being, however, only four years old. He found, amongst other pathological changes, abnormalities of the blood-vessels in the internal ear, resulting in aneurismal expansions and hæmorrhages, and it seems probable that similar changes occur in the cases of hereditary syphilitic ear disease described above. The different authors do not, however, agree as to what part of the hearing organ is the seat of the disease, Hutchinson considering the auditory nerve, or its distribution in the labyrinth, as the seat of morbid changes, while Kipp and Fournier refer these to the fourth ventricle, and Knapp thinks that the labyrinth is diseased. I think all the ear symptoms observed in hereditary syphilitic deafness can easily be explained as originating principally from a labyrinthine disease, but must, on the other hand, lay stress upon the fact that objective and subjective symptoms of catarrhal disease of the middle ear are not at all unfrequently observed in cases of hereditary syphilitic disease, and especially perhaps in the earlier stages of the deafness. Although I do not think that the middle ear disease plays any important *rôle* in the loss of hearing, I think that several circumstances tend to show that the catarrh of the tympanic cavity might have some influence as the primary cause of the labyrinthine disease.

Prognosis.—The prognosis is absolutely bad, and it seems that there is only one case—observed by Knapp—on record where the disease took a favourable course.

Treatment.—Although the different observers have tried many different modes of treatment, local as well as general, the deafness is sure to progress uninfluenced by any treatment. It seems even as if local treatment sometimes only causes a more rapid progress of the deafness, and I think, therefore, it is only advisable to try general anti-syphilitic treatment or injections of pilocarpin.

ASSOCIATION MEETINGS.

ANNUAL MEETING OF BELGIAN LARYNGOLOGISTS AND OTOLOGISTS, LIEGE.

June 5, 1892.

About twenty-five Belgian physicians comprised the meeting, which was presided over by Dr. Schiffers. Among the strangers present were Drs. Gouguenheim (Paris), Noquet (Lille), Wagnier (Lille), Koch (Luxemburg), and Moll (Arnheim).

Dr. SCHIFFERS presented a young man, operated upon ten years previously for *Papillomatous Vegetations of the Larynx*, and called attention to the curability of these affections, attributing the success obtained to insufflations of savin and tannin (equal parts), which he had continued for some weeks.

Dr. GOUGUENHEIM remarked that in certain cases of recurrent papillo-

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mata he had obtained complete cure by curettage and frictions with camphorated naphthol.

Dr. HICGUET remarked that he had obtained the same result by cauterizations with fused chromic acid. A probe is lightly heated at its extremity, and plunged into chromic acid, which fuses and adheres to the probe. These cauterizations are renewed every eight days until complete disappearance of the growths.

Dr. BAYER recommended frictions with pure glycerine in these conditions.

Dr. SCHIFFERS showed a second patient, with a very rare affection, consisting of a *Circumscribed Dilatation of the Upper Portion of the Œsophagus.* This anomaly is generally considered to be congenital, but in this case the origin of the diverticulum was clearly due to pressure by a goître. The patient did not suffer any inconvenience from the presence of this dilatation.

Dr. SCHIFFERS presented a third patient, exhibiting *Specific Disease of the Larynx.* The lesion was limited exclusively to the epiglottis, which had nearly entirely disappeared. This had occurred very gradually, the patient experiencing no inconvenience. No distinct symptoms of syphilis had ever been evident, but the diagnosis was confirmed by the speedy cure which took place under mercury.

Dr. CAPART then showed a child presenting at the base of the cranium the *Remains of a Fibrous Polypus.* This child had previously been operated upon for adenoid vegetations. When he presented himself anew to Dr. Capart he found a tumour descending into the pharynx. Bipolar electrolysis was employed, two needles being introduced through the nasal fossæ and two in the pharynx—actually it was monopolar electrolysis that was employed—for fifteen minutes, using twenty-five milliampères.

Dr. GOUGUENHEIM considered monopolar electrolysis to be tedious, and preferred the bipolar method, using sometimes even sixty milliampères. In electrolysing a growth of this kind one day he saw it perforated in a very short time—about ten minutes.

Dr. CAPART then reported three cases of *Mycotic Affection of the Throat.* In the three patients there were extensive whitish spots bathed with muco-pus, and in all there occurred paralysis of accommodation and mydriasis.

In the first case it was found that the patient had been in the neighbourhood of several sick pigeons, and an autopsy of the birds that died exposed the same condition from the beak to the œsophagus as the patient was affected with.

In the other two cases the affection appeared to arise from eating "paté de perdreaux." The principal symptoms were dysphagia, vomiting, diarrhœa, and dilatation of the pupils. A rapid cure was obtained.

Dr. Capart thought that the condition was a microbic affection related to diphtheria.

Dr. DELIE recorded a *Rhinoplastic Operation for an enormously Hypertrophied Nose.* The lobule was seven centimètres round. The operation consisted of an incision from the root of the nose along each side, so as to preserve only about the posterior third of the alæ. A third incision

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transversely connected to lateral incisions at their ends. A triangular flap was thus obtained and resected, its thickness varying with the size of the nose. The cartilages were partially removed, and the flaps of skin from the alæ remaining were brought together, and cure obtained in fifteen days.

Dr. HICGUET, in a case of a acneiform hypertrophy, employed galvano-cauterization, obtaining thus a nearly complete reduction of the tumour. The patient, however, returned six years after with a similar hypertrophy. Dr. Hicguet then practised resection of a flap, the result being complete, and the nose being restored to its former shape.

Dr. DELSTANCHE made a further communication upon *The Employment of Liquid Vaseline in Affections of the Middle Ear.* He used pure or iodoformed vaseline in acute inflammations, and in purulent otitis of influenzal origin injections of iodoformed vaseline have produced marvellous results.

Dr. DELSTANCHE then showed *Gum Elastic Sounds made rigid by a Lateral Mandarin,* which allowed the necessary curvature to be given and designed for injections in diseases of the attic. He then presented small obturators and a modification of his rarefier.

Dr. WAGNIER presented notes of a case of *Pemphigoid Bullous Eruption of the Larynx*, occurring in a man sixty-three years of age. After some acute symptoms, the author saw two very clearly-defined pemphigoid bullæ developed in the larynx. The bullous eruption was entirely limited to this part. The course of the affection was rapid, quickly subsiding, and there was no recurrence. The author does not consider the condition to be true pemphigus but rather what was formerly called acute benign pemphigus, an affection which since Hebra has been included in the polymorphous erythemata.

Dr. BAYER read notes of a case of *Primary Epithelioma of the Larynx: Intubation, Tracheotomy, Laryngectomy, Artificial Larynx.*

F. B., aged sixty-one, came to Dr. Bayer with almost complete stenosis of the larynx, arising from large granular tumours. One of these growths, examined microscopically, confirmed the diagnosis. Dr. Laurent found it to be well-defined epithelioma. Two days after, a further trial was made to remove these growths, in order to free the larynx a little. Hæmorrhage occurred, necessitating intubation, and subsequently tracheotomy, which was performed at the Hospital St. Jean. Fresh attacks of suffocation occurred next day and the following night. The canula was too short, and had slipped out of the trachea. A larger one was introduced, giving complete relief. Fifteen days after, laryngotomy was performed by Dr. Lavisé, but not being certain of the extent of the disease, he removed the whole larynx successfully, and without subsequent reaction. Cicatrization was rapid, and four weeks later an artificial larynx was applied (Gussenbauer's). The patient could then speak, and was presented at the Belgian Academy of Medicine. Recurrence occurred three months after and the patient died suddenly.

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Dr. BAYER read a paper upon *The Prodromal Affections of the Respiratory Apparatus in Typhoid Fever*; *Typical Pharyngeal Ulcerations.*

The onset of typhoid fever by affections of the larynx is not often presented to laryngologists. They therefore offer especial interest. The pathological symptoms are inflammatory injection of the nasal, naso-pharyngeal, pharyngo-laryngeal and broncho-tracheal mucous membranes, and also of the mucous membranes of the Eustachian tubes and middle ear. Bayer has seen typhus fever commence by follicular angina. In the pharynx superficial ulcerations of the pharynx, faucial pillars, arch of the palate, and uvula occur in the form of small oval losses of substance, circular, with clean cut edges, shallow, and reaching to the muscular layer, and not covered with exudation. But little important in themselves (they disappear towards the end of the third week), they are only of significance from a diagnostic and prognostic point of view. Well characterized as they are, they cannot be mistaken for tubercular, aphthous or other ulcerations, and the typical bacillus of typhus is found there. Prognostically they always indicate gravity (Vousviller).

Bayer related a case exhibiting this symptomology, and justifying the unfavourable reputation of these ulcerations prognostically. As to the larynx, in which the *soi-disant* catarrh, since there is no increased secretion, is certainly the most frequent affection, there is besides observed, reddening of the vestibule, falling of epithelium, forming a furfuraceous layer on the epiglottis, the arytenoids, and the ary-epiglottic folds. If these ulcerations become deep they give rise to symptoms well known to laryngologists. According to Landgraf, these laryngeal symptoms are not in relation with the gravity of typhus.

Dr. SCHUSTER (Aix-la-Chapelle) spoke of *The Angina following Mercurial Treatment.*

It is especially seen after frictions. It is localized by caseous bleeding spots in the tonsillar cavity after displacing the anterior faucial pillar, and it indicates that the mercurial treatment ought to be suspended.

Dr. KOCH showed a photograph of *A Bone removed from the Larynx after Tracheotomy.* It was fixed between the vocal cords, and was pushed upwards and extracted through the mouth.

Dr. WODIN.—*A Case of Snoring, dating from Infancy.*

In a man of twenty-eight this was cured by cauterization of the turbinated bodies, removal of a portion of the uvula, cauterization of the posterior pillars and electrization.

Dr. RUTTEN.—*A Manubrium Mallei expelled from the Ear in a Clot of Blood.*

Specimen shown.

Dr. ROUSSEAU presented *Fenestrated Forceps for removing Spines from the Septum.*

Dr. EEMAN.—*Corradi's Tuning-Fork Test.*

Corradi's method was described in Bürkner's excellent treatise on otology, along with those of Weber, Rinne, etc., and Eeman was anxious to

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know if it deserved to be placed alongside of these classical tests. He experimented on 50 subjects = 100 ears. Of these 66 were normal, and 34 were affected with various diseases. The result was negative in 50 cases, in seven there was secondary sensation lasting only a fraction of a second, and a repetition of the experiment gave in all cases a negative result. In two cases the result was positive, there being a secondary sensation from two to three seconds. In the second group there was uniformly a negative result.

Eeman came to the following conclusions: The method of Corradi gives only exceptionally a positive result. When secondary sensation exists it is only of very short duration. Corradi's test has not the value that has been attributed to it. The experiments were made with the "la" tuning-fork of the Paris Conservatoire, and the "do" of the same octave.

Dr. EEMAN.—*Whispered Voice as a Measure of Hearing-power.*

In certain cases the limit of the zone of audition is easy to determine, the zone of silence sharply succeeding that of sound. In other cases there is a doubtful zone, extending sometimes for several mètres. Eeman attributes to these facts a prognostic significance. If there is a doubtful zone, and especially if of considerable extent, the prognosis is unfavourable. Possibly, also, these data have a diagnostic value as regards the seat of the anatomical lesions causing the deafness. It is chiefly in cases of labyrinthine affection, either primary or consecutive to otitis media of old standing, that a doubtful zone is most distinct.

Dr. DELSTANCHE preferred the method of Bing. When a tuning-fork is placed on the vertex, and the ears are stopped, there is increased resonance in the affected ear if the disease is tympanic, but in the sound one if it is labyrinthine.

Dr. HICGUET recorded a case of *Abscess of the Trachea.*

The patient was a man aged about thirty-six, who had lived for several years in the island of Borneo, and suffered from the diarrhœa of the country. When seen at the polyclinic the diarrhœa persisted, and he was considerably emaciated. He had a cough, with scanty expectoration of mucus. The left vocal cord was found to be paralysed. Auscultation and percussion revealed no pulmonary affection, and there were no glandular swellings in the neck. A bacteriological examination of the sputum was made, and fifteen days after Dr. Hicguet again saw the patient. He was suddenly called to him to find him in a suffocative paroxysm, the impediment appearing to be expiratory, and as if a growth was suddenly projected into the passage so as to obstruct it; inspiration was free. Laryngoscopic examination only revealed the paralysis of the left cord, and the three first rings of the trachea could be seen without any appearances of tumour. There was no glandular enlargement, but pressure upon the left side of the trachea provoked slight pain. The bad condition of the patient caused the idea of tracheotomy to seek the cause of the respiratory obstruction to be rejected. Next day the patient suddenly expectorated pus mixed with air-bubbles. Koch's bacillus was not discovered in the pus. Respiration then improved greatly, but the enteritis carried the patient off two days later.

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Unfortunately, autopsy could not be obtained, and the diagnosis of abscess of the trachea could not be confirmed.

Dr. HICGUET remarked that abscesses of the trachea are rare. Dr. Jacobi published a case last year, Dr. Rosenfeld of Stuttgart has recorded two cases, and Dr. Gotthelp of Munich recorded one case. This was a perichondritic abscess of the trachea. Gerhardt, in his work on perichondritic abscesses, states that they depend upon syphilis. In Dr. Hicguet's case there were no specific antecedents to be found. It was probably one of those perichondritic abscesses which explained the paralysis of the cord by compression of the recurrent.

Dr. DELIE asked if it was not a purulent bronchial gland?

Dr. HICGUET replied that perhaps it might be so, but there was no glandular enlargement. Autopsy alone could have decided the question, for in both cases laryngeal symptoms are observed.

Dr. BOLAND had published the case of a child in whom a glandular abscess of the trachea had caused sudden death, and no premonitory sign of the condition had ever been observed.

Dr. LAURENT.—*The Mastoid Antrum in the Child.*

The mastoid antrum may be the seat of suppuration either primary or consecutive to tympanic disease, the pus accumulating in this latter cavity, then in the attic, and passing through the *aditus ad antrum* into the antrum itself. Supposing that retention of pus has taken place in this region, paracentesis is performed, a certain amount of pus is evacuated, but the inflammatory phenomena continue. In such a case, in particular, an exploratory puncture can be made by a special process. The instrument consists of a perforating stem with a chisel-shaped cutting extremity. This stem is fitted with two canulas, the one long for introduction, the other short for fitting at the end of the other, round the extremity of the stem. To introduce the instrument one places its point at the postero-superior angle of the osseous meatus, and directs it backwards and inwards with a rotatory moment. The cavity can then be washed out and a more extensive operation proceeded with if necessary.

Dr. MOLL (Arnheim). *Two Cases of Mastoid Abscess with Perforation of the Median Wall (Bezold's) following Influenza. Recovery.*

A man, aged fifty, attacked with influenza in December, presented himself early in January with otorrhœa of the right ear, intense pains in the temples, lowering of hearing power to such an extent that loud voice was only heard quite close, no mastoid phenomena. The left membrane was incised, and the perforation in the right one enlarged, and irrigation of the tympanum through the Eustachian catheter was practised. Fourteen days later there was slight swelling of the right mastoid, which disappeared after antiphlogistic treatment and painting with iodine, &c.

