what manner and to what extent, giving any facts illustrative of the value of any method of disinfection employed, as well as cases showing how soon it is safe, or unsafe, for the convalescent to mix with his fellows.

Answers may be written on ordinary note-paper, or schedules to be filled up may be had on application to me, at Monks' Hall, Eccles, Manchester.

The Committee hope that every member will endeavour to supply them with the particulars of any cases which may come under observation. Were each member to furnish us with even one case only, what a mass of facts we would possess! And, surely, the Committee's appeal will not be in vain, considering the importance of the inquiry, and the well known enthusiasm of the Associates in every undertaking which has for its object the attainment of scientific truth.

CATARRH AND PYÆMIA CAUSING LARYNGEAL ABSCESS.

By THOMAS WHIPHAM, M.B., F.R.C.P.,
Assistant-Physician to St. George's Hospital.

IN the January number of the *New York Medical Journal*, an interesting case of abscess in the epiglottidean folds is recorded as having occurred at the Bellevue Hospital. The patient, two or three days before he was taken sick, was in excellent health, and engaged in Jefferson Market. After exposure to cold, he was attacked with swelling on the right side of the neck, and, on admission to the hospital, this was very marked on both sides, but particularly on the right. He suffered from dyspnoea, also due, as was supposed, to oedema of the glottis. The dyspnoea increased to such a marked extent, that laryngotomy was advised and performed. The operation relieved the dyspnoea; but, shortly afterwards, the patient died of exhaustion. The necropsy showed that the swelling of the neck was due to a diffuse cellulitis, which had not yet undergone suppuration. In the epiglottidean folds, however, there was an abscess, which gave rise to the diagnosis of oedema glottidis. At the beginning of the present year, during the absence of Dr. Barclay for a few days, a somewhat similar case came under my care in St. George's Hospital.

A young man in domestic service, aged 25, was admitted on Feb. 3rd, 1875, who had five days previously been attacked with stiff neck, soon followed by headache, so severe as to compel him to take to his bed. He had then some swelling at the back of his neck, but this had almost entirely subsided at the time of his admission. The day before he came under notice, he had an attack of diarrhoea. At first, one or two spots of doubtful character on the belly led to the suspicion that it was a case of enteric fever, more especially as there was tenderness in the flanks. He was put upon bark and acid, with a small quantity of brandy, the diarrhoea of the preceding day having exhausted him considerably. On the 5th, the back of the right hand became red and painful. Similar pain and redness affected the knee and outer side of the ankle on the right side; the urine was high coloured and acid; pulse, 100; temperature, 104.2; bowels open once. The treatment was changed to effervescent citrate of potash with quinine every four hours, and, next day, as the pain was still severe, half a drachm of bicarbonate of potash was added to the medicine. He complained now of sore throat and slight tenderness on the left side of the neck, and the voice had become husky. Laryngoscopic examination showed a red, rounded, and opaque swelling of the mucous membrane over the left arytenoid cartilage, and, in addition, great general congestion of the larynx, but no tumefaction except as above mentioned. Small doses of antimony were ordered every two hours, of which he took about six. On the 6th, dyspnoea accompanied by dysphagia became urgent, and the patient broke out at intervals into a profuse clammy perspiration. Various inhalations were tried, but, as they manifestly increased his distress, were discontinued. Laryngotomy was then suggested; the throat being by this time too irritable to allow any examination or treatment of the larynx itself. The patient, however, obstinately refused to submit to the operation. About 7 P.M. next day, the dyspnoea being most distressing, Mr. Harper, the house-physician, tried to obtain his consent to the insertion of a tracheal tube; the man, however, became greatly excited, and, evidently thinking that force would be employed to compel his submission, turned quickly over on to his face in the bed, and was dead in a few seconds. The larynx was opened as soon as it was discovered that the muscles were relaxed, and artificial respiration was kept up for some time, but without effect.

