Menstruation then commenced to be irregular and accompanied by pain, and some months later intramenstrual pain was experienced. This state of things continued for some twelve months, the menstrual periods becoming more irregular and occurring at longer intervals, while the pain became more constant in character. About September, 1909, she noticed her clothing becoming tight, and thought her abdomen was becoming larger. It was not, however, until January, 1910, that she sought medical advice, and was then treated for some weeks apparently on the assumption that she was the subject of tuberculous peritonitis. She had had no previous illnesses of importance, and the family history did not appear noteworthy.

Condition on Examination.

The patient was somewhat emaciated, but did not show any symptoms of respiratory embarrassment, in spite of the enormous enlargement of the abdomen, neither were the functions of the bladder or alimentary canal interfered with to any extent. Inspection of the abdomen showed marked symmetrical enlargement; abdominal respiratory movements were normal. The whole abdomen was very tense, and a well-marked thrill could be elicited. Palpation produced no pain, even on considerable pressure. The whole swelling yielded a dull note, extending as high as the costal margin. Above this there was a resonant area, completely replacing the liver dullness. There was resonance in either flank, and, furthermore, the latter resonant areas could be slightly increased by turning the patient on to the opposite side. Rectal examination showed a normal uterus, freely movable, but an ill-defined mass could be felt lying to the right of this organ.

Operation.

The patient having been prepared overnight, an incision, 5 in. in length, was made through the right rectus muscle near the middle line, extending from the umbilicus to a point about an inch above the pubis. The character of the cyst was at once apparent. Having been found to be free from adhesions, it was tapped, 14 pints of clear, glairy fluid being evacuated; it was withdrawn from the abdomen, its pedicle transfixed and ligatured by interlocking sutures of silk, and removed. The left ovary having been examined and found normal, the abdominal wound was closed by three tiers of sutures.

The anaesthetic used was gas and ether. Recovery was uneventful. The tumour, on examination, was found to consist of one very large and several smaller cysts. No ovarian tissue could be recognized in it by the naked eye.

SPINAL ANALGESIA AND PITUITARY EXTRACT FOR FORCEPS DELIVERY DURING ACUTE PNEUMONIA.

By J. A. HENTON WHITE, M.D., F.R.C.S. EDIN.,
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I CAN find no record of forceps delivery under spinal analgesia, and venture to think the following case is of interest.

On April 4th I first saw Mrs. M., aged 28. She expected to have been confined of her fifth child on March 30th, and had engaged a midwife to attend her. All went well until April 3rd, when a bad shivering fit, accompanied by stabbing pain in the right chest, set in.

I found her sitting up in bed breathing very rapidly (40), cyanosis was marked, the pulse 140, and the temperature 102°. There were signs of consolidation and pleuritic friction over the lower and middle lobes of the right lung. There was no sign of labour. Next day the patient was weaker and did not recognize people, and showed signs of puerperal insanity.

At 1 a.m. on April 7th I was sent for, and found labour had set in; the os was about the size of a crown, and the waters were broken; the head was above the brim. The patient was desperately ill, the pulse was thready, and the cyanosis was of a livid hue. In spite of strychnine hypodermically, no efficient pains could be induced, and to prevent the patient dying undelivered I decided to try spinal analgesia; 1 c.cm. of a 5 per cent. solution of tropacocaine was injected in the middle line of the back below the twelfth dorsal spine with the patient leaning forwards sitting up in bed. Analgesia supervened rapidly, and I applied forceps with the patient sitting on the side of the bed, with the legs as far apart as possible, and supported on two chairs. I found it impossible to exert enough traction in this position, and put the patient on the left side, with the shoulders well raised on pillows, with the double object of easing the breathing and preventing the fluid running too high up the spine. I then rapidly effected a difficult delivery. The child was a large one, and there was a depressed fracture of the frontal bone owing to the severe traction required and the angle at which I was obliged to pull; it survived only two days. As soon as the child was delivered serious flooding set in, due to atony of the uterus from the spinal analgesia, and also to the engorged state of the venous system. I had anticipated this, and at once injected 12 minims of pituitary extract (Duncan, Flockhart and Co.) into the buttock, and introduced my hand into the uterus; as soon as I had well grasped the placenta a violent contraction of the organ took place, so violent that it

would have been impossible to introduce the hand. The placenta was removed and the bleeding stopped. The pulse greatly improved; instead of being thready and uncountable it became of full volume and good tension, and the general condition was very good.