On the 6th of February there was a renewal of the swelling extending to the apex of the process, where in a few days there formed a hard, painful tumour, filling up the retro-maxillary space, and effacing the outlines of the mastoid. On the 10th of February the abscess was opened by operation at the level of the meatus (in order to penetrate more easily,

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in case of necessity, into the mastoid antrum). There was found a soft, spongy and congested condition of the osseous substance, with here and there a spot of softening. On removing this with the cutting spoon healthy tissue was met, so that there was no need to open the antrum. The external surface was dissected off, and when the periosteum and attachments of the muscles were detached from the process a quantity of pus escaped. The inner surface of the mastoid apophysis was reached, free curettage practised, and a drain inserted. The pain disappeared, and for six weeks the patient seemed to be getting well, but after a cold day he suddenly complained of a return of pain in the temple and in the opposite ear. On examining this ear the hearing power was found to be lowered, but the tympanum and mastoid showed no signs of inflammation. There was, however, underneath the mastoid, a hard swelling, just like the one on the other side, and later there supervened paralysis of the facial nerve. The symptoms did not disappear under antiphlogistic treatment, so Dr. Moll proceeded to operate on the abscess, making the mastoid opening lower down, in order to leave the antrum intact. He found almost the same condition as on the other side—bone thickened, periosteum difficult to detach, and the abscess perforating the median wall. In order to avoid retention of pus he removed a large portion of the tip of the process, and after free scraping filled the cavity with iodoform gauze. As the temporal pain persisted after the operation, he opened the antrum eleven days later, and found it full of granulations, but containing no pus. The pain, however, disappeared, and complete recovery took place.

As regards the origin of these abscesses, it is to be explained by the structure of the mastoid process, as Bezold has indicated. The most remarkable feature is the temporary suspension of the symptoms, their sudden reappearance, and the formation of abscess with perforation.

Moll is an advocate for early intervention in these acute cases, especially those following influenza. The operation is not injurious if, following the example of Hessler and Politzer, we open only the abscess, and not the antrum. In this way deeper lesions are prevented, and prompt recovery is favoured.

Dr. BOVAL read notes of a case of *Operation for Naso-pharyngeal Polypus.*

The polypus was of the size of a large nut, inserted by a pedicle at the base of the skull, movable, and occupying the right half of the pharyngeal vault. After fruitless efforts to surround it with the galvano-cautery loop, introduced through the nose, he had recourse to Dr. Goris's snare, with which he removed the tumour with ease and without accident.

Dr. Hicguet (Brussels).

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THE FRENCH SOCIETY OF LARYNGOLOGY AND OTOLOGY.

Annual Meeting, May 2, 1892.

(*Continued from page 323.*)

Dr. ASTIER read a paper on *The Treatment of Certain Strictures of the Nasal Fossæ.*

The author, in the last number of the "Annales des Mal. de l'Oreille et du Larynx," described a new method of treating certain nasal stenoses, a subject to which he here returns. His apparatus is a cutting drum, 15 mm. long, having saw-teeth at its free border, and of 4-10 mm. breadth, which is fixed on to the dental engine, and the apparatus acts as a trephine and not as a drill. These instruments are meant to be employed in nasal stenoses exclusively arising from the bony skeleton. In hypertrophy of the turbinateds the instruments, though useful, can be replaced by the chisel or gouge. Septal ridges are better removed by saws, but the use of these instruments is difficult in cases where adhesions exist, the result of previous cauterizations. A to-and-fro movement of the saw is not always possible where there is obliteration of the posterior part of the nasal fossa. It is in these cases that the author's instruments find their principal use. When a large opening has been made, or a tunnel has been bored through the bony stenosis, one is master of the situation, and with the galvano-cautery or other trephines the cavity can be enlarged.

The author details a case illustrative of his treatment. When the ridge is located which it is desired to remove, the instrument is held in the hand like a pen, and applied to the part, being pushed from before backwards along the direction of the septum, according to the resistance felt. With the terminal of 5 mm. diameter a single application generally suffices to cause the disappearance of a ridge of average dimensions. Slight irregularities left along the edges of the furrow caused by the instrument may be got rid of with the galvano-cautery. The terminal of 7 mm. diameter is the best for the turbinateds. Only in one case out of 350 operations has a troublesome epistaxis occurred, and in another slight inflammation of the upper maxilla. Antiseptic precautions ought, of course, to be vigorously applied. The nares ought to be tamponed with salol or salicylic gauze after operation, and disinfectant injections be used. After two or three weeks all traces of inflammation and suppuration disappear.

Dr. MOURE remarked that the Germans employ the curette, gouge, or galvano-cauterization. Americans do not all use Bosworth's saw, and the drill was known in America before it was employed in France; it is a useful method of operation for regions which cannot be reached by the saw or electrolysis. It may be useful, not only for certain affections of the septum, but for small osteomata of the nose. It is also useful for opening the antrum of Highmore, and the orifice can be made of any size wished, or enlarged by using larger drills. The operation is not disagreeable to the patient.

Dr. SUAREZ DE MENDOZA said that for twelve years he had employed White's machine in preference to the French drill; and he had removal nasal osteomata and perforated the antrum with it. The operation is no more painful than the prick of a Pravaz syringe. The drill ought to be in the armamentarium of every specialist.

Dr. ASTIER said that when, eighteen months previously, he had first employed the drill, he did not know of the works referred to. He insisted upon the value of the drill in removing bony spines. Though it has been endeavoured to utilize

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the instrument for atresia due to thickening of the mucous membrane, this can have no other effect than to cause bleeding.

Dr. JOAL. *Tonsillar Fever and Purpura.*

Until latterly acute tonsillitis has been considered to be a simple inflammation of the palatine tonsils, and a purely local affection. Lasèque, in 1868, believed it in certain cases to be the manifestation of a general condition. Bouchard in 1881 included tonsillitis amongst the disorders which might be complicated by infectious albuminuria. Landouzy in his essays on "amygdalian fever" (1883 and 1885) insisted upon the general characters of the affection. Joal, in 1886, brought forward many cases of orchitis and ovaritis observed in acute tonsillitis. The idea of infectious tonsillitis is now generally admitted, and has been the subject of an inaugural thesis by Sallard (1892). Nephritis, orchitis, ovaritis, endocarditis, and arthritis are complications which have been studied. Some cases of purpura in tonsillitis have been published, but their number is very small. Dr. Joal records three new cases. In the first case, a man of arthritic temperament, the purpura appeared on the twelfth day after the onset of the tonsillitis, upon the legs, thighs, and abdomen, the chest and forearm, cure not taking place until the twenty-third day. The second case was that of a lady of twenty-eight, and six days after the onset of acute tonsillitis purpuric spots appeared upon the inner aspect of the thighs, followed by similar eruption on the legs, abdomen, and inter-mammary region. The third case was that of a man, aged forty-three, of arthritic temperament, attacked with right tonsillitis for eleven days, when purpuric spots appeared on the front and back of the thorax and abdomen. There was also a trace of albumen in the urine.

Dr. Paul Le Gendre made a communication to the Soc. Méd. des Hôp., recording the case of a woman who had a tonsillitis of long duration, in the course of which she had several eruptions of purpura and papular erythema, which ended when the angina did. C. Bocca, in 1883, recorded the case of a patient who manifested purpura a month after an angina, and in the interval between the two manifestations remained in a state of profound depression. In a second case an angina developed between two attacks of purpura. In 1884, Rehner recorded a case of purpura of pharyngeal origin, and in which the pathogenic agents were staphylococci. In the patients observed by Le Gendre and Claisse streptococci would appear to have been the principal agents of the tonsillar lesion. But the most various microbes may be present and determine purpura.

The method of its production is intoxication by soluble poisons—toxines—whether they alter the composition of the blood or influence the vaso-motors. Dr. Joal adopts this view, which has been supported by Le Gendre and Claisse, but was not able to investigate the pathogenic agents, either in the tonsillar products or the purpuric spots. *(To be concluded.)*

PARIS SOCIETY OF LARYNGOLOGY, RHINOLOGY, AND OTOLOGY.

Calculus of Wharton's Duct. By Dr. H. CHATELLIER.

Dr. Chatellier presented a calculus of this kind taken from a man aged thirty, who had a circumscribed swelling of the right submaxillary gland and spontaneous pains, which lasted for five days. Wharton's duct was distended, and a hard, ovoid, well-defined lump was situated two centimètres from its extremity. Retention was not absolutely complete. Pressure failing to dislodge the calculus, an incision was made with a bistoury, and the calculus extracted. It was one centimètre long,

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and five millimètres broad, of irregular surface and yellowish, weighing fifteen milligrammes when dried.

A Note on Contraction of the Transverse Arytenoid Muscle (an endeavour to interpret the laryngoscopic signs attributed by Gerhardt to "bilateral and complete paralysis of the posterior crico-arytenoid muscles"). By Dr. ALBERT RUAULT.

The old researches of Longet and the modern ones of Jeanselme and Lermoyez upon the larynges of patients dead of cholera have definitely proved that the action of the transverse arytenoid muscle is to strongly approximate, even to contact, the inner surfaces of the arytenoid cartilages. The vocal apophyses follow the movement of the bodies of the cartilages and approximate, but without contact, and preserving a relatively slight mobility. The structure and functions of the posterior crico-arytenoid muscles are also exactly known. Rühlman showed that this muscle was composed of two distinct bundles, the one external, nearly vertical, large and voluminous relatively to the other, of which the fibres are more horizontal. Hayes established the fact that the external fibres draw the arytenoid cartilages outwards and downwards, opening the glottis in triangular form (calm inspiration); the others, when their action is superadded to the external fibres, causing the cartilages to rotate and make the ordinary triangular glottis take a pentagonal form (forced inspiration). Jelenffy's researches teach us that, independently of the respiratory *rôle*, the posterior crico-arytenoid muscles are not less important as vocal muscles, assuring the fixation of the arytenoid cartilages and the tension of the vocal cords during phonation when they act in concert with the lateral, the thyro-arytenoid, and the crico-thyroid muscles.

Isolated contraction of the transverse arytenoid muscle leads to complete occlusion of all the posterior part of the inter-arytenoid region, leaving a slight interval between the two lips of its anterior portion. It will cause the glottis to assume the form of a fusiform cleft of a length of about three-quarters of the antero-posterior diameter of the laryngeal cavity at this region, and presenting its maximum largeness of an average of two millimètres, at the height of the extremity of the vocal apophyses. These preserving a certain mobility, whilst the action of the lateral adductors and tensors is not combined to the contraction of the transverse arytenoid, will be raised and slightly separated by the current of air at each expiration, and at each inspiration they will be lowered by the pressure of the air drawn in. The transverse arytenoid will not only annihilate the action of the antagonistic muscles (*i.e.*, the external fibres of the posterior crico-arytenoid muscles); it will also oppose the accomplishment of the respiratory function of the internal fibres of these muscles, which cannot rotate the arytenoids and carry their apophyses outwards if the external fibres have not commenced to separate the internal surfaces of those cartilages. Without being absolutely prevented, respiration will be greatly impeded; the glottic space, although very narrow, will permit the passage of a quantity of air sufficient to assure hematosis while the patient is in repose, but on the least fatigue, or effort, dyspnœa will appear. The voice will not be interfered with.

The laryngoscopic signs and symptoms of contraction of the transverse arytenoid muscle occur from time to time for clinical observation. It is not rare to see patients who present no alteration of the speaking voice, but dyspnœic symptoms not visible while at rest, but indicated by stridor on the least effort, or by attacks of suffocation occurring under various influences often difficult to determine. Laryngoscopically, during respiration the internal surfaces of the arytenoids are found to be motionless and in contact, the vocal cords in the median line, but sufficiently flask-shaped (when not in dyspnœic spasm) to be alternately depressed and raised by the inspiratory and expiratory current, which passes across a narrow

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fusiform space, the median part of which appears to be a little larger at the moment of expiration.[1]

During phonation the laryngoscopic image shows nothing abnormal. Until now this condition of the larynx has not been referred to isolated contraction of the arytenoid muscle, which Ruault believes to be its true cause. Gerhardt called it bilateral and complete paralysis of the posterior crico-arytenoid muscles. Krishaber believed it to be unilateral spasm of the adductors, meaning the arytenoid muscle. Morell Mackenzie, Semon, and others shared the opinion of Gerhardt, admitting, besides paralysis of the abductors, a secondary contraction of the adductors. Krause leaned to Krishaber's view, believing it to be a primary contraction of the adductors with, in certain cases, a secondary myopathic paralysis of the abductors, an atrophy of these muscles consecutive to their functional inertia. Numerous authors (Gouguenheim, Tissier, Massei, Raugé, etc.) have adopted this latter view.

None of these opinions are justified by convincing arguments. It is not possible to conceive a complete paralysis of the posterior crico-arytenoid muscles without an affection of the voice, and without each effort at phonation being marked laryngoscopically by a movement of translation and oscillation forwards of the arytenoid cartilages. On the other hand, it is impossible to admit a general contraction of the adductors when the vocal processes are seen to follow during respiration the displacements caused by the current of air against the relaxed vocal cords, and fixed in vocal position by the lateral crico-arytenoids, only at the moment of phonatory effort. The perfect symmetry of the two halves of the larynx during respiration and phonation is not reconcilable with Krishaber's theory, applicable only to the case where respiratory flaccidity will be indicated by one vocal cord. Only can contraction of the arytenoid muscle give the explanation of the laryngoscopic image. But Ruault does not pretend to say that there is a primary contraction of this muscle; in fact, except in hysteria, this contraction is almost always secondary to isolated paralysis of the antagonist—*i.e.*, to a paralysis affecting only the external fibres of the posterior crico-arytenoid muscle, the two bundles of fibres of this muscle being physiologically and anatomically distinct. 'That there is no affection of phonation is easily explained, since the vocal function of the posterior crico-arytenoid are almost completely confined to the internal bundle antagonized by the lateral crico-arytenoid. It is intelligible that paralysis of *one* postero-external crico-arytenoid, from whatever cause (mediastinal tumours, tabetic or infectious peripheral neuritis, etc.), may be followed by contraction of the single arytenoid muscle giving rise to the same signs and symptoms as bilateral paralysis.

Meeting of March 4 (continued).

Dr. MÉNIÈRE.—*A Case of Foreign Body in the Ear.*

In April, 1891, a young foreign lady, aged twenty-two, was brought to consult Dr. Ménière on account of a moderate degree of deafness in the left ear, dating from August, 1890.

When bathing one day, in a rough sea, she was knocked down by a wave and thrown in almost a stunned condition on the beach. In the evening her left ear was somewhat deaf, and her voice seemed to resound in it. The local medical practitioner recommended repeated injections for several days without effect. The same result followed similar treatment at the hands of her family doctor. She

[1] These passive movements of the free edges of the vocal cords, more extensive near the middle portion, and which simulate approximation of the cords during inspiration, ought not to be confounded, as has been wrongly done, with inspiratory approximation of the vocal apophyses (inverse respiratory type), which is observed in other conditions.

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then consulted an aurist in her native country, who found simply an unusual thickening of the membrane, and practised catheterization continuously without benefit.

At last, in April, 1891, the family visited France, and the young lady came under the care of Dr. Ménière.

On examination the fundus of the ear appeared uniformly concave and of a brilliant mother-of-pearl whiteness. The appearance did not correspond to any known pathological condition, and when, to clear up the doubt, the probe was used there was a sensation of quite an unusual degree of hardness and immobility. At the upper part, near the roof of the meatus, there was a delicately shaded line, but the probe detected everywhere the same density of resistance. There was no cerumen and no epidermic detritus. On learning the history of the sea-bathing incident, Dr. Ménière came to the conclusion that the case was one of a foreign body—one of those thin shells always found in the sand on the sea-shore. He filled the ear with "coal-tarized" glycerine, and after five minutes practised irrigation by means of "la grande pompe de mon père." At the second injection the foreign body fell out into the basin. It was a thin shell, of pearly tint, uniformly concave, just as if it had been modelled on the tympanum. The ear presented afterwards a normal appearance and the hearing became normal.

