act beneficially by relieving congestions of the intracranial lymphatic and venous systems, as suggested by Professor Guye. It is well known that the intracranial veins and sinuses communicate with the veins of the frontal, ethmoidal, and sphenoidal air sinuses, and through these with those of the nose and naso-pharynx, and with the pterygoid plexus; and Axel, Key, and Retzius have proved that the intracranial lymphatics pass out of the skull along the course of the nerve-sheaths; further, those lymphatics which pass out through the cribriform plate of the ethmoid along with the olfactory nerves are in direct connection with the nasal and naso-pharyngeal lymphatics, which converge to and eventually enter the follicular lymphoid glands of the nose, naso-pharynx, and fauces. I have elsewhere contended that the various tonsils and follicular glands are *par excellence* lymph-secreting organs, which pour leucocytes and serum into the alimentary and respiratory tracts; in hypertrophic conditions of the tonsils (induced by contact with irritating nasal and oral fluids in morbid conditions of the system, or as the result of the exanthemata and other fevers and insanitary surroundings), the mucous membranes of the pharyngeal and faucial tonsils become thickened and thus prevent lymph-leakage and diapedesis of leucocytes into the pharynx, it follows that there results tension in the converging lymphatic systems; and as these latter form part of an anterior cranio-nasal lymphatic system, it is easy to understand that hypertrophy and abeyance of function of the nasal and pharyngeal lymphoid glands will bring about an increase in intracranial tension through lymphatic stagnation and congestion. This tension is immediately relieved by naso-pharyngeal scarifications, and the free bleeding which invariably takes place at the same time reduces any venous congestion that may exist, and this not only in the cranium, but within the nasal mucous-membrane also, for I have frequently observed well-marked enlargements of the inferior turbinated bodies due to venous engorgement of the erectile tissue and adenoid and polypoid hypertrophy of the middle turbinated body rapidly subside after the removal of enlarged tonsils and adenoid growths of the naso-pharynx.

Now Ferrier has pointed out that extirpation of the præfrontal lobes in monkeys is followed by a marked impairment of the faculty of attention and observation, and it is not unreasonable to suppose that aprosexia and other symptoms associated with lymphoid overgrowths and obstructions in the nose and pharynx are the outcome of lymphatic and venous stagnation and tension in the structures occupying the anterior region of the cranium. Through the courtesy of Dr. Robert Jones, the Medical Superintendent of the Earlswood Asylum, I have been permitted to examine some of the backward idiotic and imbecile children of that institution. As is well known, most of such cases, excepting the hydrocephalic, exhibit the low sloping forehead indicating especially the small size of the anterior lobes of the brain, but a strikingly large number are subjects of the strumous or of the syphilitic diathesis. They are nearly all mouth-breathers, night-snores, and the victims, *inter alia*, of some form of nasal or pharyngeal obstruction. Many are deaf, all aprosexic.

Most writers have given struma and syphilis a very prominent place in the etiology of idiocy and imbecility, and adenoid growths of the naso-pharynx, hypertrophied tonsils, enlarged glands in the neck, and general overgrowth of the lymphoid tissues of the nose and throat are most frequently met with in individuals the subjects of the strumous and syphilitic diatheses. The question arises, whether want of cerebral development on the one hand and morbid conditions of the nose and pharynx on the other hand in strumous and syphilitic subjects have a casual or causal relationship. Does lymphatic stagnation within the cranium, as the result of hypertrophy and abeyance of the secretory functions of the tonsils and other lymphoid glands of the nose and throat interfere with cerebral development and function? In bringing this notion forward I am not for a moment suggesting that naso-pharyngeal scarifications are likely to improve the brains of idiots whose physical and psychological development was checked in the very early years of life or *in utero*; but if the fact be true that nasal and pharyngeal lymphoid obstructions interfere with the development of the cranial and intracranial structures, then it behoves us to pay more attention to such obstructions in very young individuals if we would lessen the number of stupid children.