The pneumonia ran a severe course, the upper lobe of the right lung becoming involved on April 10th, and puerperal insanity set in severely. The patient died from exhaustion on April 19th.

This case, although unfortunate in its termination, is instructive in that it shows the possibilities of spinal analgesia under conditions which precluded the use of a general anaesthetic. The woman felt nothing of the severe traction which I had to use. I could not safely have injected ergot to cause uterine contraction owing to its depressing action on the heart. Pituitary extract acted splendidly in this emergency, and is, I feel sure, a drug to be kept in the midwifery bag for use with a weak heart. Normal sensation returned in the legs about two hours and a half after the injection. The urine had to be drawn off on April 10th.

This case was conducted single handed with the help of an untrained woman, in a badly-lighted room.

SOME OPHTHALMIC CONDITIONS CAUSED OR INFLUENCED BY DISEASES OF THE UPPER RESPIRATORY TRACT.

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THE consideration of abnormal nasal conditions and the possibility of their presence coincident with eye disease is of much importance to the ophthalmic surgeon in forming his diagnosis and carrying out his treatment; the rhinologist, on the other hand, does not obtain so much assistance from ophthalmology, for nasal conditions are not much affected by ocular disease.

The ophthalmic surgeon may not be able to complete his treatment of a case without the assistance of a rhinologist, but he should be so equipped as to be able to complete his diagnosis without additional advice.

EYE CONDITIONS IN CHILDREN.

Corneal Ulcer.

One of the most common eye diseases of childhood, especially in hospital practice, is ulceration of the cornea. The condition is troublesome to treat, usually very painful, and cure is frequently delayed for years on account of the great tendency to recurrence. As the ulcers may be deep and centrally situated, leaving permanent and dense nebulae, they are the cause of a considerable amount of defective vision.

The chief causative factors are bad hygiene, insufficient and unsuitable food, and the presence of post-nasal growths.

The first and last of these may be said to be always present in hospital patients, but the food factor may not be so prominent, owing partly to the fact that the painful nature of the affection and the general depressed condition of the child makes him refuse the best of food. Bad hygiene, which includes lack of cleanliness, of nursing, of warmth, and of good surroundings, has much to do both with the general ill health and tardy recovery. This is shown in patients admitted into hospital when nearing perforation; the child is cleaned, kept warm, and well nursed, generally as well as locally, he soon begins to eat, and recovery is much more rapid. This, however, is not cure, and recurrence is the rule within six or twelve months; the chief cause of this recurrence is the presence of post-nasal adenoid growth. If the adenoids are removed when the eye condition is quiescent recurrence is the exception. I am so convinced of this that I do not consider any case of severe or even slight corneal ulceration has been adequately treated without resort to this operation, for a slight initial attack may be followed by a severe second one with great disturbance of vision. The following is a typical case:

A boy, aged 6 years, with deep central corneal ulcers of both eyes, much pain and photophobia, was treated for three years at the South London Eye Hospital; on an average he had three recurrences yearly; consequently he was practically in continuous attendance. On three occasions his condition was so

pitiful that he was admitted as an in-patient, only to relapse soon after his discharge.

On examining the post-nasal space digitally I found he had a diffuse adenoid growth, not large in amount, but very unhealthy, producing an odorous secretion of a caseous character. At one children's hospital the amount of growth was not deemed sufficient to indicate removal. At a throat hospital, however, the post-nasal space was thoroughly cleaned, with a remarkable result. The lad began to eat well, he increased rapidly in height and weight, the ulcers became firmly healed, and at the end of eighteen months there had been no relapse.

Mouth breathing is usually looked upon as the only symptom pathognomonic of post-nasal growths, but some children—those with a high cephalic and nasal index—have a large post-nasal space, which may contain a considerable amount of healthy or unhealthy adenoid growth without the production of mouth breathing. If the post-nasal space is small, as in children with a small cephalic and nasal index, quite a small amount of adenoid growth will produce mouth breathing. Such cases are frequently complicated by nasal obstruction.