The chief interest in the case is the remarkable resemblance of the foreign body to the membrana tympani, and it deserves to be remembered on that account.

Prof. ADAM POLITZER.—*On the Opening of the Mastoid Process in Cases of Acute Median Otitis following Influenza.*

The frequency of inflammations of the middle ear in the course of the last two epidemics of influenza, varying from the mildest catarrh to the most intense suppuration, is well known. This paper is limited to the description of cases of influenzal otitis media, complicated with abscess of the mastoid, which, owing to the rapid onset of menacing symptoms, call urgently for operative opening. This intervention is required much more often than in the course of protopathic acute median otitis.

Before describing the course and symptoms of the affection it is well to devote a little attention to the anatomical varieties in the structure of the normal mastoid process, as acquaintance with these has considerable importance in the localization of the disease, and in the determination of the mode of intervention.

The tympanum communicates, as is known, at its posterior part with a cavity of four or five millimètres in diameter, occupying the superior segment of the apophysis—the mastoid antrum. The vertical osseous portion situated below this presents, according to Zuckerkandl, great variations in its internal structure. In the first variety (thirty-six to forty per cent.) we find numerous air-containing cells of greater or lesser dimension are situated at a varying level (*processus mastoideus pneumaticus*). These cavities communicate with each other and with the antrum, but—this is the point of greatest importance in connection with the genesis of the abscess—these ways of communication are often so narrow that it is scarcely possible to introduce even the finest needle. In a second variety (twenty per cent. of cases) the conformation known as *processus mastoideus ploëticus* is found. The antrum is the same as in the former, but there are no air-cells round it; it is surrounded by spongy bone, resembling the diploë of the skull, containing vessels and adipose substance. In certain individuals the whole apophysis may even be formed of a compact eburnated mass. In the last variety (forty to fifty per cent.) there is a combination of these various forms, air-cells and diploetic substance being intermixed, and occupying in particular the antero-superior segment of this bony region.

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Experience shows that the majority of cases of abscess due to influenza occur in mastoid processes of the pneumatic type, because the narrow passages between the cells and the antrum become closed up by the swelling of the mucous membrane, and retention of the pus ensues. It must be observed that the mere presence of pus in the mastoid cells does not necessarily indicate the existence of an osseous abscess, as it is constantly found in cases of suppuration of the middle ear, in which there was not the slightest sign of mastoid abscess manifested during life. The presence of pus in the mastoid is then explained by gravitation during the dorsal decubitus. In addition, tympanic inflammation may by continuity lead to the formation of pus in the mastoid cells, but as long as free communication exists between them, the antrum and the tympanum, and as long as pus can flow freely through the perforation in the membrane, the symptoms characteristic of mastoiditis do not develop. Nevertheless, occasionally, though very rarely, an abscess may be found in a mastoid of the diploetic type, but in such cases the suppurating cavities are much smaller than in the pneumatic. As regards the compact mastoids, their eburnated structure excludes all possibility of suppuration in their interior.

On the whole it is important to recognize that the abscesses have their seat *in the middle or lower segment of the vertical part of the process, notably in the superficial cells situated under the cortical layer.*

Before passing to the description of the symptoms, it is to be insisted on that whereas mastoid abscess consecutive to protopathic otitis media is susceptible of spontaneous resolution with absorption of the pus poured out into the cells, grippal mastoiditis is, on the contrary, little subject to such a termination, the pus in these cases having apparently a destructive action on the surrounding tissue, leading almost certainly to caries of the apophysis.

The symptomatology varies with the period at which the patient comes under observation. It is only exceptionally that the specialist has the opportunity of recognizing the affection at its outset. Usually, even in the majority of cases, we only see the patient when perforation of the membrane has already taken place.

The symptoms which precede perforation are those of ordinary suppuration of the tympanum, with redness and swelling of the membrane, and yellowish coloration of its posterior segment. At the same time there are lancinating pains in the ear and at the level of the mastoid process, sometimes mild at first, but soon becoming intense, radiating in various directions, towards the vertex, the occiput, the teeth, or even the shoulder. At the same time there is usually at the top and middle portion of the mastoid acute sensibility to pressure and percussion; and while at first the pains are somewhat mobile, later on they become more localized in a limited spot, and indicate the formation of an abscess. Generally, but not always, the point of sensibility to pressure corresponds to the situation of the purulent collection. There is notable elevation of local temperature on the affected side. The general temperature may at first oscillate between 37·5° and 39·5° (99·5° and 103·1° Fahr.), rarely it reaches 40° (104° Fahr.). This hyperpyrexia may, however, be absent, and the writer has observed a case in which mastoid suppuration occurred without the temperature rising much above 37° (98·6° Fahr.).

The formation of mastoid abscess manifests itself often by clear objective symptoms. The membrana tympani undergoes distinct swelling, its superior portion projects in a conical or nipple-like manner; at the same time there is a lowering of the postero-superior wall of the auditory meatus, but this is of slight importance as an indication for opening the antrum. The aural suppuration is

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abundant; only rarely does the discharge diminish, while the inflammatory symptoms persist with the same intensity in the mastoid.

The cause and termination of mastoid abscesses present several varieties. In a first series of cases, where the tympanum is not yet perforated, the mastoid pains come on at the same time as the inflammatory manifestations in the tympanum, or very soon after. In other cases the symptoms of the formation of a mastoid abscess only come on when the drum is already perforated. In cases of spontaneous resolution of the mastoid inflammation the pains diminish progressively, although slowly; there may even be temporary suspension of the painful symptoms for several days. In some cases, when this has taken place, the symptoms of the formation of the abscess have reappeared suddenly with such violence as to require immediate operation.

The symptoms of mastoiditis may persist several weeks with variable remissions of pain and fever. Generally a profuse suppuration indicates the persistence and extension of the abscess; on the other hand, one may think of retrocession of the lesion when the pus becomes less abundant. Cases have, however, occurred in which there was cessation of the median otitis at the same time that the perforation reappeared, while on the other hand the mastoid symptoms persisted. Meanwhile it may be said in general that influenzal median otitis, complicated with mastoid abscess, has a much longer duration than protopathic suppuration of the tympanum.

The termination of mastoid abscess may take place by spontaneous recovery, although this result is much more rare after influenza than in ordinary cases. This has been shown more in the last epidemic than in the one preceding it, as if the recent epidemic was of a more benign character. In a case recently operated on by Prof. Politzer at Dr. Low's dispensary several weeks after the commencement of the aural affection, and presenting all the signs of mastoid inflammation, there was found an enormous cavity filled with pus and granulations, which on its inner side reached to the neighbourhood of the lateral sinus, which was laid bare for several centimètres. Thanks to the surgical intervention, the cavity filled up and recovery has nearly taken place. If the case had been left, phlebitis, thrombosis, and death must have occurred.

In a few cases the mastoid abscess opens outwardly, but in general the integumentary coverings of the process are not so infiltrated as in ordinary cases. It is known that a purulent collection near the surface of the bone may lead to another, not communicating with it, under the periosteum.

That influenzal otitis may lead to death is undoubted, as shown by the following case:—

Leopoldine M——, aged thirty-five, was attacked with influenza last Christmas. On January 3rd there came on acute otitis. At the commencement of February she had violent pain in the ear at the level of the mastoid, and on the 15th there was great swelling round the auricle. On the 1st of March she entered Prof. Politzer's clinic with the following symptoms:—Abundant discharge of pus from the meatus, which was much narrowed by a swelling of its roof, no perforation being visible. Irrigation was practised easily. Loud speech was heard at three mètres. There was abnormal temperature, and over the mastoid there was a fluctuating abscess. In three days the abscess discharged itself by the meatus, the mastoid was not tender, the temperature was normal. By the 10th the discharge had much diminished. On the 12th there suddenly supervened a condition of coma with thread-like state of the pulse. She was roused by an injection of camphorated ether, complained of pain in the temples, and had ptosis on the right side. Later the coma returned, with bilateral ophthalmoplegia, deviation of

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both eyes toward the right, and slight paralysis of the right facial nerve. Temperature 90° Fahr. She was transferred to Prof. Billroth's clinic, where Dr. Eiselberg trephined the mastoid. The lateral sinus was exposed, the dura mater was normal, but under it was a meningitic false membrane, especially on the posterior and superior part of the sinus. Puncture of the brain with a Pravaz syringe drew forth some pus, and opening of the abscess evacuated sero-purulent material. Death occurred six days after the operation. An abscess was found in the temporal lobe, and behind it was a smaller one.

Some anatomical specimens exhibited by Prof. Politzer further illustrated the subject. One was from a man of seventy-two, previously affected with marked deafness. On December 29th, 1891, he was attacked by influenza, complicated on January 9th by suppurative otitis of the right ear. Three days later the symptoms of meningitis came on, and the patient died. The preparation showed the drum-head not perforated, the tympanum full of creamy pus, the antrum with old fibrous tissue, which extended into the mastoid cells, and was bathed also with pus. The pus had perforated the wall of the sinus and the posterior part of the skull, leading to sinus thrombosis, and then to meningitis.

A second specimen was from a man aged eighty, who was attacked with influenza on the 9th of last February, followed by suppurative inflammation of the left tympanum, and later by erysipelas of the head, which, with metastatic nephritis, led to death. *Post-mortem*, there was no perforation of the membrane, but the tympanum was filled with purulent secretion, and the mastoid with sanious pus, which filled not merely the antrum, but all the cells. There was no direct connection with the erysipelas.

The diagnosis of the formation of the mastoid abscess depends on the *ensemble* of symptoms above mentioned, and on the course of influenzal otitis. It is most difficult at the commencement, because tenderness to pressure on the mastoid may come on at the beginning of ordinary acute otitis, and disappear in a few days. In the same way there may be temporary pain, occasioned by early congestion of the mucous lining of the cellules and osseous tissue of the mastoid. On the other hand, the diagnosis of abscess can be made with every facility and certainty when along with an abundant otorrhœa and depression (swelling) of the postero-superior wall of the meatus there is severe pain in the mastoid, continuous fever, loss of sleep, nervous super-excitement continued beyond the eighth or tenth day from the commencement of the otitis. If these symptoms are present when the otitis has already lasted several weeks, the presence of a mastoid abscess is undoubted.

The presence of external, sub-periosteal abscesses, such as Schwendt has described, must be very rare, and can only be definitely established by the absence of pus in the mastoid after trepanation. In the cases in which Prof. Politzer has operated, whenever he has found pus outside, he has found it internally as well.

The treatment of influenzal median otitis varies with the period of the disease at which the patient seeks our advice.

If the case is seen early, before perforation has occurred, and the membrane is red, swollen, and bulging, there being at the same time mastoid pain, increased by pressure, there must be no delay in performing paracentesis of the drum-head to allow free exit for the contained pus. This is often sufficient to abort the mastoid inflammation; at the same time it is necessary to keep up the application of ice to the mastoid region. In a case with well-marked symptoms these disappeared completely after paracentesis of the membrane and the use of Leiter's cold coil behind the ear.

It is different when the case has lasted eight or ten days without perforation. Then there is a great probability that an abscess already exists in the mastoid, and

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this must be opened after paracentesis of the membrane. A case treated in the country by Politzer illustrated the truth of this principle.

Similarly, when spontaneous perforation has taken place early in the disease, it is necessary, unless very grave symptoms call for urgent operation, to have recourse to antiphlogistic treatment. Leeches are rarely of any good at the commencement, and later on they are quite useless; on the other hand, the continuous use of local refrigerants (small ice-bags or Leiter's cold coil) has yielded in many cases most remarkable results. To increase the effect, the mastoid may be painted with iodine, or rubbed with iodo-iodide ointment under the cold coil. This treatment is most grateful to the patient, and has a diagnostic value, inasmuch as, so long as the patient finds it comforting, we may assume that the suppuration is still going on, but, when he begins to reject it, we may say with great probability that resolution of the abscess is taking place.

Daily irrigation of the middle ear with warm water, or one to two per cent. boric lotion through the Eustachian tube is also beneficial, although the mastoid abscess does not usually communicate with the tympanum. These means often effect a complete cure; but if, after three or four days, the mastoid pain and the pyrexia still persist, no time must be lost, and the mastoid must be opened at once. In most cases there is no danger in doing this, on account of the superficial position of the abscess. In discussing the question of early or postponed operation, we have to keep in mind cases of recovery under antiphlogosis; but, on the other hand, there are cases in which profound disease of the bone, meningitis, or sinus phlebitis, followed by death, have resulted from leaving matters to themselves. One is, therefore, led, seeing the innocuousness of the operation, to determine on early interference, especially as the abscess is then small, the necessary destruction of substance slight, and more likely to be followed by favourable and rapid recovery.

If the symptoms of mastoiditis have lasted for two or three weeks, immediate operation is called for. The seriousness of these abscesses of long standing is illustrated by the case of an anæmic and poorly-nourished young girl of twenty-two, attacked by influenza at the end of December, 1889, and, two days later, by left otitis media. Towards the middle of January, 1890, the retro-auricular swelling and the feverishness disappeared, but, on the 21st, she had tenderness of the left mastoid, copious discharge of pus from the meatus, bulging of the posterior segment of the membrane, and perforation, with pulsation in the antero-inferior part. Two days later, rigors and headache supervened, her temperature rose to 39·2° (102·5° Fahr.), and mastoid opening was performed. An abscess was found at the depth of five millimètres. In ten days there were symptoms of propagation of the disease to the posterior part of the cranium. A second opening was made further back, evacuating pus and exposing the dura mater. A few days later, delirium, followed by coma, came on, and she died. The autopsy revealed rupture of the sigmoid sinus, at the level of the posterior opening, and thrombosis in the venous channel. The posterior part of the dura mater was covered with a fibrinous deposit, and the cerebellum contained an abscess of the size of a walnut.

The operation is thus practised:—The neighbouring parts of the scalp are shaved and carefully cleansed. Under anæsthetics a vertical incision, slightly concave in front, is made about half a centimètre behind the insertion of the auricle, and four or five centimètres in length. This incision must be carried through all the tissues, including the periosteum, and should reach nearly to the tip of the process. The periosteum is then peeled off by means of an elevator, and pushed backwards and forwards so as to leave exposed a bony surface of one and a half to one and three-quarter centimètres square. All hæmorrhage is to be arrested by means of tampons of sublimate gauze or pressure forceps. As far as that goes,

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the best method, even if the hæmorrhage is abundant, is to forcibly separate the edges of the wound by means of large retractors. A large layer of the bone is next to be removed by means of Schwartze's gouge. Often the first application of the chisel is sufficient to liberate the pus, which may spurt out forcibly. Sometimes it is necessary to penetrate to the depth of one and a half centimètres, but rarely further. Occasionally the bone has to be opened down to the lowest part of the wound, if the abscess extends towards the apex of the process. All diseased tissue is then to be scraped away with a sharp spoon.

It is a most important fact that these abscesses hardly ever communicate with the antrum, but are almost always isolated. We must, on no account, try to force an opening into that cavity, as our abscess, after we have been at pains to scrape and clean it, would become re-infected by the pus reaching it from the middle ear. It is quite different in chronic middle ear suppuration, where the chief object is to open the antrum in order to disinfect the tympanum by means of continuous irrigation.