Post mortem examination revealed an abscess in the soft parts on the inner surface of the left ala of the thyroid cartilage. The pus lay in

contact with the cartilage, and had caused inward bulging of the ventricular band, slightly so of the vocal cord, and a certain amount of eversion of the ventricle. The normal orifice of the glottis was in consequence reduced in size. No disease of the thyroid or other cartilages existed. Microscopic examination of the swelling over the arytenoid proved the tissues to be infiltrated with a nuclear growth, which was most abundant in the neighbourhood of the blood-vessels, and immediately beneath the mucous membrane.

Cases of laryngeal abscess are at all times of great interest, and more especially so to the laryngoscopist, who may, by actual demonstration of the nature of the malady, be enabled by evacuating their contents to avert the immediate danger of suffocation, and to place the patient under conditions favourable to his recovery. But, in order to effect these results, a clear history of the formation of pus is required in addition to actual demonstration of the abscess by the laryngoscope. The above cases are placed together, with a view of showing how extremely obscure in some instances is the diagnosis of these purulent formations in the larynx.

In the first case, cold seems to have been the starting point of the disease, and this was followed by laryngitis, an event of common experience. Nothing, however, in the course of the case as reported, gave rise to a suspicion of abscess. In the second, the absence of the earlier manifestations of suppuration was remarkable; the patient had no rigors, sweatings, or any of the ordinary symptoms (save elevated temperature) of pus-formation. The most prominent feature in the case was the pain in the joints, which was at first thought to be rheumatic; but afterwards, from the brightness of the erythema, and the circumscribed area of the patches, it seemed more probable that the patient was suffering from pyæmia. Sweating certainly occurred, and profusely, towards the later periods of his life; but only after the dyspnoea became urgent. This symptom, therefore, might have been as much due to the latter cause as to the former.

A notable feature in this case is that, although after death such serious lesions were found in the larynx, there was nothing in the earlier part of the case indicating special laryngeal trouble. Swelling of the neck, doubtless, had occurred before the man's admission into hospital, but it had nearly subsided when he came under observation; and it was only after he had been under treatment for two days that special attention was directed to the throat. The voice then became husky, and the swelling over the left arytenoid was detected. This swelling, it may be well to observe, was unilateral and limited in extent; it was, therefore, not considered advisable to resort to operative interference. As the sequel proved, moreover, incision into this swelling alone would have been unproductive of good.

The throat-affection in the case which occurred at the Bellevue Hospital appears to have originated in catarrhal laryngitis, the inflammation resulting in the formation of a laryngeal abscess. Such cases are interesting by reason of their unfrequency. In my own case, the cause is less evident. Possibly it may have been due to exposure to cold; and this supposition (in the absence of any definite history) is strengthened by the occurrence of swelling and stiffness of the neck. The cold, however, will scarcely explain the disease in the larynx; and for this reason, that there was no laryngeal inflammation until the eighth day of the patient's illness. It can hardly be supposed, therefore, that laryngitis was the prime cause of the malady. The idea naturally occurred at the time of the *post mortem* examination, that the laryngeal abscess was but the local manifestation of general pyæmia. But as no other cause for the blood-poisoning could be discovered, this theory would seem to lack support. Nevertheless, it every now and again happens that in a case which may clinically have been considered as an undoubted case of pyæmia, the cause of the blood-poisoning, even after most diligent search, cannot be demonstrated. I am therefore disposed, seeing that the affection of the larynx did not manifest itself until so late in the patient's illness, and then as a sequela of general blood-poisoning, to consider the abscess in this case to be of pyæmic origin.

Abscesses of the larynx, except in cases where the cartilages are diseased, are, as has been stated, rare. According to the observations of Porter, "their most usual situation is behind the broad portion of the cricoid cartilage"; and this is doubtless due to the fact, that this cartilage is more liable to be affected by caries than the thyroid epiglottis or arytenoid. "The presence of an abscess in this situation", he continues, "exercises a very decided influence in pressing upon and obstructing the rima glottidis. The approach of the suffocating symptoms is very gradual, and their progress slow; and it is extremely difficult either to ascertain its existence or to apply a remedy." Owing to the position of the abscess in each of the recorded cases, symptoms of suffocation occurred in the natural course of events: they encroached upon and obstructed the rima glottidis. The approach of the suffocating symptoms and their progress was, however, neither so gradual