A digital examination of the post-nasal space is seldom necessary in order to make a diagnosis. The conditions and symptoms, apart from mouth breathing, which may be looked upon as pathognomonic of the trouble are:

1. Acute or chronic otorrhoea in childhood.
2. Children who are classed as "delicate" without any discoverable organic disease; they are badly nourished; their appetite is capricious as the result of a mucous dyspepsia caused by swallowing the secretion from the post-nasal space.
3. Children who are subject to attacks of bronchitis and bronchopneumonia during the winter months.
4. A very large percentage of children with enlarged tonsils also have post-nasal growths.

This is not an exhaustive list, but it is a good basis on which to make a diagnosis. As regards the nutrition of the child, the condition of the hypertrophy (that is, whether in a healthy or chronically inflamed state) is of more importance than the amount; a small amount of unhealthy, chronically inflamed adenoid tissue will disturb the child's digestion and cause loss of appetite, with frequent attacks of sickness, to such an extent as to prevent assimilation of suitable food, whereas a large amount of growth may cause nothing more than mouth breathing and its results.

Other common eye diseases associated with the presence of adenoids are phlyctenular keratitis and conjunctivitis and severe blepharitis. Children with these complaints, if in poor condition and ill health, should have the post-nasal space examined, and, if necessary, curetted.

Dacryocystitis.

Another point of importance concerning the healing of corneal ulcers is that if there be a coincident dacryocystitis healing will be much retarded and very serious complications may arise.

In infants dacryocystitis is due to an imperforate nasal opening due to developmental defect; the cord-like thickening which has separated along the naso-lacrimal

groove has acquired its lumen, but the process has not been quite completed at the nasal extremity.

Many cases of acute and chronic dacryocystitis in adults are dependent on nasal trouble. The nasal duct must be regarded rather as a nasal diverticulum than a conjunctival appendage; the columnar epithelium and the submucous cavernous network are common to both the nose and nasal duct. In hypertrophic or atrophic rhinitis an extension of the trouble may take place along the nasal duct, causing obstruction to the flow of tears—in the first case from swelling of the cavernous tissue, and in the second from formation of stricture caused by atrophy of the submucous tissue.

If the nasal duct be healthy there is probably no passage of micro-organisms from the nose to the conjunctival sac. The flow of tears towards the nose and the valve-like action of the mucous membrane at the nasal end of the duct prevent any regurgitation from the nose. It must

be remembered, however, that the healthy nose, like the healthy conjunctival sac, contains no pathogenic bacteria. Thomson and Hewlett¹ have shown that virulent micro-organisms placed on healthy turbinates rapidly disappear, whereas at the nasal orifice and on the vibrissae manifold micro-organisms may be demonstrated. When the duct is in an unhealthy condition and not performing its functions normally, bacteria may enter it from an unhealthy nose or conjunctival sac, and cause acute or chronic blepharitis of the lacrimal sac. Nasal polypi rarely find their way into the inferior meatus of the nose so as to occlude the orifice of the nasal duct. Tertiary syphilis of the nose with bony necrosis in the region of the lacrimal and inferior turbinate bones causes obstruction and a perisaccular abscess with much brawny swelling. Although many cases of acute dacryocystitis are secondary to chronic inflammation of the lacrimal sac and nasal duct, some are due

Fig. 1.—Dissection of accessory nasal sinuses from the anterior cranial fossa. The roof of the left orbit and of the accessory nasal sinuses have been removed. On the right side the orbital plate of the frontal bone is intact. It well indicates the extent and irregularity of the sinuses, and their relation to the orbit. The left sphenoidal sinus—extent posteriorly is indicated by the dotted line—practically occupies the whole of the body of the sphenoid bone. Suppuration in such a sinus might account for contralateral blindness. A, Left frontal sinus. B, Ethmoidal cells. C, Optic canal. D, Large sphenoidal sinus showing opening (anteriorly) into nose. E, Inner wall of orbit. F, Small right sphenoidal sinus. G, Sphenoidal fissure. H, Large right frontal sinus.

primarily to nasal disease, especially anterior ethmoiditis. The anterior ethmoidal cells are very irregular in their arrangement; sometimes they closely surround the infundibulum of the frontal sinus, and in this region of course come into close association with the lacrimal bone and sac. If suppuration takes place in these cells a perisaccular abscess may result. In all such cases where, on probing, bare bone can be felt the nose should be carefully examined, and when the cells are affected they must be broken down and curetted.

