intrauterine life.

(*Note.*—It is hoped that a more detailed abstract of this important paper will be obtained later.)

The Author's Electric Audiometer. R. MIÈGEVILLE (Paris). (*Zentralblatt f. Hals-, Nasen-, und Ohrenheilkunde*, 1928, Vol. xiii.)

The apparatus was first described in 1922, and has ever since then been used for the exact determination of auditory acuity. It consists of a generator of electrical waves, of which the frequency and intensity can be regulated, thereby producing pure audible

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