and opened his eyes, which were turned to the ceiling. Prolonged suffering illness, sepsis, and repeated haemorrhages must have rendered the case particularly vulnerable, and it is doubtful under the circumstances if the cerebrum could have withstood a less protracted arrest of its circulation. As there had been a good deal of muscular tremor prior to the operation, an investigation was made after death as to the presence of tetanus, but this was excluded. The operation had not been begun at the time of the catastrophe.

CASE III.

An elderly woman in a state of collapse was undergoing operation for strangulated femoral hernia when the heart stopped beating. Cardiac massage was at once performed and spontaneous contractions occurred. As the abdomen was being closed the heart again stopped beating, and a second attempt with cardiac massage then failed. Although the patient was a poor subject, this experience seems to indicate that massage should be carried on until contractions are established at maximal strength, the task not being considered complete merely upon their reappearance.

CASE IV.

In this case general adhesions were found in the upper abdomen, and it was not possible to insert the hand below the diaphragm or below the liver. Pressure below the stomach immediately forced gastric contents out of the mouth. Methods 2, 3, or 4 were indicated but not tried.

CASE V.

On February 7th, 1918, a case of perforated gastric ulcer in a man aged 38 years came under my care. The operation was performed fourteen hours after perforation, and the abdomen was found full of gastric contents. There was a large opening in an indurated ulcer at the lesser curvature of the stomach. It was impracticable to treat this otherwise than by passing a tube to the opening. Suprapubic and loin drainage was provided. Whilst the wound was being sewn up the patient expired. Cardiac massage was unsuccessful. Success was not to be anticipated, as the subject was devitalized.

CASE VI.

On June 13th, 1917, a glass cutter, aged 43 years, was struck on the left leg during an air raid. Severe bleeding, which preceded admission, continued from two deep contused wounds. There was tearing of muscle and comminuted fracture of tibia and fibula at their upper third. The patient was restless and anxious, and had no feeling in the toes. Operation was performed, shrapnel being removed and the punctured anterior tibial artery ligated. Gangrene appeared on the second day and amputation was performed at the middle of the thigh, the flaps appearing suspicious. The patient sank during the operation, pulse and respiration ceasing. All methods to revive him, including cardiac massage, failed, as was to be expected in such a case of toxæmia.

REFERENCES.

¹ *British Journal of Children's Diseases*, October, 1917. ² *BRITISH MEDICAL JOURNAL*, February 21st, 1920. ³ *Indian Medical Gazette*, February, 1919.

HEAD OF RYE GRASS IN THE LUNG REMOVED FROM PLEURA.

BY

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THE following is a case in which an ear of rye grass (*Lolium perenne*) was inhaled, and after producing symptoms of an unusual character was extracted from the pleura.

Children, in this part of the country at least, play games with ears of rye grass. If one of the ears is placed on the back of the neck, bristles upwards, it gradually disappears down the back. Another game is to throw the grass at one another, the sharp bristles readily adhering to the hair or clothing. A third, and more dangerous game, is to place the grass on the tongue, when it slowly creeps backwards towards the throat.

The patient in this case, a boy aged 14 years, having put an ear of rye grass into his mouth, felt it pass into the throat, and was aware of a strong prickling sensation in the pharynx. The prickling suddenly disappeared after some hours. As there was no coughing or disturbance of any kind it was assumed that the grass had been swallowed.

Twenty hours later he was seized with acute pain in the right side of the chest in the area corresponding to the lower lobe of the lung, and was forced to go to bed. The pain continued, and remained severe up to about sixty hours from the onset, and then abated. His medical attendant was called seventy-two hours after the swallowing of the grass. At this time the physical signs suggested consolidation of the lower lobe, and with free fluid in the pleural cavity at the level of the limit of the lower lobe. There was no cough and no sputum and the picture was one of a pleuro-pneumonia with the pleural element predominating. The temperature was 104°, and kept steadily

on this line up to admission to hospital, eleven days after it reached this level. The fluid in the chest increased until the whole right pleural cavity was filled. Only on the eleventh day was a little blood and a few spots of very foul pus brought up by coughing. Exploration of the chest proved the fluid to be very foul pus, and he was referred to me for the drainage of an empyema.

On admission his general condition was very grave, with great dyspnoea and much toxic absorption. Resecting the ninth rib in the scapula line, I evacuated about three pints of very foul pus. At the end, a complete ear of rye grass was floated out of the pleural cavity, covered with debris. No cavity could be felt in the lower lobe of the lung. Continuous drainage and lavage by Dakin's solution through a Dobson's cannula completed the operation.

On the eighth day a large slough of lung tissue was extruded from the pleural cavity, followed in two days by a similar one, at least three inches long and a quarter to half an inch thick.

The boy is making an excellent recovery. There is practically no sputum, and very little cough to be noted.

On direct examination of smears from the pus, large numbers of bacilli, Gram-positive and negative, were found, together with staphylococci and streptococci. Cultures were all overgrown with saprophytic organisms. No branching fungi of the actinomycosis order were discovered.