In dacryocystitis, therefore, the abnormal nasal conditions to be recognized are hypertrophic and atrophic rhinitis, bony necrosis due to tertiary syphilis, anterior ethmoiditis, and possibly nasal polypi. In such cases the treatment of dacryocystitis must be most unsatisfactory without careful and patient treatment of the nasal condition.

The treatment of obstruction of the nasal duct in its earliest stages should always be accompanied by treatment of the nasal condition, and I feel sure better results

would accrue if the ophthalmic surgeon did not interfere until the nose had been thoroughly treated by a rhinologist.

Conjunctivitis and Blepharitis.

Reference to the conjunctivitis caused by the Koch-Weekes and the Morax-Axenfeld bacilli is not necessary, as these bacilli have not been found in the nose and throat, although they are the most common cause of catarrhal and chronic conjunctivitis respectively. Other micro-organisms, however, play an important part in the production of identical conjunctival conditions, so that to classify them correctly a bacteriological examination is necessary.

Many children with chronic conjunctivitis and blepharitis, especially after an attack of one of the acute exanthems, also suffer from rhinitis with acrid discharge from the anterior nares, causing redness and swelling of the upper lip. Not infrequently there is an accompanying chronic otorrhoea and possibly impetigo contagiosa of the face. Careful inquiry shows that the conjunctival condition is secondary to the aural and nasal discharges; the infection is probably carried to the conjunctival sac by the child's fingers. The discharge of chronic otorrhoea always contains the *Diplococcus pneumoniae* and the *Streptococcus pyogenes*; it is interesting to note that the same micro-organisms may be found in the conjunctival and nasal discharges in the aforementioned class of case.

A satisfactory cure of the eye condition cannot be expected until the cause of nose and ear trouble has been thoroughly treated.

Croupous conjunctivitis—that is, conjunctivitis characterized by the formation of a membranous deposit—should suggest a bacteriological examination of the membrane, and a careful examination of the nose and pharynx for any membrane. A child may have a membranous rhinitis—always caused by the Klebs-Loeffler bacillus—without disturbance of health, which may prove to be the primary cause of the conjunctival condition; it must be confessed, however, that in diphtherial conjunctivitis the source of infection is most frequently obscure, and not related to a nasal or pharyngeal diphtheria.

Refractive Errors.

It is extremely common to meet with children suffering from the combined effects of an uncorrected refractive error and of the presence of post-nasal growths: the result is frequently deplorable; the general health and nervous system are much deranged. It is not always easy at once to apportion to each fault the amount of trouble it

causes; some indication may be gathered in such a case by first removing the adenoids. There is a general improvement in health, and the child seems brighter and better able to understand when instructed; there is, however, little improvement in ability to concentrate, and the school report reads that the child is quick and intelligent, but inattentive, and unable to concentrate on his lessons.

If the refractive error be corrected before the adenoids are removed, the result is not always satisfactory, and symptoms of asthenopia continue. This is no doubt due to the involvement of the muscles of convergence in the general condition of myasthenia so common as a result of the presence of adenoids.

I am in the habit of examining the post-nasal space in all spectacle cases in children, and advise operation where the correction of refractive error does not give as satisfactory a result as might be anticipated.

EYE AFFECTIONS CAUSED BY NASAL DISEASE.

In order to understand these affections, the anatomical relations of the orbital cavity must be made clear.

The orbit may be looked upon as an irregular pyramid, the apex of which is formed by the sphenoidal fissure and optic foramen. The roof, floor, and internal wall of the orbit are all in close contiguity to important structures.

The roof of the orbit, which is chiefly formed by the orbital plate of the frontal bone, is of variable thickness; the chief point of interest is the extent to which the frontal sinus may be continued posteriorly. In the dissection (Fig. 2) the length of the frontal sinuses antero-posteriorly was 2 cm.—that is, almost one-half the antero-posterior diameter of the orbit; the importance of this possibility will be pointed out later.

The inner wall of the orbit in the whole of its extent is in intimate relation with the nasal accessory sinuses, and separated from them for the most part by a thin plate of bone covered by periosteum.

Posteriorly, both the optic nerve and the contents of the sphenoidal fissure are in close relation to the sphenoidal sinus. (Fig. 1. Note the varying thickness of the bony partition.) In the dissection (Fig. 2) the optic nerve has no relation to the sphenoidal sinus, as the posterior ethmoidal cells intervene; this is one of many variations.