After the abscess cavity has been scraped, it may very conveniently be explored by means of a small electric lamp. The wound should be bathed with weak sublimate lotion, and lightly packed with iodoform gauze. A few or more stitches may be inserted according to the amount of bone removed. In superficial cases the whole wound may be sewn up after being thoroughly dusted with iodoform. In deeper abscesses, however, only the upper and lower extremities of the wound should be closed and an iodoform dressing applied, as further scraping may be necessary. Later on, when the suppuration has ceased and the wound is covered with healthy granulations, the edges may with every advantage be brought together as advised by Gruber, and stitched after cocainization.

The good effects of the operation generally show themselves speedily by the disappearance of the local pain and the reduction of temperature. This has been shown by the observations of Schwartze, Chatellier, and Schubert. The condition of the tympanum is often improved by this operation, in spite of the fact that there is no communication between the abscess and the middle ear. The discharge of pus diminishes and the membrane may cicatrize. This was shown in the case of the wife of an advocate under the care of Dr. Eisenschitz, in whom the discharge ceased on the third day; the membrane healed and the hearing power returned. This is the usual result, but occasionally disturbances of hearing accompanied by tinnitus may persist for some time.

The ability to operate on mastoid abscesses is not so necessary for physicians practising in large towns, where there are skilled specialists at hand, as for the country practitioners, who have to treat them on their own responsibility. There can be no doubt that many of the fatal cases of influenza occurring in the country have been due to the complication described, no operation having been performed, and the death having been attributed to pyæmia or meningitis. Such cases should be treated satisfactorily by any practitioner who is *au courant* in the fundamental principles of modern surgery. In these influenzal cases the operation is much easier than in mastoiditis following chronic suppuration of the middle ear, in which the antrum has often to be opened at a considerable depth, at the risk of injuring the important structures in its neighbourhood (lateral sinus, facial nerve, horizontal semicircular canal). If in such cases the operation should only be practised by a specialist, the opening of post-influenzal mastoid abscesses is within the competency of all practitioners, who may in this way save the lives of their patients. This, however, can only happen when a knowledge of otology is made officially obligatory by the faculties of medicine.

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DISCUSSION.

Dr. LADREIT DE LACHARRIÈRE shared Professor Politzer's views on the necessity of surgical intervention whenever the mastoid process was the seat of osteitis or suppuration of the cells. In a certain number of cases, however, where there was pre-mastoid engorgement or phlegmon, the diagnosis was at first uncertain, and the question was whether one had to do with pre-mastoid phlegmon, or with osseous suppuration, with superficial engorgement. Professor Politzer, in one of his cases, had found himself face to face with a similar alternative. In cases in which there was deep-seated pain, along with a superficial bogginess, Dr. de Lacharrière was in the habit of first separating the soft parts, and of postponing till next day the opening of the mastoid cells. In some cases the latter operation was thus found to be avoidable.

Dr. CHATELLIER considered that pre-mastoid tumefaction afforded no precise indication with regard to the presence of pus in the cells. Either condition might exist without the other.

There are two kinds of inflammatory tumefaction of the soft parts covering the mastoid process. In the one the periosteum and cellular tissue are infiltrated, inflamed, and thickened; it is an osteo-periostitis associated with pus in the mastoid. In the other, the lymphatic gland on the mastoid is swollen, and the cellular tissue surrounding it participates in the inflammation; it is an adeno-phlegmon. At first the gland can be felt rolling under the finger, and of considerable size. It may give a sensation of fluctuation without having broken down into pus. This adeno-phlegmon may terminate in resolution or in suppuration.

The treatment consists in antiphlogistics and loosening of the soft parts (Wilde's incision). If breaking down has commenced, there will be found an anfractuous abscess traversed by fibrous tracts which partition the cavity, but which give way later and leave a single pouch filled with pus. These abscesses are situated outside the periosteum, and the bone is nowhere denuded. The whole cavity should be curretted, swabbed with chloride of zinc (ten per cent.), and dressed antiseptically.

In one case a tumefaction over the mastoid, suggesting operation, was found on incision to be a gland inflamed as described. Removal of the gland, suture, and antiseptic dressing speedily led to healing. In another case the abscess on the mastoid consisted of a large purulent cavity, but when it was opened there was no disease of the periosteum nor denuded spot of bone. The cavity was curetted, swabbed with chloride of zinc, and dressed antiseptically. Six days later the whole wound had healed up. The discharge from the ear ceased, and the patient completely recovered. When one is convinced that the mastoid cavity contains pus, there should be no hesitation in opening it. The operation as now practised is without danger, whereas abstention from it, or its too late performance, has led to the death of many patients who might have been cured if they had been operated on.

Up to the present Dr. Chatellier has trephined the mastoid twenty-nine times; twenty-four recovered, and four died. The latter presented at the time of operation such conditions that the fatal issue was certain. He intends to return to the consideration of these cases when he publishes his statistics.

Dr. LOEWENBERG took up an opposite position to that of Prof. Politzer, and did not admit of trepanation of the mastoid without the most urgent reasons. He had cured all his cases of mastoid suppuration without trepanation since 1879. He employed extensive openings in the tympanum, and abundance of antiseptics. If the pus has got into the mastoid from the tympanum it can get out again. In

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attacking the cause of the secretion we diminish it, and the mastoid empties itself. Among us influenza is less severe than in the East. The operation of opening the mastoid is performed less frequently in France than abroad. He has seen in influenza, perforations of the tympanum on mamillary prominences heal up with rapidity. In such grave cases he has adopted a waiting policy, and always with satisfaction.

Dr. GELLÉ congratulated Prof. Politzer on the support his statements derived from the large collection of anatomical preparations and specimens he had exhibited. He was struck with the dissemination and small size of the abscesses described in some of the cases; but this was not an argument in favour of early operation, but the absence of communication between the abscess and the middle ear was brought forward as an unanswerable argument in its favour at the same time. Meanwhile, if it is admitted that in these rapid infectious diseases there is pus in the mastoid cells in a few days, how is the comparative rarity of abscess and its complications to be explained? We must believe in natural resolution and re-absorption of the exudation in a large number of cases, those operated on being quite a minority. Like Dr. Loewenberg he had not had during fifteen years to operate on a single one of the cases he had treated from the commencement with regularity. Further even, although pus was met in a few cells on the early opening of the mastoid, it did not follow that an operative opening was indispensable, and that the exudation might not have disappeared without surgical interference.

Dr. CHATELLIER considered the mastoid operation as of capital importance in some cases. He rose, therefore, with the deepest conviction to protest against the opinion of those physicians who reject on principle this surgical intervention. What should be discussed was not the question of the necessity for the operation, but of the conditions calling for it. He thought the operation was too seldom performed, and in support of this contention related two cases.

In one case there had been symptoms of sub-acute otitis for two or three months, but no sign of mastoid trouble. The patient became attacked with vertigo, and Chatellier, suspecting fluid in the drum, performed paracentesis. A few days later there was swelling of the postero-superior wall of the meatus. Paracentesis was again performed without evacuating fluid. In the evening violent headache, of several hours' duration, was reported, and the mastoid was opened, and found to be full of pus, in which was a movable sequestrum. A few hours later, death ensued.

In another case a physician with acute influenzal otitis recovered apparently in four days after paracentesis. A fortnight later his symptoms returned, the membrane was red and bulging, and the postero-superior wall swollen. Paracentesis evacuated a good deal of reddish fluid. There was little mastoid pain, and no swelling. He advised mastoid operation in case of the affection becoming obstinate or pain supervening. On his further pressing the operation the patient disappeared, and he heard nothing of him till he received the announcement of his death three months later. He was afterwards informed that the patient had sought the advice of another surgeon, who advised no operation. The pains persisted for three months, and one day he fell into a comatose state, and died almost suddenly.

In view of such cases, it can no longer be said that all cases of otitis recover without trephining of the mastoid.

Prof. POLITZER pointed out that, whereas Dr. Loewenberg thought that the mastoid abscess was the consequence of the entrance of pus from the tympanum, it was really occasioned by propagation of the inflammation along the mucous lining. He no longer employs Wilde's incision, but opens the sinus (? abscess cavity) at once. In case of a small abscess he seeks for union by first intention,

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otherwise he drains. The more he operates on mastoid abscesses the more he becomes partizan of the operation.

Dr. GARNAULT. *On the Therapeutical Use of the Soluble Salts of Bismuth, especially in Otorrhœa.*

In July, 1884, Messrs. Guyon and Depetit placed before the "Société des Sciences Physiques et Naturelles de Bordeaux" a communication on the antiseptic properties of the soluble salts of bismuth. In it they stated that "salts of bismuth can "be dissolved by means of acids, or glycerine, or by the formation of double salts, "such as the iodide of bismuth and potash. The last have the advantage of "permitting the neutralization of the solution while allowing a portion of the salt to "remain dissolved. Very small quantities of these when added to putrescible fluid "inoculated with living microbes prevent these from developing and from altering "the liquid. The minimal dose requisite for the purpose is less than that of boric "acid, carbolic acid, salicylate of sodium, chloride of zinc, or even sulphate of "copper. *The salts of bismuth have the advantage over several of these substances "in not preventing the reactions due to soluble ferments.* These observations have "great therapeutic importance, because to a certain extent they explain the effects "and justify the employment of salts of bismuth in certain affections."

Subsequently to this communication the author made some investigations, along with M. Dupetit, on this subject, but these were interrupted by the death of the latter, and Dr. Garnault confined himself to some simple medical observations, concerning which he published a short account before the "Société des Sciences Physiques et Naturelles de Bordeaux" on the 19th of November, 1885, as follows:—

"MM. Guyon and Dupetit have demonstrated that the soluble salts of bismuth, "and especially the double iodide of bismuth and potash, are powerful antiseptics. "After having made several experiments, showing that under conditions similar to "those under which I proposed to try the iodide of bismuth and potash the salt "was not poisonous, I have employed it in a one per cent. solution in the treat- "ment of chronic otorrhœas, ulcers, an anal fistula, a septic surgical wound, and "an abscess of the thigh, with caries of the femur. I effected rapid disinfection "of the wounds and disappearance or rapid diminution of the pus. All the "patients have recovered, or are on the way to do so."

Dr. GARNAULT has since used these salts frequently as a vulnerary and as a topical application. He would recommend the study of their internal use. He tested their toxicity on lower animals without any untoward results. In cases of chronic ulcers the results were very good, but the application was generally painful. The effect on fresh wounds gave evidence of an astringent action. He used it in some thirty cases of otorrhœa—acute and chronic—and obtained the best results in old chronic cases in which there was no caries but obstinate discharge. Equal success was obtained in more or less recent cases with profuse suppuration. It is necessary in these cases to wash out the ear beforehand. When the pus is abundant and fœtid there is sometimes produced a black precipitate of sulphide of bismuth, but this causes no inconvenience.

It is evident that iodide of bismuth and potash cannot effect a cure any more than any other drug in the presence of deep-seated caries of the petrous bone, but handled with caution it can render great service, and it has appeared to the writer to be superior to all the other remedies used in otorrhœa—alcohol, boric acid, resorcin, creolin, sulphate of copper, nitrate of silver, etc.

He instils five or six drops, warmed, into the ear (after syringing if there is much pus), of a one per cent. solution. In the rare cases where this causes pain he dilutes it with a fourth part of water. The meatus should be dried out before

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the instillation, as an excess of water determines a precipitation of the salt. The double iodide of bismuth and potash may be prepared in sclution in the presence of iodide of potassium. The solution must not be allowed to touch metallic instruments as it damages them.

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64 VERSAMMLUNG DEUTSCHER NATURFORSCHER UND AERZTE IN HALLE-a-S.

Meetings, Sept. 21 to 25, 1891.—LARYNGOLOGICAL SUB-SECTION.

Presidents, B. FRAENKEL (Berlin), CHIARI (Wien), BRESGEN (Frankfurt-a-M.); *Secretary*, R. WAGNER (Halle-a-S.).

CHIARI (Wien).—*On Cysts on the Vocal Bands.*

The cysts occurring on parts of the larynx where there are glands must be looked upon as retention cysts. For the explanation of cysts of the free edge of the vocal bands, and of the cysts which are found in fibromata of the larynx, other causes must be sought. Kanthack believes that they arise from atrophy, exudation, and hæmorrhages. Schroetter believes that they are of the same origin as miliary vesicles. The author showed different specimens, in one of which the cyst is formed by a dilated lymphoid space, and a second from atrophy of the connective tissue. The cysts in polypi, as the author has proved by many specimens, are caused by dilated lymphoid spaces. A cyst in a neoplasm can become so large that it appears to occupy nearly the whole neoplasm.

B. FRAENKEL (Berlin) showed *Photographs of Microscopic Specimens: Vertical and Horizontal Sections of the Human Larynx.*

He distinguishes four parts of the vocal band—(1) the region of the anterior sesamoid cartilages; (2) that of the elastic region; (3) that of the cartilage; (4) that of the arytenoid cartilages. He also showed micro-photographs of neoplasms and "Singer's nodes."

P. HEYMANN (Berlin) showed specimens of a melano-sarcoma of the nose operated upon by him in 1887. The first recurrence had now taken place after four years. In the other cases published (Michael, Lincoln, Michelson) there was a long interval without recurrence. [The reporter's case, operated upon in 1889, had the first recurrence in March, 1891, a second in November, 1891, and a third in March, 1892. At this time the patient is free from further recurrence, and in good health.—*Rep.*]

BRESGEN (Frankfort-a-M.).—*On the Application of Aniline Colours in Diseases of Nose, Throat, and Ear.* (See the report upon the book of the author upon the same subject in this Journal.)

In the discussion, in which ARONSOHN, KRAKAUER, KAYSER, FRAENKEL, FLATAU, THOST, CHIARI, and BRESGEN took part, most speakers believed that after-treatment, after galvano-caustic operations upon the nose, is not necessary.

METZNER (Halle) showed a *patient tracheotomized twenty-four years ago*, who still wore his canula without any difficulty.

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HARKE (Hamburg) showed in the pathological institute a method of *post-mortem examination of the Nose and Appendices* without external malformation of the cadaver.

THOST (Hamburg). *Removal of the Canula and Treatment of Laryngeal Stenosis following Tracheotomy in Children.* A report upon the different causes of impossibility of removal of the canula. The most common cause is granulations produced by badly fitting canulas, especially if they are too small. The inflammation occurring during croup or diphtheria often causes hypertrophy of the mucous membrane, also in places where the canula is not situated. The author showed dilators which he has invented to cure this condition.

HARKE (Hamburg) showed a *Modified Laryngeal Mirror.*

FLATAU (Berlin). *Electrolytic Treatment of Hypertrophic Catarrh of the Nose.* The author had treated a great many cases by electrolysis instead of the galvano-cautery, with satisfactory results.

SCHEINMANN (Berlin). *Treatment of Pachydermia Laryngis.* Characteristic of this disease are the well-known tumours on the processus vocalis; sometimes they are combined with hypertrophy of the posterior laryngeal wall, sometimes this occurs alone. Tumours must be removed by operation. The hypertrophy is successfully treated by the author by brushing with three per cent. acetic acid.

ARONSOHN (Ems) has had good results from inhalation of Ems water.

FLATAU (Berlin) recommends O'Dwyer's tubage.

SCHMIDTHUYZEN (Aachen) showed an *Instrument designed to prevent the falling in of the Alæ Narium.*

R. WAGNER (Halle) showed a *Laryngoscopical Apparatus with Auer's Incandescent Light.*

FLATAU (Berlin). *Treatment of Rhinitis atrophica fœtida.* The author recommends that treatment should be commenced by applications of a spray of 15 per cent. of peroxide of hydrogen, insufflation of iodoform, and Gottstein's tamponade, which he performs with gauze dipped in an ointment of iodoform, and later on brushing with iodoform ointment.