It is a matter of everyday experience with aural surgeons to find that deafness and aprosexia in association with catarrh and hypertrophy of the lymphoid glands of the nose and pharynx date from an attack of one of the exanthematous fevers more especially

in strumous and syphilitic children; from my own, as yet limited, observations on backward school children I am led to believe that aprosexia and allied conditions often result from the above mentioned pathological causes when there is no deafness present to direct attention to the *fons et origo mali*. The relief afforded by naso-pharyngeal scarification is often remarkable. I need scarcely add that not every child with deafness of naso-pharyngeal origin is aprosexic, and not every sufferer from aprosexia is deaf; nor is it contended that all the supposed victims of over-pressure suffer from nasal and pharyngeal obstructions, but it is probable that a certain, as yet undetermined, proportion do so.

The stupid looking lazy child who frequently suffers from headache at school, breathes through his mouth instead of his nose, snores and is restless at night, and wakes up with a dry mouth in the morning, is well worthy of the solicitous attention of the school medical officer.

NEW ANTISEPTIC ARTIFICIAL MEMBRANA TYMPANI,

WITH REMARKS ON THE TREATMENT OF PERFORATION AND OTHER DISORDERS OF THE MIDDLE EAR.

Read in the Section of Otology at the Annual Meeting of the British Medical Association, held at Leeds, August, 1889.

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SOME of the most striking results of simple surgical treatment follow the successful application of artificial drumheads in cases of chronic middle-ear disease. Individuals who are unable to distinguish clearly sonorous vibrations, or to follow ordinary conversation, find themselves, by the introduction of a little mechanical contrivance into the ear, suddenly placed in a new world of sound. Many of my patients have expressed their surprise at the simplicity of the treatment, and their satisfaction that they could so easily practise it themselves. If these statements are true, how is it that in every town and village of this country sufferers from permanent deafness and aural disease are to be found who have never given any kind of artificial membrane a trial? The fact, however, admits of a very easy explanation. Medical men engaged in the arduous duties of general practice really take very little interest in chronic middle-ear affections, and they regard their treatment as unsatisfactory and often practically hopeless. Many patients, partially deaf, are remarkably indifferent about their aural troubles, and parents often ignorantly neglect them in their children, and look upon "a running at the ear" as a constitutional error that ought not to be rashly checked. Every day a large number of chronic cases attended with serious deafness are seeking relief at the special institutions, and it is really astonishing to find how small a proportion of them have ever undergone any regular treatment.

Aural Diseases in which Artificial Drumheads are Useful.—The special forms of middle-ear disease in which the hearing power is improved by the insertion of an artificial drumhead are capable of well-marked definition. 1. It is especially useful in cases of perforation, but the probable increase in the hearing power cannot be estimated by any preliminary examination. The amount of benefit certainly does not depend upon the size or position of the injury, for in every case there are other abnormal conditions which exert a variable influence upon the result. It is almost impossible to have any loss of substance in the membrane without also some other structural changes in the tympanum. 2. The artificial drumhead is also beneficial in other alterations of the membrane involving abnormalities of tension in the conducting apparatus. It may be used with marked benefit in chronic middle-ear disease attended with ossicular changes and atrophy of the drum, or in cases of cicatricial collapse caused by inflammatory thickening of the membrane and lining of the tympanic cavity. In fact, in all cases of accommodative loss from alterations in the contents of the tympanum, the artificial membrane may be hopefully employed, provided the Eustachian tube is unobstructed and the naso-pharynx fairly healthy.

Early Efforts to Compensate for the Loss of the Membrane.—The great value of mechanical aids in diseases of the tympanum has long been recognised. Half a century ago methods were devised by surgeons for closing the opening of the drum in cases of

perforation. The notion obstinately clung to their efforts that it was absolutely essential to completely fill up the aperture with some material, and leave the external meatus free and unobstructed. This practice of plugging the perforation proved dangerous, and was sometimes followed by disastrous results, so that, after many trials with various materials, the attempt to treat mechanically the injured membrane was for a time abandoned.