The following points in this case are of interest:

1. Its rarity in view of the fact that the games mentioned, especially that concerning the tongue, are so common.

2. The inhalation of the grass with the absence of the usual intense paroxysm of coughing.

3. The entire lack of cough and sputum for eleven days.

4. The rapidity of involvement of the pleura, which is almost suggestive that the ear of rye grass "forcibly crept" its way through the lung tissue and involved the pleura at so early a date that the damaged lung tissue and consequent abscess drained into the pleural cavity instead of being expectorated by way of the bronchus.

INTRANASAL DACRYOCYSTOSTOMY.*

BY

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IN summarizing the history of the various plans which have been adopted for making a permanent opening from the lacrymal excretory system into the nasal cavity, the earlier efforts may be neglected. These were designed to provide a new outlet from the nasal duct, but experience has proved that the lesion to be circumvented is rarely, if ever, situated so low down that such methods could succeed. The abnormality, usually a stenosis, is practically never at a lower horizontal level than the junction of the lacrymal sac and the nasal duct. The sac, not the nasal duct, must be attacked; to open the duct only is useless.

The first reported case of such a sac operation was that of Strazza in 1903. The technique adopted by different surgeons has varied. Yankauer's operation may be described as a plastic reconstruction of the nasal duct right up to the sac, and so approximates to the principle of an attack directed on the sac itself. Mosher removes the anterior end of the middle turbinate, and then approaches the sac via the unciform process. Beck devised two operations, in one of which he opened the sac into the nose by means of a burr introduced through a canaliculus. Von Eicken works from the antrum; but, as West remarks, only the nasal duct is accessible, and, in order to expose the sac from the antrum, a piece of the orbital floor must be removed. Choronshtzky, Wiener and Sauer force a probe through canaliculus and sac into the nose, and then remove, with the probe as guide, the debris of bone and mucosa; it will be noted that these surgeons do not undertake any formal preliminary removal of bone and mucosa so as to make a window. West, Halle and Polyak perform a formal window operation intranasally, then seize the sac and deal with it by partial excision. Of these window operations West's may be regarded as the prototype.

Broadly speaking, and apart from combined operations in which the sac is approached from both inside and outside, all intranasal manoeuvres for draining the lacrymal sac fall into one of three types.

The first is the most ambitious undertaking, in that it aims at reconstructing the lumen of the nasal duct right up into the sac. This form of operation, of which Yankauer's is the only instance, is not generally favoured. It is technically difficult of performance, and in any case is likely to fall short of its object because the lesion may

* A summary of a paper read at the Annual Summer Congress of the Laryngological Section, Royal Society of Medicine.

be in the sac itself, too high for access by this operation. The second type is the least ambitious in design, and the simplest to perform. Briefly it consists in creating a compound comminuted fracture of the lacrymal bone by forcing a probe through a canaliculus into the nose. This type commends itself on account of its ease of performance, but the amount of bone comminuted and subsequently removed from the nose, and the area of mucosa simultaneously excised piecemeal, are variable. In my experience of several cases of this operation the opening has not remained permanently large enough for drainage. The third type is a compromise between the first two. It attempts nothing so ambitious as the reconstruction of the duct, but is not satisfied with the rougher method of driving an instrument from the punctum through the sac into the nose. In this third species of operation a window resection is performed, over the nasal aspect of the sac, which is then seized and partially excised. In his first seven cases West resected the bone over the nasal duct; finding this inadequate, he devoted his attention thenceforth to the sac itself, thus elaborating the operation known by his name.

Indications.

The selection of suitable cases rests less with the rhinologist than the ophthalmologist; the latter sees the patients first, and it is only some of the cases which he thinks wise to hand on to a colleague. It appears that ophthalmologists are often profoundly dissatisfied with the results of external excision, and it may be mentioned that attempts to cure an epiphora persisting after this operation by excision of the lacrymal gland have been considered disappointing. Intranasal drainage does at least hold out a hope of curing epiphora—a hope which is often fulfilled. As regards complaints other than epiphora—blepharitis, conjunctivitis, mucocoele, or recurrent empyema of the sac—if the drainage is permanent, the prospect is at least as good as after the external procedure. If, then, the ophthalmologists refer these cases to us *faute de mieux*, it may be argued that West's operation is indicated in any case for which external operation had been considered advisable.