P. WAGNER (Halle) showed an *Apparatus for Laryngo-Photography.*

Michael.

BRITISH LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION.

Friday, July 1, 1892.

Mr. LENNOX BROWNE, F.R.C.S. Ed., President, *in the Chair.*

Election of Fellows, presentation of accounts, &c.

Dr. MACINTYRE (Glasgow) read the notes of a case of *Rodent Ulcer, extending from the Face into the Superior Maxillary Bone.*

William Stevenson, aged sixty-two, mechanic, consulted me some time ago about an ulceration of the face, from which he had long suffered. He complained of severe pain and sleeplessness, and was willing to

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submit to any operative measures, as he had undergone a number without marked benefit. So great was the pain, which was constantly darting to the ear and the frontal and parietal regions, that no rest could be got without the aid of sedatives, locally and constitutionally administered.

On examination, an extensive rodent ulcer of the face was seen, extending outwards and inwards so as to involve the floor of the nose, the inferior turbinated bone of the right side, the greater part of the inferior meatus, and nearly the whole right side of the septum. There was an opening on the side of the nostril, between it and the face, where previous destruction had taken place after operation. The whole parts were so diseased and inflamed that it was difficult to make out the full extent of the lesion. The superior maxillary itself was destroyed for at least an inch in the alveolar process. There was no glandular enlargement. The margins of the ulcer were very much thickened and infiltrated, and along the lines of incision of the previous operations there was every indication of more rapid extension of the disease than had hitherto been experienced.

He states that ten years ago, while employed at his occupation, some drops of oil from a lamp burning above him fell upon the side of his face. This left a slight irritation and break in the tissues, which shortly afterwards healed up, but left a swelling the size of a pin-head. After a few months this broke out, and from time to time gave him great pain and trouble, as it would not heal. It was situated just at the angle between the nostril and upper lip. Two years after the injury he consulted several medical men, who ultimately referred him to the hospital, and, after consultation with the dispensary surgeons at the Glasgow Royal Infirmary, he was sent into the house.

There is nothing of importance in the family history. His father died of bronchitis at the age of sixty-eight; his mother is also dead, cause unknown, but she lived to the age of sixty-five. He has one brother and one sister living, aged respectively fifty-two and twenty-eight, both in good health. Two sisters died during youth, cause unknown. He has three daughters and one son living, in good health, ages ranging from twenty-nine to forty-three.

In the middle of September, 1891, I saw the patient in the Royal Infirmary, Glasgow. The soft parts were very exuberant, extremely painful, and causing a great deal of discharge. These were removed, and afterwards a careful examination was made.

Permission having been obtained, on the 28th September the patient was put under chloroform, and the right upper jaw was excised leaving the horizontal plate of palate bone however, and the posterior wall of the antrum of Highmore. An incision was made from the junction of the nasal and frontal bones straight down the middle of the nose, along the lower border of the septum, and then to the left below the nostril, so as to get well beyond the middle line and free of the disease. The upper lip was then split from above downwards so that only one-third of it was left. A second incision, beginning at the inner angle of the eye, was carried below the eyelid straight out to the zygomatic process of the malar bone. A third was taken from the

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malar bone down to the external angle of the mouth, so that the soft parts were completely isolated from the normal surrounding tissues. The alveolar processes of the maxillary bones were then divided with a saw, and this was carried straight back to the junction of the horizontal plate of the palate, and the superior maxillary bone. The nasal process of the superior maxillary bone was then divided with the bone forceps, and lastly the zygomatic process of the malar. The upper jaw was seized with a strong pair of forceps, and thus everything was removed, including the inferior turbinated bone, except the posterior wall of the antrum and the horizontal plate of the palate. The diseased soft parts, including the right side of the septum and roof of the nose, were carefully removed with the scissors and knife.

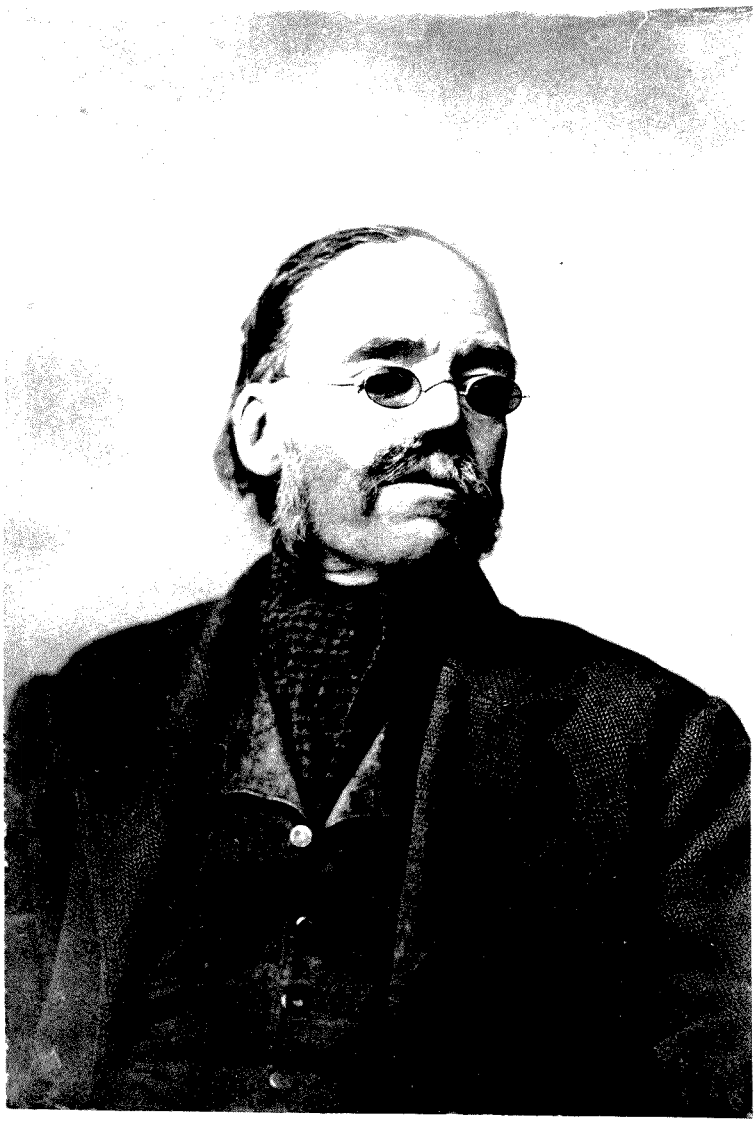
By carefully preserving a small strip of the side of the cheek and lip a piece of tissue was made available for stretching across to take the place of the upper lip.

The patient made an excellent recovery, and at no time was the temperature high. Within a month he was able to leave the hospital, and shortly afterwards the mucous membrane had extended from below upwards, and the skin from without inwards, so as to cover the raw surfaces. Plastic operation in this case was hopeless, as the bone itself was extensively implicated. The great deformity was overcome by artificial means as the report of my friend, Dr. Woodburn, which I give here, will show. (*See Illustration.*) He says :—

"The first part of the process of mechanical restoration was the closing "of the opening between the mouth and nose, which was practically one "cavity. This was complicated by the unusual dimensions of the aperture, "combined with the absence of teeth to serve as an anchorage for "any appliance. The latter difficulty was overcome in the first one I "made by fitting a plate to the lower jaw in order to carry the ordinary "springs used in complete sets of artificial teeth. This served the end "in view, but, owing to the cicatricial state of the buccal structures, they "were a source of great discomfort. In the present one I discarded the "use of springs, and depended solely upon a perfect adaptation to the "remaining part of the palate and the nasal cavity ; the walls of the latter "were lined with vulcanite in continuity with the palatal obdurator. This "nasal portion was made hollow, and serves the purpose, anatomically "and physiologically, of the antrum cavity, and also acts as a fixing point "for the artificial face and nose piece. With this the patient has perfect "comfort and enjoys comfortable deglutition, very distinct articulation, "and so, notwithstanding its many imperfections, is the *sine qua non* of "his material existence.

"The unsightly appearance presented by the immense loss of the "structures of the nose and cheek was next to be overcome. This was "an opportunity of exercising some mechanical turn of mind, combined "with artistic effect. I took an impression of the parts with plaster of "Paris, extending it beyond the limits of the lesion, and from that, having "made a cast, I modelled in wax something like the counterpart of the "perfect side of the face. This, again, was cast in zinc and a die made, "on which was stuck a piece of metal, again allowing it to overlap the

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" outline of the original diseased tissue. I used tin, both from economy, " and owing to the only other available metal, aluminum, being liable to " be bent by careless handling.

" The manner of fixing this was some trouble, and after trying many " methods, I had recourse to the old-fashioned one of fixing with the aid " of spectacles, selecting those with long arms reaching behind the ears. " They were rivetted to the front of the metal nose in such a position that " when the whole was in place the tension of the spectacle arms brought " tension to bear in all directions equally, so that in any position of the " head the artifice was immovable. Thus it is, and yet can be removed " by the patient, and readjusted at will with the greatest ease. This face " piece an artist friend painted the tint of the surrounding healthy skin. " The line of the apparatus, which nearly touches the everted conjunctiva " of the remains of the lower eyelid, is obscured by having the eye-pieces " made of coloured glass, and the line which lies on the small piece of lip " is hidden by an attempt at a false moustache, the hairs of which have " been taken from the patient's whiskers, and fixed with varnish.

" Such briefly is what I have done for the unfortunate man, and " although my work falls far short of being perfect, yet it has enabled him " to resume his avocation, and take his place among his fellow men minus " the consciousness of being an object of horror and pity."

The patient, since the operation, has suffered no pain whatever. He has rapidly gained in strength, and is now able to walk perfectly well. With the aid of the false palate made by my friend, Dr. Woodburn, he can speak and swallow as well as he ever did. Up till now there has been no recurrence of the disease. Previously he had been operated upon under chloroform thirteen times, but the disease rapidly recurred after each successive operation.

Dr. SANDFORD asked what was the appearance of the floor of the cavity on recovery.

Dr. MACINTYRE said the cavity granulated over from the skin inwards, so that there was perfect tissue throughout, although the cavity was of enormous size, and through it the epiglottis and other deep structures could be distinctly seen. It had gradually covered in below with mucous membrane, and above with skin, so that all pain had been done away with.

The PRESIDENT reported a case of *Œsophageal Obstruction by a Dental Plate. Extraction three and a half years subsequent to the accident.* (From notes by Mr. Wyatt Wingrave.)

W. T., a man aged thirty-six, engaged as a civil service writer at the Woolwich Arsenal, came under the care of Mr. Lennox Browne at the Central London Throat and Ear Hospital on May 20th, 1892, complaining of difficulty in swallowing and alteration in his voice.

The history was to the effect that three and a half years ago, whilst drinking a glass of water, he swallowed a vulcanite plate with two artificial teeth. He "distinctly felt it go down and stop at the windpipe," but it did not interfere with his breathing. He immediately consulted one of the surgeons attached to the Arsenal, who, failing to either force the foreign body down or to remove it, sent him to St. Bartholomew's Hospital,

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where several attempts were made under chloroform to remove the plate, but unsuccessfully. It was then "forced down," as he was told, into the "lower gut," and he was ordered to carefully examine his motions, *which he has always since done.* This was in December, 1888.

Soon after leaving the hospital he noticed a change in the character of his voice, which for two months entirely disappeared, while for the last two years it has been more or less "husky."

Difficulty in swallowing dates from the accident, but during the last few months it has considerably increased, and has now become actually painful, "everything seeming to stop halfway down," and causing occasional fits of coughing, during which some "stinking matter" was expectorated. His breath has lately been very unpleasant, and he is never free from the sensation of a disagreeable taste and smell.

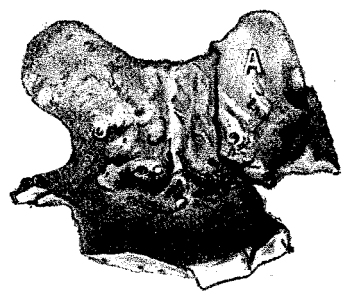
On admission he spoke in a very husky voice, and deglutition was obviously attended with considerable difficulty and pain.

Laryngoscopic examination revealed fixation of the left vocal cord in the position of adduction, otherwise the larynx was healthy, and there was nothing abnormal to be observed in the pharynx.

On passing an œsophageal bougie, resistance was first met with about eight inches from the teeth, but the bougie eventually passed to a distance of fourteen inches.

At the first exploration by Mr. Lennox Browne a foreign body was struck with a metal-tipped bougie, and apparently localized at a point about two inches below the level of the cricoid cartilage to the left side, where it was distinctly felt by external manipulation.

On May 21st, the patient having inhaled chloroform to the extent of relieving spasm but not to narcosis, Mr. Lennox Browne dislodged the plate by means of a "coin catcher," and an assistant grasping the throat so as to fix it, he succeeded in drawing it into the pharynx, when it was grasped by a pair of crocodile forceps and removed.



On examination a recent fracture was seen, indicating that a portion had been left behind, the correctness of this surmise being quickly proved by the immediate removal of the remaining portion by means of an "umbrella probang." The attendant hæmorrhage was very slight.

Subsequent history: Pain rapidly diminished; the temperature, which was 101·2 F. on the day before the operation, fell to 99·8 in the evening of the removal of the foreign body, and became normal the day following. The patient was discharged on May 28th.

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Remarks by Mr. LENNOX BROWNE: On November 28th, 1890, I exhibited before this Association a plate of teeth, which had passed into the larynx during an epileptic fit in sleep, and had been in that position unknown to the patient and unrecognized by any medical man for twenty-two months, the patient being told that it had evidently been vomited, the vomiting, however, having really been due to their presence.

In the present case also, the patient had been wafted into a similar fool's paradise by the surgeon assuring him that the foreign body had been dislodged, as was eventually proved, on quite insufficient ground. It is also to be noted that another surgeon, rightly diagnosing that the foreign body was still there, had given an opinion that œsophagotomy was the only means of affording relief.

Surgically the interest of the case is, first, that no greater harm had been done to the healthy tissue by the impaction of the foreign body, especially considering its jagged features, and secondly, the rapid and complete recovery so soon as the cause of obstruction was removed.

An additional point of interest is the service rendered by localization of the site of the foreign body on external manipulation, a procedure which had been previously neglected, and the important aid which was afforded by digital pressure and support during the operation of removal.

Mr. MAYO COLLIER showed a patient suffering from *Stenosis of Larynx*. He said that he had ventured to exhibit this case, as one of considerable interest and some rarity. The woman was twenty-nine years old, was married when twenty-one, and had three children born dead, and two miscarriages. She had sore throat three years ago, continuing more or less ever since. There was no other evidence of syphilis. The husband was apparently healthy, and in her case there was no suspicion that the symptoms were due to disease of congenital origin. The upper opening of the larynx now was extremely narrowed, but symmetrically so, giving it the appearance of the faucial opening. A well-marked papilloma was also present on the left ventricular band.

Mr. Collier suggested the relief of the stenosis by, first, removal by means of a snare of a fragment of the epiglottis which remained, and then by the use of the cutting dilator.

Mr. G. STOKER observed that with regard to the use of the snare, he did not think its use was indicated or advisable in respect of the small projection which in his opinion was the remains of the epiglottis. If the fragment was not able to discharge the functions of that structure in their integrity, it might nevertheless fulfil them in part. He agreed, however that it would be an advantage to cut the bands laterally.