About thirty years ago the late Mr. William Harvey stated¹ that Itard introduced the practice of inserting cotton wool at the bottom of the meatus. Subsequently, Delean applied a piece of wood, and Todd a little pad of lint. The following list shows the various kinds of artificial drumheads which have been introduced up to the present time:—

Moistened cotton pellet, Mr. Yearsley. (1) Cotton ball attached to thread; (2) disc of adhesive plaster; (3) disc of sublimated gauze, Dr. Turnbull. Disc of oil silk, Dr. C. M. Thomas. Cotton pellet fixed by collodion, Dr. Barr. Disc of sized paper, Dr. C. J. Blake. Compound disc of india-rubber, cotton wool, and flannel, Mr. George Field. Solid piece of india-rubber, Dr. Burkard Merian. Solid piece of india-rubber on fine stem of silver wire, Mr. Toynbee. India-rubber tube as long as canal, Professor Politzer. India-rubber disc attached to rubber tube, Professor Lucae. Circular patch of pellicle of egg, Dr. Walker Downie. Cylinder of gold, Dr. H. B. Richardson. Glycerine thickened with tannin, Dr. Michael. Plug of boracic acid powder, Dr. Farquhar. Little roll of paper, author unknown.

It is not my intention to advocate the special excellence of any of these devices. No doubt all of them have been found useful; but not one of them is adapted for indiscriminate adoption. Up to the present time the pellet of cotton-wool has been more extensively employed by aural surgeons than any other form of artificial tympanic membrane, but its constant use is attended with many disadvantages. The patient must be taught the method of using the pellet, and adjusting it in his ear with forceps. Sometimes the cotton ball is not completely withdrawn, and the portion that remains in the meatus becomes foul and dangerous from purulent saturation. It may be put in too firmly, so that the upper part of the passage is converted into a shut sac, and the drainage of the tympanum prevented. It is my experience that few patients can be induced to persevere with the cotton pellet, because it is so liable to get out of position, and requires so much dexterity in putting it in and taking it out of the meatus.

During the debate at the annual meeting last year,² Dr. Barr expressed the opinion that the cotton pellet properly applied was a very valuable aid to hearing in suitable cases. He said that it ought to be tried in various sizes and shapes, and also in various positions, and that the many failures which occurred in practice arose from the want of sufficiently painstaking efforts in these directions. Whenever the cotton pellet got out of position and habitually became misplaced, he found it an excellent plan to immerse the cotton in collodion, and then carefully fix it in the meatus. It is scarcely necessary, otherwise I could refer to other eminent authorities in corroboration of my statement that the cotton pellet, the most universally employed of all artificial drumheads, is really difficult to manage. If the surgeon requires so much patience and skill in its adjustment, how can it be applied efficiently by the majority of patients?

As regards the artificial tympanic membrane in the form of an india-rubber disc, it is sometimes useful, but is seldom persistently worn, as the metallic stem attached to it is irritating and uncomfortable, and its vibration in the meatus causes constant annoyance. A short time since a gentleman consulted me respecting long-standing perforation and chronic otorrhoea. He was wearing an artificial drumhead of this description, which had been recommended to him by an aural surgeon, and he informed me that it was of much assistance to him, but that he was unable to wear it constantly in consequence of the vibration of the stem. On examination, I found the meatus so narrow, and the posterior wall so much distorted and thickened, that it was impossible to examine the perforation, or introduce any other kind of artificial drumhead.

An Efficient Artificial Membrane.—The essential qualities of a good artificial drumhead are somewhat numerous, and they can be tabulated as follows:—1. The artificial membrane must, first of all, decidedly improve the hearing power both for distance and conversation. 2. It must be so constructed that it can be easily placed in the right position and readily removed. It ought also

to be especially adapted for self-application. 3. It must be extremely light and delicate in structure, so that it causes no sensation or irritation in the meatus by its presence. 4. The artificial drumhead ought also to be an efficient protector to the injured organ, and a screen for maintaining the moisture of the exposed tympanic cavity. 5. It should be capable of fitting the varying capacity of the external meatus, so that when once placed in position it is not liable to displacement. 6. It ought to be a convenient vehicle for the application of local astringent and deodorising remedies. 7. The contrivance should be obtainable at a trifling cost, so that a new artificial membrane may be used as often as necessary.