nor so slow as in Porter's description; unless, indeed, we are to institute a comparison between the formation of an abscess and the course of acute laryngitis. In the American case, laryngotomy appears to have been rendered necessary very shortly after the onset of the laryngeal symptoms. In my own case, the patient died suffocated within forty-eight hours from the accession of the disease. The difficulty in demonstrating laryngeal abscess is in exact proportion to the irritability and congestion of the surrounding parts, and more especially of the fauces. In my case, two laryngoscopic examinations only were possible, and neither of those showed the swelling on the left side of the larynx, which was afterwards demonstrated at the necropsy. Remedial measures are, however, since the introduction of the laryngoscope, less difficult than heretofore. Provided a satisfactory exploration of the larynx can be made and the swelling detected, the contents of the abscess may be evacuated with comparative ease with Mackenzie's laryngeal lancet. The only other alternatives, if the dyspnoea be urgent, are laryngotomy, or the method suggested by Porter—viz., to cut gradually down to the cartilage from without, and give exit to the pus externally. With regard to this last operation, Porter observes that, "although it has happened that I have not cut upon the matter in the first instance, yet it always made its appearance on the following day, the abscess never failing to burst into the wound. The result of the incision in the neighbourhood of an abscess seems to depend on the disposition of purulent matter to make its way to the surface by that route which offers least resistance; and the principle may be turned to advantage in every case where matter exists in a hazardous situation, and it is desirable that it should be discharged externally." This latter operation might, however, have been resorted to in days before the laryngoscope came into use; it is far less simple than the intralaryngeal method, and, in all probability, no less dangerous. In the case here related, it would have been difficult to give exit to the pus by such a proceeding, seeing that the abscess lay entirely under cover of the ala of the thyroid cartilage. Moreover, in the presence of urgent dyspnoea, there would scarcely be time for the amount of careful dissection which operations in this neighbourhood render necessary. In the treatment of laryngeal abscess, then, where the dyspnoea demands immediate relief, the only means that appear to afford any prospect of successful termination are direct incision into the abscess with the laryngeal lancet, or, failing this, laryngotomy.

ON A NEW FORM OF ARTIFICIAL MEMBRANA TYMPANI.

By GEORGE FIELD, Esq.,
Aural Surgeon to St. Mary's Hospital.

IN treating cases of perforation of the membrana tympani, it has always appeared remarkable that some patients should derive benefit from Yearsley's pellet of moistened cotton-wool, while others gain greater advantage from Toynbee's artificial membrane. It has, therefore, occurred to me that the instrument I am about to describe might prove advantageous; and such I have found to be the case. It is simply a combination of Toynbee's artificial membrane, viz., a thin disc of India-rubber mounted on a fine silver-wire stem, and Yearsley's cotton-wool. In my instrument, the wire is carried beyond the India-rubber for about a quarter of an inch, and terminates in a second disc, made of flannel. The space between the two is filled up with a small portion of Dr. von Bruns's wound-dressing cotton-wool, which is absorbent, and so takes up and communicates to the flannel disc any medicated solution which it may be desirable to apply. To prevent overcharging the cotton-wool, a pipette should be used, as one or two drops are sufficient to moisten every fibre of the wool and flannel.*

Its advantages are the following.

1. It does not irritate the membrane, and being very soft, is not likely to injure it.
2. It is made of cotton-wool, which is absorbent; lotions can by this means be constantly applied with much advantage.
3. By thus keeping the part clean, the membrane gets into a healthy state, and the perforation heals.
4. The hearing distance is improved.
5. It is not liable to leave the India-rubber disc in the meatus.
6. It is easily used; and does not require the forceps, as is the case with Yearsley's cotton-wool.

The following cases are interesting.