Immediately in front of the sphenoidal sinuses are the ethmoidal cells which form the body of the ethmoid bone; these, as shown in both Figs. 1 and 2, are only separated from the orbital cavity by the thin os planum, this may be wanting in parts, so that periosteum alone forms a partition. These cells are very variable in size and distribution; the posterior cells may extend backwards almost to

Fig. 2.—The roof of each orbit has been removed. The frontal sinuses are extensive both laterally and antero-posteriorly. The sphenoidal sinuses are small, and situated ventrally; the conformation of the sella turcica partly accounts for this. The cells opened up posteriorly are the ethmoid cells continued on to the body of the sphenoid. The very thin os planum is well indicated. A, Left frontal sinus. B, Floor of orbit. C, Ethmoidal cells. D, Os planum of ethmoid. E, Optic canal; note very thick wall between it and ethmoidal cells. F, Sella turcica, large and deep.

the optic foramen and occlude the nasal opening of the sphenoidal sinus; the anterior cells, as has been pointed out, may extend so far forwards as to come into intimate relation with the lacrymal sac and the infundibulum of the frontal sinus.

Not only are these cells in internal relation, they are also supero-internal, and may even be continued outwards into the roof of the orbit. I have in my possession a dissection in which the whole of the orbital plate of the frontal bone is a hollow wedge (orbito-ethmoid cell), continuous with the ethmoidal cells, and separated from the frontal sinus in front by a thin but intact partition; more remarkable still, the condition is symmetrical.

The frontal sinuses are very irregular in size, shape, and symmetry; from the ophthalmic point of view the chief interest is in its floor; in front this forms the roof of the orbit, and may extend backwards a considerable distance, so that the sinus forms a wedge between the orbit and the anterior cranial fossa.

Study of the two dissections, therefore, shows that there is a more or less continuous line of sinuses from the optic foramen posteriorly to the region of the external angular process of the frontal bone antero-externally.

The sphenoidal sinuses have received much attention of late years, on account of the difficulty of diagnosing their affections and of the various and apparently obscure eye symptoms these affections may produce. These sinuses are as irregular in their size, symmetry, and shape as are the frontal sinuses; the thickness of their walls varies from $\frac{1}{2}$ mm. to 2 or 3 mm. (Figs. 1 and 2). The nasal opening of the sinus is so situated as to be quite hidden from view both by anterior and posterior rhinoscopy.

The antrum of Highmore does not take as prominent a place in the etiology of orbital troubles as the other accessory sinuses. It is variable in size; its roof, which forms the floor of the orbit, is thicker than that of any of the other sinuses impinging on the orbit.

Mention has been made only of those anatomical points necessary for the understanding of subsequent remarks. Full details of the accessory sinuses and their irregularities may be obtained from various works on rhinology.²

Optic and Retro-bulbar Neuritis and Atrophy.

In cases of sudden loss of sight in one eye caused by retro-bulbar neuritis, or in unilateral optic neuritis where there is no evident or ordinary cause, suspicion must fall on the sphenoidal sinus. The inflammatory secretion may accumulate rapidly and be unable to find its way into the nose, consequently the intrasphenoidal pressure rises; pain may or may not be present. One can only speculate as to the mode of production of the neuritis; it may be due to the action of toxins or to the pressure of slight periostitis at the optic foramen, but probably it only occurs when the bony partition is very thin. Relief of the sinus tension followed by free irrigation and drainage results in rapid disappearance of the alarming eye symptoms.

No figures can be given as to the frequency of these ocular troubles in accessory sinus disease; in order to do so, the eye should be examined as a routine procedure in every case of sinusitis, for, as ophthalmic surgeons well know, definite neuritis may be present without any loss of visual acuity.

Proptosis and Diplopia.

These conditions are produced by the encroachment on the orbital contents of any growth or suppurative process. The most common cause is orbital cellulitis; this is produced by an invasion of micro-organisms from the nose by way of the ethmoidal cells; extension to the orbit may be by necrosis of the os planum in a chronic case, or by the line of least resistance being in the direction of the orbit in an acute case, possibly through absence of the bony partition.

Some of the chronic cases of ethmoiditis in strumous young adults are undoubtedly tuberculous; others are due to the pneumococcus alone or coupled with the *Streptococcus pyogenes*; the *Streptococcus pyogenes* alone is not common, nor are the staphylococci. Some indication of the origin of the cellulitis may be gathered from the position of necrosed bone felt on probing after the abscess has been opened. In cases due to chronic ethmoidal sup-puration the diagnosis of the nasal condition presents no

difficulty, but in the acute cases careful nasal inspection may be negative.