The New Antiseptic Artificial Drum.—The new membrane which I desire to submit to the criticism of my professional brethren is represented in Fig. 1. In shape it is exactly like a hat with a very high and tapering crown and a broad and flat brim, having a short ribbon attached to the edge. It is just firm enough in substance to retain its shape in the ear, and yet the material is so soft and flexible that it causes no sensation by its presence. It is stained a delicate flesh colour, and is made in several sizes, to suit the varying capacity of the external meatus. When in position the crown rests near the tympanic membrane, the brim upon the meatal wall, and the little ribbon or handle behind the tragus. The method of manufacture has been worked out by a series of experiments. The material is composed of compressed cotton fibre swollen by prolonged immersion, and saturated in an antiseptic oil and ether. The soft material is then firmly compressed in a little machine that I have designed for the purpose, and afterwards dried by artificial heat.

One marked feature of the new antiseptic membrane is its extreme lightness. The weight varies a little according to the size, and this has a range from one-sixth to one quarter of a grain. I have often introduced it without the patient being aware that anything had been put into the meatus. Another special quality consists in the facility with which it can be introduced and removed by the patient himself. The little instrument for the self-application of the artificial membrane is depicted in Fig. 2. The probe end is inserted into the crown of my little hat, and in this way it can be accurately placed in the meatus, and then detached from the instrument by the aid of the sliding collar. Patients very soon get into the way of adjusting it, and slipping it into position with just the right amount of pressure for securing the best result. The forceps is intended to be used for the removal of the artificial membrane, and in doing this, patients are guided by their tactile sensibility. Traction is made upon the handles, which ought always to be easily found resting behind the tragus.

It is a matter of great practical importance in every case that the artificial membrane should be selected to suit the shape and capacity of the external ear. It is my practice to regulate the height of the crown by the sensations of the patient, and the breadth of the brim by the size of the meatus. It must not fit too tightly, but simply rest in contact with the meatal wall, so that after it has been put into the right position it does not get easily displaced.

Fig. 3 presents a diagrammatic section of the ear, showing the usual position of my artificial drumhead. It is not necessary to place the crown upon the perforation, or in contact with the remnants of the tympanic membrane. The surgeon cannot select the point of contact by any internal scrutiny of the organ, but in every case he must be guided by the sensations of the patient and the improvement produced in the hearing power.

The artificial drumhead may be regarded also as an ear protector and a local antiseptic remedy. I have recently made some impregnated with the oils of eucalyptus globulus and pumuline pine in combination with other aromatic substances, and their agreeable fragrance renders them extremely grateful to some patients, especially those who have suffered from offensive discharge. Other patients with perforation of the tympanic membrane, but without serious deafness, have used them as ear protectors with great comfort. In such cases the artificial membrane forms a screen between the middle ear and external meatus, and acts as an efficient shield during rough and cold weather.

With reference to the length of time an artificial membrane can be retained in the ear, I recommend a fresh one to be introduced every day, and of course this is absolutely necessary in all cases of otorrhoea. It should be taken out during the night, and put in directly after the local treatment is finished in the morning. Some patients make one of the drumheads do for two or three

¹ *The Ear in Health and Disease*, by William Harvey.

² See JOURNAL, September 1st, 1888.

days. A medical friend, who has been using my little hat for several months, informs me that he has often kept one in his ear for a week without removing it. Of course this is a detail which must vary in different cases, and patients soon learn to arrange it for themselves.

Fig. 1.

The antiseptic artificial membrane does not require to be moistened before introduction. If the passage is dry it should be wiped out with a weak solution of boracic acid or any deodorising lotion. On two occasions only have patients complained of some temporary irritation from its presence in the meatus. One was a case of gouty eczema of the auricle, and in the other the external ear was particularly tender and irritable from chronic inflammation. Under these circumstances a morsel of lanoline containing cocaine can be used with great relief just before the introduction of the artificial drumhead, and I always direct that the membrane should only be retained for a few hours at a time until the sensibility of the meatus has subsided.

Fig. 2.