This generalization is subject to certain exceptions or reservations, which amount to *contraindications*. In the case of an acute empyema it is advisable to wait. There are also cases in which the persistence of an epiphora is less serious than the risk of putting the eye into communication with a neighbouring septic focus; for instance, when subsequent operation on a cataract is intended. But Silex operated on cataract after West's operation in two cases, both of which healed without complications. If an obstruction exists in the puncta or lacrymal ducts, these must be slit or dilated by the ophthalmologist before West's operation is considered. Certain contraindications are obviously temporary and surmountable. A high deviation of the septum towards the affected side precludes access; in such cases a limited submucous resection is required, and a fortnight or more later West's operation is performed. It may be necessary to remove the bulbous anterior end of a middle turbinate either at an earlier session or as part of the dacryocystostomy. A sinusitis will sometimes require previous attention; in particular, it may be necessary to open and drain ethmoidal cells. And, quite apart from this and in the absence of any sinusitis, a cell in the ethmoidal bulla may be an anatomical obstruction and have to be punched out before the window can be cut. Should a frontal sinusitis require preliminary attention, the internal operation may be found most suitable.

Technique.

The most important point is to remove sufficient bone, otherwise granulations will block the opening. As regards the mucous membrane, the manner of its treatment is less important. A small opening is not likely to close if the opening in the bone is generous. If the mucosal window is smaller than the bony, the edges of the soft tissue may be everted round the free edges of the bone. This small manoeuvre is deliberately aimed at by some operators. In shape the bone removed is roughly oblong, with rounded corners, and comprises a flimsy piece of the lacrymal bone and a tough piece of the nasal process of the superior maxilla. In making the four cuts—two horizontal and two vertical—to separate the bone, the gouge tends repeatedly

to slip off the bone without getting a purchase. To obviate this, which is due to the fact that in the narrow cavity the gouge necessarily lies almost parallel with the bone, West's set of instruments include some gouges curved back on themselves. To these I have added another, turned back at a still sharper curve; and I find I use this gouge more often than all the other six in the set put together. In traumatic cases of stenosis of the sac or duct, which were not uncommon in the war, the nasal process of the maxilla has often suffered fracture which has joined only by fibrous union. The fragment then rocks when struck with the chisel, and it is increasingly difficult to get a grip with the cutting edge; unless the bone be firmly supported by external counter-pressure a serious dislocation is probable.

If the services of an oculist to pass a canaliculus probe are not available at the operation, the less practised rhinologist may more easily make a false passage; this applies especially to old strictured and fibrosed canaliculi and tough fibrous sacs. Sometimes a small subcutaneous or subconjunctival haemorrhage shows itself as a black eye; this disappears within a week. If insufficient bone has been removed the opening will close. The mucous membrane of the septum may be abraded during the operation; in such cases, if it also happens that it has been necessary to remove the anterior end of the middle turbinal, an adhesion may form. I have never seen such an adhesion cause any trouble. One cause of disappointment, often anticipated, feared and discussed, is absent. There is not any macroscopic escape of nasal mucus into the eye, even on raising the intranasal pressure. The patient does not "blow his nose into his eye" in any case which I have ever seen or received an authentic report of.

In my series of 25 cases the percentage results in those I have been able to trace is 63 per cent. complete cures, that is, not lacrymating even in a keen wind; 25 per cent. failures, that is, still lacrymating intermittently even when indoors; and 12 per cent. partly cured, that is, having slight epiphora only when out in a keen wind. The longest duration of a perfect cure which I am able to show is six years. I think the results obtained by most operators in this country are sufficiently encouraging to justify a greater amount of attention being given to the West type of operation.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CASE OF BROMOFORM POISONING, WITH RECOVERY.

THE following case seems of interest, both because it shows how easily bromoform poisoning may occur, and on account of the interesting phenomena displayed during treatment:

L. T., a weakly child of 13 months, suffering from whooping-cough, received the usual dose of a mixture containing bromoform at 7 a.m., shortly after having had her morning meal. She appeared to fall asleep, but nothing untoward was noticed by the nurse until 8.10 a.m., when it was found that she could not be roused. On my arrival I found the child unconscious and unresponsive to any stimulation, but of a good colour and with respiration well maintained, although a little rapid, and pulse good. The pupils were contracted and would not respond to light; the corneal reflex was absent. Drug poisoning was at once suspected, and upon inquiry it was found that the bottle containing the bromoform mixture, which was being administered to all the children suffering from whooping-cough, had been emptied at the morning administration, so that bromoform poisoning then seemed certain. Strychnine sulph. $\frac{1}{10}$ gr. was given hypodermically, followed by black coffee 3 oz. by the rectum, brandy 20 minims hypodermically, and amyl nitrite to inhale. There was an instant response to amyl nitrite and to the injection of brandy: the pupils momentarily dilated and the child moved its arms, but unfortunately a spasm of whooping-cough succeeded, leading, after a few expiratory efforts, to cessation of respiration and cyanosis. Artificial respiration restored the breathing after about 30 seconds. As it was impossible to say how much bromoform the child had received, it was difficult to gauge her prospects of recovery, but as the pulse remained good and there was no respiratory difficulty (apart from the spasms due to whooping-cough) it seemed best to adopt a waiting policy. The patient remained in the same condition, which closely resembled a good level surgical anaesthesia with chloroform, until about 12.30 p.m., when the corneal reflex was found to be brisk, and she gradually came round. By about 2 p.m. she was bright and active. There was no vomiting.