The PRESIDENT said the case was very similar in laryngoscopic appearance to one under the care of Dr. Orwin, the details of which were set forth in the chapter on lupus in his (Mr. Browne's) work. A great deal of mischief might be done in lupus without the patient being made aware of what was going on, but it was rare to see such an amount of mischief from syphilis without some previous subjective and objective evidences of either pharyngeal or laryngeal ulceration, and in this respect the case was almost unique in his experience. As to treatment, prior to any attempts at dilatation, he advised the performance of tracheotomy; for

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though the patient was not now suffering in such a way as to justify that operation, attempts at dilatation, or an intercurrent laryngitis, might at any moment render it necessary under circumstances of urgency less favourable to its performance. He agreed with Mr. Stoker that the remains of the epiglottis ought not to be removed, but one never knew what might be the value of such remnants in aiding the healing process.

Judging from the illustrations of syphilitic stenosis by Schroetter the pathological process in this case had followed the usual course of events, viz., by a gradual diminution of the lumen. Cohen had in his book the picture of a case which might almost be accepted as a portrait of the one before them.

Should the author employ dilatation, the President hoped that he would give his cutting dilator a trial. This instrument presented the advantage of being made as a hollow tube, through which the patient being able to breathe, indication was afforded where the instrument was going, for when it was in the right direction air came through the tube. Moreover, by this means the discomfort of the procedure was greatly reduced.

Mr. WYATT WINGRAVE showed the following *Microscopic Specimens.*

The three slides illustrated some different forms of epithelial growths occurring in connection with the tongue and pharynx.

No. 1, taken from a private patient of Mr. Lennox Browne, is a typical example of stratified or squamous cell epithelioma, commencing in the superficial epithelium of the faucial tonsil. It is by no means as rare as text-books seem to indicate.

Nos. 2 and 3 are both from the Central London Throat and Ear Hospital. The first shows an early stage of columnar epithelioma, commencing in the crypts of the lingual tonsil, and not in the ducts of Salter's or Henle's glands. Many of these crypts are lined with "rod" epithelium. This specimen was taken from a case of Mr. Jakins, in which the growth commenced in the pharyngo-glossus, and subsequently invaded the upper larynx.

No. 3 is an extremely rare form of stratified epithelial growth devoid of cell nests. It was removed from the oro-glossus by Mr. Jakins, and strongly resembled a rodent ulcer. Five months afterwards there were no signs of recurrence.

The PRESIDENT observed that the first case was one of stratified epithelioma of the tonsil, in which he removed a small portion of the growth for microscopical examination. As soon as the malignant nature was made out, the consent of the patient was obtained to a radical attempt to remove the growth by external incision, with previous ligature of the external carotid. This was done by Mr. Pepper. Unfortunately, fatal secondary hæmorrhage took place eight days later. Although less than a week had elapsed between removal of the fragment and the operation, it was surprising what activity the growth took on. From a mere warty fringe it had become a large angry patch of ulceration, and even between the operation and death there were signs of recurrence.

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Dr. MACINTYRE.—*On the Etiology of Affections of the Upper Respiratory Tract.*

Last year I had the honour of introducing the subject of bacteriology in relation to the study of diseases of the nose and throat, and as the Council were good enough to request me to give a paper this year, I have attempted once more to bring up some points of interest in the same subject for consideration.

Perhaps it may be useful to make a reference to our point of arrival in the last paper. We dealt first with the general facts bearing upon this magnificent field for study and observation; secondly, we devoted some time to the consideration of the results following the introduction of micro-organisms into the tissues; thirdly, we took into consideration the principles upon which we may found methods of treatment before or after the bacteria have been introduced into the living tissues. To make these points more fully understood a reference was made to the history of the causal association of these organisms in disease; the classifications in vogue were briefly referred to, the physical characters, chemical composition, forms and distinguishing features were as fully considered as it was judged expedient in the time at our disposal.

The second part of our paper was devoted more particularly to the consideration of three things. First, the finding of parasites in apparently healthy persons; secondly, micro-organisms which might have something to do in maintaining the healthy economy; and thirdly, a reference to the diseases which we as specialists find particularly interesting to study in the upper respiratory tract.

Since then brilliant work has been done in many departments, and the literature is full of suggestions for treatment; confirmation of the views then referred to are being received on all hands, and there is a gradual tendency in every branch of medicine and surgery to give more attention than has ever been paid in the past to etiology.

To-day we will first make some further observations upon the micro-organisms found in the upper respiratory tract, with special reference to the methods of investigation at present at our disposal, and we will afterwards refer to the occurrence of particular organisms which have special bearing upon the work to which we are devoting ourselves. The first part of our work will, therefore, be an amplification of that gone over before, *viz.*, a reference to the bacteria which are generally found in the oral and nasal cavities.

Most investigators in this department, as in almost any other department of medicine and surgery, before beginning the actual study of disease, desire to make themselves fully acquainted with the conditions which occur in the normal structures, because as pathological investigations are but a continuation of the study of physiological processes, so the study of pathogenic bacteria must necessarily be that of the physiology of micro-organisms. As long as tubercle remains outside of the animal tissues, it is purely a matter of biological investigation. As soon, however, as the organism is admitted to and begins to act upon the tissues of an animal, the pathological studies begin. Reasoning in this way, not a few investigators have done much to discover the micro-

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organisms which are usually found in the upper respiratory tract of healthy subjects; and, unfortunately for the advancement of this very complicated subject, a large number of observers have overlapped each other's experiments, so that less has been done than might have been, had small parts of the subject been taken up by each and exhausted thoroughly. To put it more plainly, were our scientific knowledge so advanced that every micro-organism could be classified, its form distinguished, and its life-history recorded, so that at any time it could be distinguished from any other organism, just as we classify the different plants in the higher vegetable kingdom, matters would be comparatively easy. Unfortunately, however, so little do we know about these organisms, that their proper place even in the organic kingdom has not yet been found; and further, many bacilli are indistinguishable by microscopic appearances from each other. A great deal, however, has certainly been done to aid us in diagnosis by careful study of all their characteristics and properties, but as yet no common basis of investigation can be laid down.

Working upon these lines, a considerable number of investigators have started the study of bacteriological investigations in the nose, throat, and mouth, by attempting to put on record all they have found therein; but very few have gone far in this way without coming to the conclusion that the great number makes it utterly impossible to overtake the work, or identify each with other known species. This will be easily understood, because the cavities are being constantly filled with air loaded with all kinds of organisms. Moreover, in the food and drink passing through the cavities, great varieties must find entrance. To attempt such a work is endless, and with all the modern armamentaria at our disposal, little can be done in this way by any individual.

With a view, however, of making ourselves as familiar as possible with the organisms which gain entrance to these cavities at different times—for you will sometimes find an organism one day and fail to find it ever afterwards—a number of experiments were made after the following manner:—Over fifty patients were selected, and cover glass preparations were made from a scraping of the mucous membrane of the nose, and mouth and throat. These were stained according to different and approved methods, examined, and carefully set aside for comparison. Again four different tubes were taken for each case. The first was reserved for control experiments, and left untouched. The second was exposed to the atmosphere of the room in which the experiments were made. Thirdly, a sterilized gelatine tube was impregnated with a slight scraping from the mucous membrane of the nose or mouth; and fourthly, a tube of agar-agar was likewise impregnated. Plate cultivations were made from some of these, and in a considerable number of instances the growth of the organisms was tested on potatoes, etc. Cultivations, of course, were rapidly got in great numbers, and in a very short time it was found to be impossible, as nearly all experimenters have found, to carry such experiments to a legitimate conclusion. The numbers were so great that it became impossible to attempt to record the physical characters, growth, temperature required, production, staining properties, and last of all, isolation and identity with known species

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It was so far of use, however, that it made one familiar with the common species found in normal subjects.

Workers in this department, such as Millar, Vignall, Wright, and others, have done good work, and something over one hundred organisms at least have been isolated and described. It will of course occur to most men, that by persistent efforts on the part of different investigators, new forms will be found, until every known micro-organism will have been recorded as having been found in the cavities.

From the above it will be seen that if we were to go on the principle of trying to record all the micro-organisms found in health, in the hope that we might differentiate between them and the micro-organisms found in disease, no progress would be apparent for a very long time to come. The above mentioned experiments were not made with any such intention—the fact was too obvious before beginning—but rather with the object of familiarizing myself with the different species. A moment's reflection, however, will soon show us that we are only experiencing in this department what experimenters have in every other. For example, we can identify a peculiar living organism with tubercle, but the best experimenter is not yet in the position to say that he has a knowledge of the many organisms which may be found in the lungs of the subject afflicted. In other words, we are driven to take up the position of investigating the micro-organisms which are usually present when a person suffers from a particular affection, and if this peculiar organism can be found in a considerable number of cases of persons so infected, and moreover, if the form, chemical reaction, life-history, and other properties correspond, then we may attempt to prove the causal association between this organism and the affection.

Fortunately, in a considerable number of cases this can be done by the approved method, viz., cultivation of the peculiar organism after isolation from all others; secondly, the introduction of it into the living tissues of a healthy animal; thirdly, the discovery of it in that; fourthly, the production of the same disease; and lastly, the re-cultivation of the organism outside of its body, and the identification of this form with the organism found in the patient originally suffering from the disease. In other words, however much we might desire an intimate knowledge of all the forms found in health, the only practical method at our disposal is to search for the association of peculiar organisms in a specific affection, and then by experiment to prove its causal association.

Under the microscope micrococci (probably micrococcus of sputum septicæmiæ) will be seen. These were found in the nasal cavity, probably observed by many others, and impossible to identify with round forms found by others, which grow rapidly in gelatine media, and which under the skin of animals grow and rapidly produce swelling, œdema, and painful symptoms, which disappear in a few days. Again, in the microscopes will be found specimens of bacilli very commonly found in the nostrils, which of course may have been observed by others. A considerable number of the above, if cultivated upon suitable media and injected into the living tissues of animals, are found to be pathogenic. In health, probably owing to the struggle for existence and destruction of each

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other—probably also to the different temperatures in the mouth, or to the power which the living tissues possess of destroying these enemies to health—they are comparatively harmless. We know that certain organisms can be tolerated in these cavities, which, were they to gain access to the circulation, might prove dangerous to the host. A practical illustration of this will suggest itself to the surgeon in the manner in which bites from apparently healthy persons act on the injured part. It is is a well-known thing that a bite is an exceedingly difficult wound to heal, largely owing to the fact that the organisms produce great irritation.

This is no new idea. Stricker gives the history of the idea that human saliva produces poisonous results under certain circumstances, and points out that authorities from the earliest times believed in and observed this fact. Within the last twelve years, however, it has been attributed to the presence of micro-organisms. Raynaud, Lannelongue, Pasteur, Roux, Fraenkel, and others, made inoculations with the saliva and with cultivations, and produced death in animals—particularly in rabbits.

Any attempt to classify the organisms found in the upper respiratory tract into pathogenic and non-pathogenic is difficult, because it must be evident that, while they are harmless at times, or in certain individuals, they may become dangerous under altered circumstances.

For purposes of demonstration I have placed the following under the microscope :—(1) Leptothrix buccalis (these include the forms classified by Miller as bacillus buccalis maximus, leptothrix buccalis maxima, iodococcus vaginalis, spirillum sputigenum), micrococcus prodigiosus, micrococcus tetragenus, hay bacillus. Also the bacilli of lactic acid, green pus, pyogenes aureus albus, the streptococcus erysipelatis, tubercle bacillus (Koch), and diphtheria (Loeffler's) ; pneumonia (Fraenkel and Friedlander), micrococcus of sputum septicæmia. These are all interesting to anyone engaged in the study of the etiology of the affections of the upper respiratory tract, and there are others to which we must refer, such as syphilis (Lustgarten), even if the causal association be doubted ; also the organisms found in cases of rhinoscleroma. That mycosis of the pharynx is not to be ignored the paper by Dr. H. B. Hemenway, in the JOURNAL OF LARYNGOLOGY for February, proves. The higher developed fungi are less common, but are sometimes present, as the aspergilli, and, more rarely in man, actinomycosis. Lastly, we are greatly indebted to Miller for his interesting work on the colour-producing bacteria, although these are more useful in the study of dentistry.

I may now be allowed to refer to some pathogenic micro-organisms found in clinical observation, and to draw a few inferences from these.

Suppurative Processes.—A patient was sent to me some time ago by Dr. Carmichel, of Glasgow. There was a sinus leading from the bridge of the nose at the junction of the frontal and nasal bones into the nasal cavity. The patient explained that some weeks before he received an injury from a piece of wood by a thin spike of it being driven through the nose, giving him at first very little trouble, but great annoyance afterwards. There was marked stenosis in both nostrils, and a constant discharge on the face ; the sinus was difficult to heal. On making an ex-

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amination of the nostril, it was evident an active periostitis was going on. The mucous membrane on both sides of the septum was intensely inflamed and separated from the bone. It was also evident that there was an accumulation of pus, because the mucous membrane of the septum was pushed outwards on both sides so as to come in contact with the tissues of the middle turbinated bones. An incision was made inside the nostril after using cocaine, and a large quantity of fœtid pus discharged. The bone itself was destroyed to the extent of half an inch. This was removed by the electric trephine, resulting in complete perforation of the septum. The wounds were treated antiseptically, and the patient made a good recovery. The external sinus healed within a week.

In the discharge abundant evidence of the staphylococcus pyogenes aureus was found. When the patient called some time afterwards these had disappeared.

Secondly, a patient was sent to me on 18th May last, by Dr. Clark, suffering from nasal stenosis. There was no injury in this case. He was under the impression that he had nasal polypus, and suffered mostly from an offensive smell from the left nostril. On examination it was easy to make out that we were again dealing with a large sac of fluid which had separated the soft tissues from nearly the whole side of the septum on the affected side. An opening could be found at the upper part admitting a probe, and out of this a small quantity of fœtid pus would be expressed on pressure of the sac from below. A free incision caused the evacuation of a large quantity of pus, and in it there was abundant evidence of the pressure of the staphylococcus pyogenes, and also the bacillus pyogenes fœtidus. As the case improved, which it rapidly did, these organisms disappeared.

These two instances may be taken as types of others which came under my observation in which the micro-organisms of suppurative processes evidently have been intimately associated. In thirteen patients noted lately, I have detected these organisms—four of them affections of the antrum of Highmore where a free opening was made—and it is interesting to note the opinions of others on these points. For example, Hajek is referred to in the recent paper published by Dr. Potiquet on the canal of Jacobson. This author, keeping in mind the large number of organisms found in the nasal cavities, says that affections such as perforating ulcer are most likely caused by the entrance of the staphylococcus and streptococcus pyogenes into the depths of the glands. One cannot help thinking of the results possible owing to the frequency with which these organisms are found in the upper respiratory tract, and particularly in the so-called cases of idiopathic abscess occurring even as low down as the larynx. That they are frequently present in healthy subjects is a matter of common observation. Is it unreasonable to assume that they are really the cause of many such cases?