Antiseptic Treatment in Middle-Ear Disease.—I must now refer to several practical matters connected with the treatment of perforation of the tympanic membrane and chronic suppurative disease of the middle ear. It sometimes happens that good results can be obtained by simply adjusting the artificial drumhead and

Fig. 3.

replacing it as often as necessary. In a large majority of these distressing cases, however, other important remedial measures must be diligently practised, and the ear must always be tho-

roughly deodorised before the introduction of the artificial membrane. The external meatus must be kept clear by washing, and, in some cases, this must be repeated two or three times a day. It

Fig. 4.

is only by persistent and gentle irrigation that the inspissated secretion can be removed from the tympanum, and this should be carefully and regularly done with lukewarm and astringent

Fig. 5.

lotions, applied with a glass syringe or aural douche. Often the injured organ is too sensitive for treatment by injection, and the external passage can only be filled with the warm

solution. This must be retained for a minute or two, and the operation repeated over and over again until the ear is effectually cleansed. The meatus should then be gently wiped out with pinol wool, and for this purpose I use the aural probe (Fig. 2), as with it the soiled material can be instantly cast off by slipping over the point the sliding collar. Parents must always be taught to carry out this deodorising treatment, and to examine the ears of their children several times a day, so that they may be sure that the foetid odour is effectually destroyed. In cases of profuse otorrhoea I do not recommend the use of the artificial membrane until the discharge has been relieved and the excoriations around the meatus have been successfully treated. Care must be taken that the purulent secretion from the diseased tympanum is not mechanically pent up, for plugging the ear with cotton wool or any other substance is a very dangerous practice. Our poor patients come to us quite ignorant of the gravity of their condition, and of the imminent peril which often surrounds them from inflammation of the bony structures and the risk of septic absorption.

Again, in all cases of chronic middle-ear disease it is essential to examine the naso-pharynx and test the condition of the Eustachian tubes. For this purpose I often use my hand-ball injector and evacuator, and whenever chronic tubal obstruction is present, I teach my patients to apply the instrument for themselves, and also diligently to carry out daily antiseptic treatment. It is often only after weeks of perseverance and attention that the full comfort of the artificial drumhead can be secured and the improvement in the hearing power fairly estimated.

Value of Artificial Drumhead.—In a communication On the Value of Artificial Aids to Hearing, read at the last annual meeting of the Association, Dr. Laidlaw Purves remarked: "Our assistance is not asked by a patient to enable him to hear the tick of a watch or the sound of a tuning-fork, but to restore him as far as may be possible to conversation with his fellow-men." It is for the improvement of the hearing power in conversational intercourse, and for the protection of the injured organ during the ordinary purposes of life, that I can confidently recommend the antiseptic artificial membrane. It may require sometimes a little patience to learn its exact adjustment, but the effort will be followed by real benefit and diminished risk. The intensity of the sonorous vibration is often immediately increased, and patients have voluntarily told me that they could define sounds which before appeared to them to be only a noise. The sensibility of the organ is magnified, and the hearing power is so far improved that the patient does not appear deaf in ordinary conversation. Inter-course with friends is made easy, the hearing distance is increased, and in place of earnest looks and strained attention the countenance expresses both pleasure and repose. As a general rule the help afforded by the artificial drumhead is more pronounced in perforation than any other form of middle-ear disorder; still I have seen many successful applications in other forms of injured membrane.

I have now tested the value of the new antiseptic membrane in more than 100 cases of middle-ear disease, and, out of this number, all but three have experienced decided benefit. I always tell my patients that they may hope for progressive improvement, but that they must not expect to realise the full amount of relief until they have regularly carried out the local treatment, and worn the artificial drumhead for at least two or three months.