In order to prevent recurrence of the cellulitis the chronic ethmoiditis must be radically cured. A culture of the orbital pus or serum will probably reveal *Streptococcus pyogenes* and pneumococci combined. After opening and draining the orbital abscess the proptosis and diplopia gradually disappear.

Empyema of the antrum may cause similar symptoms, but is not nearly as common an etiological factor; the anatomical position of the antrum, the thickness of the partition between the two cavities, and the greater readiness with which the disease is diagnosed, all assist in protecting the orbit from invasion in this direction.

Other causes of diplopia and proptosis are invasion of the orbit by growths originating in the accessory sinuses, by mucocele of the frontal sinus, and occasionally by a chronic empyema of the frontal sinus.

The two latter conditions must be carefully distinguished. Mucocele is a retention of normal secretion which accumulates under pressure from occlusion of the infundibulum, and which cannot escape to the middle fossa; the fluid is glairy, viscid, and sterile. Chronic empyema is an infection of the sinus by nasal micro-organisms; as a rule drainage is free, and if there be some obstruction of the infundibulum the rise of intrasinus pressure quickly forces a passage into the nose; rarely the obstruction is so great that the symptoms usually ascribed to a mucocele result. The symptoms depend somewhat upon the extent to which the sinus is prolonged backwards; if it extends into the orbital plate of the frontal bone the first symptoms are deep, obscure frontal pain quickly followed by diplopia and the appearance of a hard swelling in the roof of the orbit. Such a swelling may be mistakenly diagnosed as an osteoma, a gumma, or a malignant growth, and as there is no complaint of nasal discharge or catarrh, a definite diagnosis may be very difficult; the swelling increases in size, and if the floor is thin eventually an egg-shell cracking may be detected. The following case is instructive:

A man, aged 37, consulted me for double vision of three weeks' duration. He complained of deep frontal pain, and had been treated with large doses of potassium iodide. On digital examination of the roof of the orbit a small hard swelling about the size of a hazel nut could be felt about 2 cm. from the orbital margin. It increased in size whilst under observation, as did the pain and diplopia. Examination of the nose showed complete occlusion of the infundibulum by a dense adhesion between the septum and the infundibular region, the result of an operation performed in Germany two years previously for a septal spur. This had been diagnosed as a gumma and a malignant growth, but it was undoubtedly a mucocele of the frontal sinus.

If the frontal sinus is small the swelling presents in the region of the trochlear fossa.

Iridocyclitis.

A certain proportion of cases of both acute and chronic iridocyclitis which cannot be ascribed to syphilis, tubercle, gout, or gonorrhoea, may be caused by septic processes in the mouth and nose.

Pyorrhoea alveolaris, or Rigg's disease, is undoubtedly a cause of some of these cases; the infection is staphylococci. S. Mayou³ has been able to demonstrate them in the anterior chamber. Two cases at present under my care, after being regarded successively as due to syphilis and tubercle by different oculists, eventually proved to be caused by the *Staphylococcus albus*.

Chronic empyema of nasal sinuses must not be forgotten as an etiological factor in this disease when all other possibilities have been excluded.

CONCLUSION.

In summing up, I would say that in every obscure eye case, especially where there is complaint of a long-standing nasal or post-nasal catarrh, the accessory sinuses should be examined by an expert, and, if diseased, they should be radically treated for the benefit of the eye trouble.

When operation on the eye is contemplated, not only should a careful examination be made of the condition of the conjunctiva, but the mouth and nose, with its diverticulum, the nasal duct and sac, should be examined. If pyorrhoea is present no operation should be entertained until the mouth is perfectly clean; even then the system

may be so permeated with staphylococcal toxins as to render the likelihood of an endogenous eye inflammation possible as the result of the traumatism of operation. The same remarks apply to atrophic rhinitis and chronic sinusitis.

The condition of the operator's mouth and nose must also be considered in this connexion; carious teeth, pyorrhoea, or nasal trouble, including acute coryza, should be looked upon as a possible source of infection, and precautions taken; speaking during the operation should be forbidden for obvious reasons. The bacteriology of post-operative inflammatory eye troubles indicates that the pneumococcus and staphylococcus play an important part; these micro-organisms are not frequently found in the conjunctival sac, but the mouth is a common habitat, hence the great likelihood of infection arising from the operator's or assistants' exhalations.