Erysipelas.—Some years ago my attention was drawn to the subject of erysipelas occurring in the nasal fossæ. One of my colleagues had a patient in the general hospital, suffering from hypertrophy of the mucous membrane on both sides of the nostril, which had extended to the skin

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round the margins. The deformity resulting in the enlargement of the nasal organ had induced the patient to seek aid. The case appeared comparatively simple, and the hypertrophied parts were removed with scissors. No difficulty was experienced in controlling the hæmorrhage, and the operation was performed with careful antiseptic precautions. I was extremely astonished to learn from the operator that on the fourth day after the operation erysipelas sprang up, which passed into the nasal cavity downwards to the naso-pharynx, and that death had resulted. The operator was a most careful and experienced surgeon, and there was no erysipelas in the hospital at the time. Secondly, another operator in the same hospital, with a comparatively easy operation for the removal of a portion of a bone from the face and opening into the antrum, had a similar experience. There can be no doubt whatever as to the care exercised in this as in the former case. It was at a date two years later than the first-mentioned case. Thirdly, an old lady, over seventy years of age, consulted me something like four years ago for nasal polypi. Owing to her age her medical adviser had not deemed it expedient to interfere, but as the discomfort became greater, after consultation it was decided to remove the neoplasms. One great difficulty, however, was she was afraid to have any operation performed, as she had had three attacks of erysipelas of the face within seven years, each time causing great constitutional disorder, and as she put it, combined with the discomfort of the nostril, almost proved too much for her. The operation was successfully performed in the left nostril, and great care was exercised as to the cleaning of the cavity before and after each operation. Before the right nostril was done she received a message to go to the north of Scotland, and the operations had to be arrested. She did not return, as promised, and three months afterwards a severe attack of erysipelas set in on the *right* side, which had not been operated upon, a fact which pleased me considerably, because had it affected both sides her friends might have been inclined to associate the sequelæ in some way with the operation. Careful examination of the discharge revealed the presence of organisms which, in form and after cultivation, left no doubt we were dealing with the streptococcus of erysipelas. Fourthly, a patient, aged sixty-eight, came to me two years ago suffering from a severe discharge from the antrum of Highmore. The case was evidently one of chronic suppuration in the same cavity. The discharges were carefully examined, and found to contain micro-organisms (a specimen of which we see under the microscope), corresponding in form and arrangement to that usually associated with erysipelas. The organisms were easily cultivated in gelatine and agar-agar, although the growth was not very rapid. My intention in this case was to open into the antrum, and to have the parts carefully washed out, but owing to weak heart and other reasons, he was afraid, and refused to undergo the ordeal. Some little delay took place in giving his consent and four months afterwards he called to state that he had had a severe attack of bronchitis which had terminated with a sharp attack of erysipelas, beginning in the affected nostril and side of the face, and followed with every indication typical of the disease. There was now a more profuse discharge, and in it the same organisms were found.

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In two other cases I have made similar observations. One of these particularly struck me, occurring in a young man, twenty-three years of age, where the erysipelas caused intense swelling of the external parts, œdema in the nostrils, and ultimately a pharyngitis, with subsequent post-pharyngeal abscess of a very acute type.

The question arising from the above mentioned cases will naturally be, are not a considerable number of abscesses in the nasal cavity and antrum of Highmore, and even post-pharyngeal abscess, due to the organism of erysipelas? I think there is fair room for assuming that there is an association, and even causal association, and at least it is deserving of further consideration and thought. Are we to assume in these cases that there was accidental infection from the outside, or were the organisms causing this affection or their spores lying latent in the cavity, and only waiting a suitable opportunity for development? Possibly both explanations may be true, but it seems a reasonable position to take up that in the cases of recurring erysipelas they were most likely stored therein. In any case the practical application lies in the fact that all such cases require careful antiseptic treatment before, at the time, and after operation. Similar observations have been made by others. Dr. Luc, of Paris, reports a case of empyema of the antrum of Highmore, caused by erysipelas, and in the discharges he found typical organisms.

Diphtheria.—No pathogenic organism is more deserving of our attention than that of diphtheria, and I may be pardoned for once more bringing this before you. Since its discovery by Klebs, Loeffler's great work, and the discoveries of Roux and Yerson by producing typical paralysis in animals, not only with the germs but with their products, great attention has been paid to it. In our last paper we referred to the best methods of obtaining and cultivating the same. During the year I have made a number of observations, and in something like thirty-eight per cent. bacilli, corresponding to that described by the above-mentioned writers, were found. This is by no means so frequent as some observers state, but, on the other hand, I have not been as favourably situated for observation as many, and that for a simple reason. It is my habit when seeing cases of diphtheria, in consultation with others, to take a specimen from the false membrane, but we must remember there are many organisms present; that in some cases one is called in at a comparatively early stage, in another at a very advanced stage, and probably once only. In consequence of this, one has not the same advantage as the practitioner who follows the case from beginning to end. Nevertheless, in the proportions mentioned above these organisms have been observed.

Other workers have since last year given other results. Dr. Baginsky found Loeffler's bacillus sixty-eight times in ninety-five cases of diphtheria. He makes an important note likewise; that of twenty-four cases which gave the impression of true diphtheria, and in which the bacilli were not found, only one died. Dr. Tangl believes after investigation that the bacillus is of a certainty the cause of the affection. Dr. Retter found it in twenty-nine cases of eighty-two examined. In this department Drs. Welch and Flexner have contributed excellent work on the relation of the pseudo-bacillus to the true diphtheritic organism.

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With such a consensus of opinion as to the true nature of the disease, and the importance of careful differential diagnosis between real diphtheria and conditions simulating it, we can no longer afford to ignore the importance of this organism any more than we do that of tuberculosis. This is true of nearly all the affections which we are called upon to treat. For example, an interesting communication on the value of these organisms in diagnosis is made by Dr. Seigl of Britz. An epidemic occurring in over three hundred persons was investigated from a bacteriological standpoint, and the author had no doubt that the microbe found was identical with that of the foot and mouth disease of animals. He describes it under the heading, "Stomatitis epidemica."

To sum up, I have brought some of these facts before you for the following reasons :—

First, to point out the difficulties attending such investigations, and particularly the overwhelming nature of the work in attempting to gain an idea of the organisms found in health and disease, and to seek your aid as far as possible in its continuation.

Secondly, to emphasize the extreme importance with some examples from clinical observations, and particularly the lessons to be drawn from a careful observation of the work which has been done by so many, not the least of which is that, inasmuch as the upper respiratory tract is full of micro-organisms, non-pathogenic and pathogenic in nature, extreme care and cleanliness in antiseptic precautions must be insisted upon.

If I were asked for a reason to justify the existence of such an association as this, and for the special study of this department, I think I should select the recent treatment and advances made in the study of the etiology and pathology of catarrh. The healthy tissues are able to look after themselves, but when we reflect that the great proportion of people suffer in some form or another from catarrh—acute, sub-acute, and chronic —and moreover when we consider that this catarrh leads to impairment of function, and so in a greater or lesser degree to abrasion of the tissues of these parts, we are driven to the conclusion that the barrier between health and disease is constantly being broken down, and must afford an entrance to these organisms. That they do enter the tissues we can show from the last photograph put upon the screen, for which I am indebted to Dr. Thomas Reid, Glasgow. In it the mycelial spores are seen developing within the tissues of a sarcoma of the choroid. That inoculations from weak points are constantly taking place could easily be demonstrated, but this I must defer to another occasion. I trust to put facts before the Society which have taken years to collect, but which may be sufficiently convincing to prove by actual demonstration that even tubercular disease, and when I say tubercle I might add many other chronic affections, is too often thus fatally admitted into the system.

The PRESIDENT expressed his sense of the thoroughness of the paper which they had just heard. At the same time, from its very nature, they could hardly do more than listen with admiration to the truly remarkable results which the author had obtained by long and painstaking research, and as he had remarked with regard to the same author's previous paper, few present were able to discuss it off-hand, for

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much time was needed even for its full digestion. The case of the lady who had developed erysipelas in the nostril, not affected with polypus, showed not only the importance of antiseptic precautions in operations, but also that of the open nostril for the ordinary purposes of health. It was a daily experience to find that relief of one much obstructed nostril was followed by such benefit that the patient became almost hypercritical, and would suffer from distress in a nostril which had previously appeared clear and had been doing all the work of nasal respiration. The presence of so many micro-organisms in the mouth was largely explained by the fact that the majority of persons breathe through the mouth instead of through the nose; and the circumstance that any one of these organisms, though primarily innocent, might become pathogenic, was a fact that could not be too strongly insisted on. With regard to the case of diphtheria in which the disease was transplanted to the intestines and proved fatal, he mentions that he had recorded one such case in his book. Unfortunately, no *post-mortem* was permitted, but Dr. Wilson Fox, who had seen the child, agreed that this was what had taken place.

Mr. MAYO COLLIER wished to second a vote of thanks to the author of the admirable paper. He thought the paper was indeed worthy of a greater society than theirs, and he suggested that it would have commanded respect if read before the Royal Society. Personally he knew nothing about bacteriology; he could only admire the author's abilities in this direction, and wonder how he could find time for such research. Such a paper conferred a service on the profession at large, and he hoped the author would not limit his remarks to that society: it would be welcomed at any society in London.

Mr. BENDELACK-HEWETSON said the paper was particularly interesting to him, because at the Glasgow meeting of the British Medical Association he had drawn attention to the fact that operations for cataract were occasionally followed by rapid suppurative processes, the cause of which could never be made out. His own extreme precautions in operations for cataract had been laughed at, but when he stated that pathogenic micro-organisms from the o[illegible] doubtedly projected into the eye during the operation, setting up the processes which ended in panophthalmitis, just as they would if cultivated in gelatine, more attention was paid to his warnings. Whether as general surgeons or as specialists, they ought to take home with them these all-important truths, which showed how quite accidentally a surgeon might be the means not only of causing the failure of the operation, but also of causing the death of the patient.

Mr. BENDELACK-HEWETSON (Leeds).—*The Relations between the various forms of Nasal Stenosis and Deafness.*

The subject, he said, had occupied his attention for several years, and he had been gradually developing it. The number of observations when he first broached the subject, however, was not very great, not sufficient to enable him to sum up the results; but now, with a more extensive number at his command, he was enabled to speak more definitely than was formerly the case. Since he first called attention to the correlation

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of nasal stenosis and deafness at the Leeds Meeting of the British Medical Association, he had added considerably to his stock of information. Going into the subject broadly, he had been endeavouring to find out what was the cause of nasal stenosis. He had found it associated with a narrowness of the jaws, leading to crowding of the teeth, elevation of the palate, etc. Then he proceeded to inquire into the causes of this narrowing of the modern face, the ultra refined face, with this result. He had been assisted in the matter very greatly by Mr. Henderson Nichols, a neighbouring dentist, and, together they had come to these conclusions :—That the result was, speaking broadly, a devolutionary process going on in the bones of the face, due probably to the fact that civilized men partook habitually of a much softer food than that which fell to the lot of savage man. By reducing thus the demands upon the muscles of mastication, they became less powerful, and when muscles became weaker their attachments to bone became less strong, and the bones themselves, no longer having need of the same strength, became less developed. Speaking broadly, therefore, they had come to the conclusion, supported by dentists generally, that there was a strong probability of this devolutionary process being due to the difference in the food, and that nasal stenosis was caused by the alterations in the bones of the face as a whole. To bear this out he had examined the jaws of the people who did eat very soft food, and who did not exhibit this tendency to formative degeneration of the facial bones. These people, of whom he had examined a large number, were in the first instance coal trimmers, men who were for the most part rescued slaves from the Zanzibar coast. They were magnificently formed men, and he had never found any of them exhibiting even in the slightest degree a tendency to nasal stenosis. Then he had examined Hindoos engaged on the P. & O. line. These men fed on hard lentils and curry, and they suffered from none of these conditions.

On his last visit to Morocco, he had carried on the inquiry on a much larger scale among the Arabs, and the same remark held good. They all had beautifully arranged mouths, good teeth, and no nasal stenosis. Although he had examined a large number, he had not alighted upon a single instance. What, then, was the result of the mouth-breathing caused by nasal stenosis? These effects could be seen in any child who, in consequence of nasal stenosis, breathed constantly through the mouth. There were thickened, enlarged tonsils, a stinking condition of the mouth; an ideal nest for the micro-organisms described by Dr. Macintyre. Such a child never from its infancy had a proper nasal sanitation. One result was that the thorax became narrower. These children became pigeon-breasted, with a stooping gait like that of an old man with bronchial asthma. He hoped one day to be enabled to show them a complete collection of photographs showing what was the condition in these cases, and the extent to which it could be improved by judicious measures.

Other conditions, however, were met with. Dr. Guye, of Amsterdam, had shown how nasal stenosis led to interference with the return of lymph from the brain, and how blockage of the cribriform plate of the ethmoid

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bone led to the condition which he had termed aprosexia, in which the drainage of the brain was imperfectly effected. The results in children with nasal stenosis were very remarkable indeed. Someone had observed that a very large proportion of idiot children were mouth-breathers, and though this matter was worth looking into further, it was certainly a matter that called for attention at the hands of such a society.

These premises brought him to the threshold of his subject. He had shown that all these conditions—malformation of the thorax, a defective gait, anæmia caused by defective aëration of the blood and insufficient oxygen, or by the disturbance of the general nutrition caused by sleep being troubled by the respiratory difficulties, the filling of the post-nasal cavity by adenoid growths and pathological micro-organisms, which led sooner or later to abscess of the middle ear or the advent of scarlet fever, because the little patients could not get rid of the mucus that accumulated in the nose—all these, one or several, might be caused by nasal stenosis. The instrument he used resembled a glove stretcher. In these cases of nasal stenosis he always tried to find out first what was the cause of the blockage. One met with patients who had never breathed properly through the nose. In addition to the actual narrowing of the bones, and the approximation of the middle turbinated bones to the septum, there was often a swollen condition of the latter, the effect and not the cause of the stenosis, also blockage by adenoid growths and enlarged tonsils. His object had been to determine by what means one could best restore nasal breathing. If nasal breathing could be restored as a permanent thing, the question of the treatment of the deafness remained to be considered.

Now, although Politzer had done so much to assist aural surgery to the front, he feared that on the whole the very brilliancy of his results had tended to obscure and to divert attention from the real nature of the affection. The sudden improvement in deaf persons in whom the deafness was due to conditions such as these, led the practitioner to overlook the exact nature of the conditions underlying his ailment. Personally he did not find much occasion to use Politzer's bag, and his Eustachian catheters lay rusting in the drawer. (In reply to the President he observed that this remark applied principally to children.) He found that by removing the adenoid growths he did some, but not permanent, good. A good deal of improvement, too, followed the removal of the turbinated bodies, but still the benefit was not sufficient. It was this fact that had led to his having recourse to the dilator. Looking at the deafness as a symptom, and not as a disease *per se*, he found that the best test was to ascertain how many seconds the child could keep the mouth shut, usually not more than from ten to thirty, or at most forty, seconds. The success of the operation advised by him was revealed by the fact that children, after having gone through it, could sleep even with the mouths shut. There was a marked change in the temperament of the child, in his features, in his intellect—a change nothing short of remarkable.

When he brought forward these facts at Leeds he could only speak of some three or four hundred cases, but now he could reckon by thousands. He mentioned the case of a child, a mouth-breather, who could not hear

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a watch at either ear, there were no adenoid growths, no enlargement of the turbinated bones. He dilated freely, and a marked and rapid improvement took place. Children wore a celluloid tube for seven or eight days to prevent recontraction, and hearing returned even before the tubes were removed. He showed photographs of a patient taken before and after treatment. The next case was practically the same. The child could hear a watch one and a half inches on the right, two inches on the left. Snores loudly all night. The nostrils were dilated, post-nasal growths were removed, and hearing became normal within a month. In another similar case the facial expression had undergone an enormous change since the operation. He admitted that the instrument looked a powerful weapon to introduce in the nose, but he was obliged to use all his force to open properly. It crushed back the wall of the antrum, and then the tubes served to prevent reclosure.