The following illustrations are taken from my notebook. Both these cases, and many more like them, have recently been examined by my colleague, Mr. Childe, Dr. C. C. Claremont, Dr. Conan Doyle, Surgeon-Major Lennon Brown, Surgeon Wardrop, and many other professional friends. Fig. 4 has been taken from the photograph of a patient, aged 16 years, and it exhibits the position of the drumhead during traction on the pinna. Her mother stated that she had suffered from disease of the ears since infancy. The perforations were large on both sides, and involved nearly the whole surface of the membranes. About five years ago, the deafness appeared to have been much aggravated by repeated blows on the ears at school. During the last two years, she has been very deaf, and the discharge copious and foetid. On the right side she complained of constant tinnitus—a somewhat rare symptom in perforation, and probably excited by a collection of inspissated secretion over the fenestra ovalis. Local treatment had been regularly carried out for four months, in combination with the daily application of the artificial membranes. The hearing power had much improved, and conversation with her indi-

cated scarcely a trace of deficiency. She stated that she could follow the sermon at church, and her appreciation of musical sounds had also much improved.

A sketch taken from the photograph of a patient, aged 26, is seen in Fig. 5. The tragus is drawn forwards to expose the artificial membrane and the handle in position. She had been married some years, and had had two children. Her mother stated that her hearing was lost when she was twelve years of age, and that her friends "had always to halloo at her." On examination both membranes were found destroyed. The aural discharge was foetid but moderate in quantity. The ears were at once deodorised, and the artificial membranes inserted. The hearing power was immediately very considerably increased. During the last four months she has regularly carried out the antiseptic treatment, and has daily introduced the drumheads. She could now hear well and exhibited no apparent deafness in conversation. She stated that musical sounds were clear and distinct, and that she could hear a watch one inch from her right ear.

Now, I am quite aware that local treatment assiduously carried out will do much to improve cases of this description, but it is my experience that persistent attention to cleanliness, in combination with mechanical assistance, will give far better results, with a fair prospect, too, of progressive improvement.

The new antiseptic artificial membranes together with my aural probe, can now be obtained from Messrs. Burroughs and Wellcome at a very trifling cost.

DR. WARD COUSINS gave a demonstration in the theatre of the Leeds Infirmary on Thursday afternoon, August 15th. The attendance of several patients labouring under chronic middle-ear disease had been very kindly arranged by Mr. J. A. Nunneley. The cases were all severe forms of deafness with otorrhoea and perforation. Dr. Ward Cousins deodorised the ears with boracic acid and then inserted the antiseptic artificial membranes. He explained the method of self-application and the value of his new aural probe. Many members of the Association were present, and the results were considered, in three cases out of four, very satisfactory.

BRITISH MEDICAL ASSOCIATION.

FIFTY-SEVENTH ANNUAL MEETING.

PROCEEDINGS OF SECTIONS.

SECTION OF OPHTHALMOLOGY.

WEDNESDAY, THURSDAY, AND FRIDAY, AUGUST 14TH, 15TH, AND 16TH.

A Modified Hook for the Removal of the Remains of Lens Capsule.—DR. ADOLF BRONNER said that in many cases of discission or linear extraction of cataracts, it was found that part of the lens capsule was left, and that it covered the pupil, thus greatly impairing the vision. In most cases the capsule could be torn up with the help of one or two discission needles. In some cases, however, in which the capsule was very tough, or, if thin, tough bands were in the way, or if the capsule were very adherent to the iris, it had to be removed with the forceps or hook. The great drawback to forceps was that it was very difficult to keep them perfectly aseptic, and he personally had a great dread of introducing any forceps into the interior of the eye. Hooks could very easily be made perfectly aseptic. The drawback in this case was that it was often very difficult to get them out of the cornea, as the end of the hook caught in the edges of the wound through which it was introduced. He had had a hook made which was bent in such a manner that it could very readily be withdrawn from the corneal wound. The advantages which the hook seemed to have over the forceps was not only that it could easily be made aseptic, but also that the aperture in the cornea, through which it was introduced, need not be nearly so large as that for introducing the forceps, and also that in cases of tough capsule the capsule could be much more readily caught hold of with the hook than with the forceps.

Ophthalmic Trophoneuroses.—DR. P. H. MILES read a paper on this subject. He hoped to initiate for certain forms of eye disease, a reclassification based on a definite pathological unit. This reclassification would give a common starting point for many affections hitherto of doubtful origin. The function and diseases of