E. F., aged 26, a clerk, came to consult me at St. Mary's Hospital, having suffered from deafness for twenty years. Both membranes were

perforated. On the right side, there was a large perforation; he could not hear my watch on contact. On the left side, there was a smaller perforation; he heard the watch at the distance of an inch. On the right side, Toynbee's membrane increased his hearing about seven inches; cotton-wool had no effect. In the left ear, Yearsley's mode of applying cotton-wool answered best; the India-rubber disc having very little effect on this side. With my instrument, he can hear nearly eighteen inches on both sides. His hearing is thus greatly improved. The membranes are gradually getting into a healthy state. He says "he can now hear sermons", a benefit he was never able previously to enjoy.

H. J., aged 19, came to consult me at St. Mary's Hospital. She had been deaf for two years in both ears. The deafness came on after measles. She had a large perforation of the membrana tympani on the right side, with constant offensive discharge. She could not hear a watch on contact. After the new artificial membrana tympani was used, her hearing improved one foot, and by using (by this means) various lotions applied directly to the perforation, the discharge has gradually ceased, and her hearing distance when wearing the instrument is now one yard, and about four inches without it. The membrane now looks healthy, and the perforation is decidedly smaller.

W. D., had perforation of the left membrana tympani. He could not hear a watch on contact. He had been deaf eight months; the deafness came on after "brain-fever." This boy's hearing improved four inches, and the discharge, which had previously been very great, has ceased altogether.

H. L., aged 17, had had deafness for five years in both ears after scarlet fever. There were large perforations in both membranes. With Toynbee's artificial membrane, her hearing is greatly improved, four to five inches. The application of the cotton-wool also affords benefit; but, with the combination of the two, a much better result is obtained; for, when she wears them in her ears, she can hear ordinary conversation perfectly well, and the hearing distances were twelve and fifteen inches. The lotion she has lately used (which has quite stopped the discharge) consists of two grains of the nitrate of silver to the ounce of water; she says, also, that when wearing them, the sound seems much clearer than with the others.

S. M., aged 26, had perforation of both membranes, much the same as the last case. It came on from scarlet fever. Her hearing is improved to a very great extent on both sides. She says that my instrument is much more comfortable than the other, and does not move about like the India-rubber one; she also hears double the distance with it. The discharge has stopped.

I have several other cases of the same kind, both in hospital and private practice, in all of which the benefit has been the same.

My predecessor at St. Mary's, Dr. Peter Allen, was of opinion that in Yearsley's contrivance (when the natural membrane is perforated or lost) the benefit is derived from support given to the ossicula, by which they are enabled to exercise that due pressure at the fenestra ovalis, which keeps the membrane of the fenestra rotunda in a condition susceptible of vibration, and capable of transmitting them to the nerve-expansion of the labyrinth. And Yearsley himself says his object is to support the remaining portion of the membrana tympani or the ossicula, and that care must be taken that the entire opening be not covered, otherwise the experiment will not succeed; it is also indispensable to success, that the moisture of the wool should be preserved.

Toynbee, on the other hand, says, "It seems to me no doubt but that one of the functions of the membrana tympani is to confine the sonorous undulations to the tympanic cavity, in order that they may be concentrated on the membrana fenestrae rotundae. Indeed, it is probable, that the vibrations only partially pass through the chain of bones to the vestibule, and that the air in the tympanic cavity is one great medium of communication with the labyrinth. If the means of communication with the labyrinth be the air in the tympanic cavity, it is palpable that any aperture in the membrana tympani is likely to diminish the power of hearing, by permitting the vibrations to escape from that cavity into the meatus, and so prevent their concentration upon the membrana fenestrae rotundae."

But, in the supplement of his book, Hinton says, "Mr. Toynbee, also, modified the view he at first entertained (by page 452). This he was partly led to do by intercourse with Dr. Julius Erhard who, without any perforation, found his hearing much improved by the use of cotton-wool, and published his experience in a paper entitled, *Deafness Curable by Pressure*."

Roosa says, "That the artificial membrane is only of service in cases of partial or complete loss of the drumhead." (Page 380.)

Von Troeltsch is of opinion, that the action upon which the benefit mainly depends is the pressure on the remaining portion of the membrana tympani and the chain of ossicula; whether it be that, by this

* It is made by Messrs. Krohne and Sesemann of Duke Street.