When he first began to practise this operation, it was followed by some degree of fever, but since he had made the patients vomit up the blood that had been swallowed during the operation, and washed out the cavity with weak Condy's fluid, these febrile symptoms had ceased to manifest themselves. He showed charts of cases showing that practically no rise of temperature took place at present. If the turbinated bones were enlarged he always removed them before dilating, because he did not wish unnecessarily to complicate the operation. At the same time he scraped away all post-nasal adenoid growths when dilating. A very large proportion of the persons who consulted complained of chronic otorrhœa, and these got well within a fortnight, or at most three weeks.

The PRESIDENT asked the author whether he had ever met with any untoward results from this treatment in the shape of suppurative otitis or other evidence of pyæmia?

Mr. BENDELACK-HEWETSON said that the tubes were removed twice daily, and the naso-pharynx washed out with a weak solution of Condy's fluid. No untoward effects had ever been remarked as the result of the treatment.

The PRESIDENT, reserving further remarks, said he could not altogether agree with the suggestion that curries, lentils, or vegetable diets were harder food or likely to call into greater play the muscles of mastication than the dietary employed by Europeans generally. He suggested that their perfect mastication did not necessitate as much force as the average specimen of meat.

Mr. MAYO COLLIER felt constrained to express his entire disagreement with the author of the paper, both as to his theory that a devolutionary process in the muscles and bones of the face was a common cause of nasal stenosis, and as to his practice of forcible dilatation. As to the first, no particle of proof had been brought forward in support of his contention, and no notice had been taken of his (Mr. Collier's) paper read a few months ago before the Association. In this communication he had placed facts and statistics before this Association which proved beyond doubt that nasal stenosis and all its sequels—the pinched nose, the thin drawn face, the high palate, deformity of the teeth, distortion of the orbits, the difference in size of the nostrils, etc., etc.—were all due

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entirely to unduly disposed atmospheric pressure; moreover, these views met with unanimous approval, or, at least, no dissentient voice had been raised. He had shown that up to the age of seven, nasal obstruction was unknown, because the anterior nares were wide, were on the same level as the floor of the nose, the turbinated bones were not developed, and no erectile tissue was present in the nose. He has further pointed out that at the age of ten to fifteen the turbinated bones developed, and that the cartilaginous portion of the nostril assumed a position below the floor of the nose, and at this period catarrhs and slight injuries were a fertile source of blockage of the nose. He had laid before them cases in which the nostril had been artificially blocked in young animals, and this inevitably led to certain deformities, such as deflection of the septum of the nose, highly arched palates, and irregularity and crowding of the teeth, as well as to chronic inflammation of the nasal, naso-pharyngeal, and laryngeal mucous membranes. With regard to Lascars and Coolies, he had pointed out, giving five or six thousand observations, that aborigines were not so subject to deflections of the septum nasi as Europeans, probably because they led more healthy lives, lived in a more uniform temperature, and were therefore not so much exposed to catarrhs. The author's facts were thus accounted for. Mr. Hewetson had drawn attention to the fact that deafness was often associated with nasal stenosis, but this is exactly what one might expect. By blocking one or both nostrils the posterior nares and Eustachian tubes were chronically being dry cupped, and the openings into the tympanum consequently obstructed. The treatment in these cases was not alone Politzer's bag, but was to open the nasal cavities. Politzer's bag gave relief for a few hours, but by restoring the passages in one or both nostrils the hearing was cured permanently. General surgeons might laugh, but he asserted it was the only way to give permanent relief. He asserted that the majority of affections of the larynx and lungs were due to blockage of the nostril, due, in fact, to the constant dry cupping of the respiratory tract. Passing on to discuss the treatment suggested by the author, he urged that to introduce such an instrument as the one shown them into the nose to force a passage, as they might attempt to force open a blocked gas pipe, was neither more nor less than a barbarism.

The PRESIDENT observed that this was rather a strong expression to use.

Mr. COLLIER continuing, said he felt compelled to speak strongly on a point which appeared to him fraught with danger. He pointed out that in these cases there was usually marked deflection of the septum. In from seventy to ninety per cent. of these cases marked deflection was present. The use of this instrument meant fracture or dislocation of the septum, without any means of keeping the parts in place afterwards. If there happened to be enlarged inferior turbinated bones it meant great injury, which was sure to be followed by sloughing. If polypi were present it meant crushing them, and leaving decaying tissues in the nasal cavity with all the possible consequences. He maintained that, under these circumstances, unless one was absolutely certain as to the

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state of the parts, the use of such an instrument was, in his opinion, unjustifiable.

The PRESIDENT pointed out that the author did not recommend its use indiscriminately in every case of nasal stenosis, and Mr. Collier's assertion that the treatment was adopted without a previous diagnosis was gratuitous.

Mr. COLLIER said he had heard no attempt to differentiate between the cases in which it should be used and those in which its use was not indicated.

Mr. BENDELACK-HEWETSON said that the shortness of the time at his disposal had prevented him going as fully into the subject as he would have desired, but as a matter of fact he never used this treatment for polypus nor indiscriminately.

Mr. COLLIER said that he certainly understood that the author advocated the treatment in all cases of obstruction of the nose, and as this was not the case he would withdraw the expressions he had made use of in this respect. He could quite understand that in certain cartilaginous deflections of the nasal septum the instrument might be useful, but he could not admit that the author's treatment was in any sense an advance on the treatment now in use.

Mr. GEORGE STOKER said he was himself a little mixed as to the meaning to be attached to the "devolutionary process" advanced by Mr. Hewetson. He must join issue with the author in respect of his view as to the eating of soft food being the cause of nasal stenosis. He had had a good deal of experience of living among savage races, and he could not admit that the difference between their articles of food and our own was sufficient to explain or account for the absence or presence of nasal stenosis. The savage races ate meat in large quantities, with boiled Indian corn and clotted milk. It was certainly a fact that these people had wonderful teeth, and it was very rare to see anything in the nature of decay, probably because they lived more natural outdoor lives. It was the habits of life that were different and not the food. He had been struck with what had fallen from the author in reference to the use of Politzer's apparatus. He himself was prepared to admit that its use was principally as a means of diagnosis, and as a means of ascertaining what progress the patient was making; he thought it was wrong to Politzerize a patient, and then to send him away with an idea that he had derived permanent benefit therefrom. He had never himself used the instrument shown by Mr. Hewetson. He had not had the courage. Perhaps he might summon up courage in the future in view of the brilliant results claimed for the treatment. He had already resorted to dilatation for nasal stenosis, using for that purpose a large sponge.

Dr. WARDEN (Birmingham) concluded that the instrument was not to be used for roughly poking about among the turbinated bones, but laterally outwards from the septum, and, he supposed, gradually. If the instrument were used carefully and quietly, he did not see what harm could be done. He himself was much impressed with the advantage of these blades. He asked whether the dilatation was effected under an anæsthetic.

Mr. HEWETSON: Yes, under chloroform.

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Dr. WARDEN, continuing, said he was very much pleased with the celluloid tubes, and he quite appreciated the advantages likely to attend their use. He pointed out that nasal stenosis had only been recognised by that name during the last few years—probably not more than ten or twelve years—and when he first commenced the study of this affection, he had no idea how common it was. He hardly ever examined an ear or throat case now without finding it present more or less. He was also Medical Officer of the Birmingham Ear and Throat Hospital, and connected with the Royal Deaf and Dumb Institution, and there he had made very careful examinations in this respect with the result of finding it to be present in nine-tenths of the cases. Mr. Collier had remarked that Mr. Hewetson's use of this instrument would probably excite laughter on the part of general surgeons, but specialists were probably by this time accustomed to the ridicule of general surgeons. Dr. Warden had been in this department for thirty years, and he found that this laughter diminished from year to year. They, as specialists, had made their influence felt in the scientific world, and that progressive movement was likely to continue. By giving their undivided attention to this branch of medicine they were certain to advance the treatment of these cases. He had no doubt that they had at present taken a standing and a position which would ultimately tend to specialists being the leaders and pioneers of science in their respective department.

Dr. TURNBULL (Philadelphia) observed that it was indeed very important to examine the anterior and posterior nares in cases of deafness. When in doubt he always sent his patients on to a neighbouring laryngologist. He did not understand how it was that there was to be no department of aural surgery at the forthcoming meeting of the British Medical Association, although at Cork and at Glasgow they had large meetings. The throat had very little in common with ophthalmology, but affections of the throat and nose were very closely allied with affections of the auditory apparatus, and it was extremely important that the two specialities should be studied in common. Adenoid growths, enlargement of the tonsils, deflections of the septum, leading to alterations in the whole contour of the face, produced effects on the hearing as well as on the naso-pharynx. He hoped, therefore, that the society would see their way to extending the scope of their enquiries so as to include otology.

Dr. MACINTYRE (Glasgow) said he felt quite sure that we could render after-treatment of these cases comparatively simple by careful antiseptic precautions. The feverishness in Mr. Hewetson's earlier cases could only be attributed to septic absorption. It might be impossible to keep the parts here as aseptic as in a limb after amputation, but the condition could be approximated by proper antiseptic precautions, and the spores not allowed to develop in the parts. He would like to ask the author of this paper what he intended to do by these processes of dilatation. Did he simply mean to drive the hard structures out of the way? The turbinated bones did not develop until a certain age, and many cases of deafness occurred before that. With regard to the question of general surgeons, he was not inclined to enter into the discussion, but this was quite clear—that physiology had taught us to breathe through our nostrils, and many people did not perform this function properly. Why then should we

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not get them to do so if this could be safely accomplished? It seemed to him the true method was to ascertain where the obstruction was, and then to remove it. If the propriety of removal were conceded, he was unable to understand why the hard parts should not also be attacked. He was at a loss to understand why so little attention had been paid to the upper respiratory tract. There was not a regulation, until recently, in our Scotch universities which would force a man to look into the nose or throat; and while he did not blame the man, but the system, it was strange that diagnosis had so long been a matter of making out lesions through the chest wall, which were usually extensive before the cruder methods enabled us to detect them, while much more certain evidence could often be obtained by ocular inspection of the larynx.

The PRESIDENT observed that he was in the habit of insisting that the nose was the front door of the respiratory tract, provided with safeguards in the way of structures for warming, moistening, and filtering the inspired atmosphere, and that persons should take in the air they require through the front, and not through an unguarded supplementary entrance. It seemed absurd to urge such an obvious thing, but it was necessary so long as its importance was ignored. The moment a patient says he has a dry mouth in the morning one may know that he sleeps with open mouth. The author's remarks as to the number of seconds a patient could remain with the mouth shut did not represent the whole of the mischief; patients might be able to breathe with the mouth closed, consciously, or during the day, and yet sleep with their mouths open the whole night. He had already stated that he was unable to agree with the author's prefatory remarks on the theory of nasal stenosis, but he thought that Mr. Collier had attached too much importance to these points of theory, and not enough to the practical part of the paper. As to aprosexia the President mentioned the case of an officer who was working up for Staff College examinations, and who came to him complaining that he was quite unable to apply himself to his work; he was found to be suffering from nasal polypi, but from the moment that this cause of obstruction was removed he brightened up, and was able to continue his studies. Such an event, which happened occasionally in the adult, was common in children, against whom the charge of stupidity or laziness was often unfairly applied. It was a remarkable fact that affections of the naso-pharynx occurred much more intensely after attacks of scarlet fever or measles. On the other hand, he had no doubt that the exanthemata, as well as diphtheria and other acute specific diseases, occurred much more readily and frequently in children who were mouth-breathers. He did not agree with the view that Politzer's bag should only be used as a means of diagnosis. To say that it was only useful as a temporary relief to difficulty of hearing was a mistake; one met with a number of cases in which, after operation, Politzerization was required in order to confirm the cure. He, himself, was in the habit of ordering a Politzer bag for patients, and letting them use it themselves, and he deprecated as strongly as anyone the urgency of frequent visits for the purpose of its employment by the surgeon. He admitted, however, that the ease with which it could be used had led to its abuse, especially by the uninformed general practitioner, who frequently used it as a matter of routine,

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without any attempt at diagnosis of the true cause of the Eustachian obstruction, or of the vacuum in the tympanum. With reference to Dr. Macintyre's remarks, he said that he and his colleagues had come to the conclusion that the less one douched the nose after operation the better, for they believed that it was a fruitful source of suppurative otitis. They were now adopting the dry treatment, but while no longer using douches they admitted most absolutely the importance of antisepsis in the after-treatment of all cases of intra-nasal surgery. In regard to the number of cases calling for the treatment of Mr. Hewetson he observed that it was well known that there was no great development of the turbinated bones until puberty, but he had found so frequently that removal of adenoids had led to relief of turgid turbinal bodies that he had come to the conclusion that it was very rarely necessary to do anything to these structures before the age of puberty. The hypertrophic rhinitis, if one could employ such a term for children, was often cured of itself after removal of the adenoids. The same remark applied to the majority of cases of chronic pharyngitis in children.

Lastly, on behalf of the society, he wished to express his admiration of the photographs exhibited by Mr. Hewetson. It was almost impossible to believe in several of them that the pictures before and after treatment represented portraits of the same individual. They had, however, seen similar effects follow removal of adenoid growths, which proved that it was the opening of the nostril that effected the difference, without regard to the particular means employed to attain that end. Finally, he would remind the Fellows that a certain number of children who had been mouth-breathers would continue to be so at night, even after opening the nostrils, unless precaution was taken to support the chin during the period of unconsciousness, until the habit was removed.

On the motion of the President, a cordial vote of thanks was accorded to the author for his contribution.

In reply to a question by Mr. Hewetson, the PRESIDENT said he had always used nasal douches warm, but he now *never* employed them till twenty-four, or preferably, forty-eight hours after operation.

Dr. MACINTYRE pointed out that when there were blood-clots or other septic material, douching afforded the only practicable means of getting rid of it.

Mr. BENDELACK-HEWETSON, in reply, said he did not mind his theories being attacked so long as his facts were fairly treated. The object of his paper was not to force theories upon the society, but to bring before them certain facts which he thought might be considered of interest. He would be glad if any member would take advantage of an opportunity to call and see him operate at the Leeds Infirmary. It was not an operation blindly carried out, but a delicate scientific widening of an abnormally narrowed tract, removing whatever there might be requiring removal. In the case of some children he had shown there were no adenoids nor enlarged turbinated bones, but only narrowing of the nostrils, simple dilatation of which cured the deafness. That occurred with more or less frequency. They often differed on points that were curious, and he suggested that there might be something in the nationality of the patients. In London they had to deal with classes of people who came from widely

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different and distant parts, and in these the tendency of the disease differed enormously, as did also the general characteristics. Until they had looked at the same people from the same point of view they were not justified in discrediting what another had said on such matters. In conclusion, he said he would not be dissuaded from pursuing this treatment until and unless it could be shown to be productive of harm, a conclusion which nothing in his own experience tended to justify.

The PRESIDENT, before leaving the chair, offered a few words of thanks to the Fellows for their support during his year of office, and congratulated the Association on the important work which had been achieved.

The following were elected members of the British Laryngological Association :

EDWARD BALL, 2, Part Street, Southport.
G. CHARLES WILKIN, 27, Harley Street, Cavendish Square.
FRANK MARSH, F.R.C.S.E., Paradise Street, Birmingham.

NOTES.

Mr. LENNOX BROWNE has been elected a corresponding Fellow of the American Laryngological Association.

OWING to the great pressure upon our space due to the reporting of several Society Meetings, we are compelled to hold over any abstracts of current literature until next month.

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