Mention must be made of blindness resulting from the onset of optic atrophy, caused by intranasal operations. Such cases are, of course, not frequent, but there are a number on record.

Perhaps the most common accident has been entry of the orbit when exploring the antrum of Highmore with a trocar or cannula, or in forcibly boring a hole in the alveolus of the superior maxilla, for drainage purposes; loss of control and the absence of a stop on the drill has resulted in puncture of the floor of the orbit and either injury to the optic nerve or infection of the orbital contents. Forcible removal of bony nasal spurs and of the middle turbinal bone may produce a fracture involving the optic canal, the formation of callus, pressure of the callus on the nerve, and subsequent atrophy.

I am much indebted to Sir William J. Collins for permission to make use of Case 1 and of a portion of the ophthalmic material on which this article is based.

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AN INTRANEURAL CYST OF THE EIGHTH CERVICAL NERVE.

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THE patient in the following case, a lady, married, and aged 32, was first seen on November 1st, 1907. She complained of pain in the inner side of the left forearm and hand, which had been present for three weeks following an attack of "influenza." The pain was nearly continuous as a dull aching, with attacks of severe pain and tingling shooting to the little and ring fingers. It was aggravated by cold. The skin over the affected area was tender, so much so that the pressure of the wedding ring could not be tolerated.

State on Examination.

There was found to be marked wasting of both thenar and hypothenar eminences, and a little also of the interosseous spaces of the left hand. There was a slight amount of flattening of the flexor aspect of the ulnar side of the forearm.

The movements of the fingers were good, but the thumb could only be abducted, adducted, and opposed to the fingers weakly and imperfectly. The hand was slightly colder than the other. The objective sensory changes consisted of marked increase of painful sensation over the palmar and dorsal surfaces of the little and ring fingers, and ulnar half of the hand up to the level of the wrist-joint.

The pupils were natural, and radial pulses equal. On the left side of the neck, beneath the lower part of the sterno-mastoid muscle, could be felt a swelling, which was too deeply placed to admit of accurate definition, but which seemed to be fixed to the deep structures in the neighbourhood of the transverse process of the seventh cervical vertebra and neck of the first rib.

Initial Diagnosis.

A diagnosis of cervical rib was made, although the distribution of the sensory changes was not quite typical. For, in

cervical rib, the objective sensory change is commonly anaesthesia over the first dorsal area, or over the first dorsal and eighth cervical areas combined; whereas, in this case, the changes were confined to the eighth cervical area.

The patient was not aware of the weakness and wasting of the hand, but on further careful inquiry it became clear that for many years—almost as long as she could remember—there had been some difficulty in picking up and holding objects in the left hand. This could be traced back with certainty to the age of 14—namely, eighteen years. It further transpired that for two or three years past pain had occasionally been felt along the ulnar side of the forearm and hand, which had been treated as "neuritis."

Final Diagnosis.

A skiagram was taken by Dr. Harrison Orton which showed no cervical rib but a definite circumscribed shadow at the root of the neck extending downwards behind the clavicle. Electrical testing of the muscles showed no reaction in the abductor and opponens pollicis, partial reaction of degeneration in the remaining short muscles of the thumb, those of the little finger, the interossei and the flexor sublimis digitorum.

During the next week the swelling above the clavicle increased in size so as to cause visible asymmetry of the neck.

It seemed evident that the swelling affected the eighth cervical nerve above the brachial plexus; that it was of many years' standing; that it had recently begun to increase in size rapidly; it was feared that it might prove to be a sarcoma originating in an old neuro-fibroma.

Mr. Butlin was consulted and agreed with the general diagnosis; he advised an early operation, which he performed on November 19th, 1907.

Operation.

The brachial plexus and third part of the subclavian artery were exposed by a V-shaped incision carried downwards over the posterior border of the sterno-mastoid and outwards above the clavicle. The lowest of the three primary cords of the brachial plexus was identified, and on tracing it inwards a thin-walled, tense cystic swelling was found extending downwards behind the scalenus anticus over the first rib. The cyst was punctured and some clear fluid and a little mucoid material escaped. A small portion of the cyst wall was excised and a fresh section immediately cut by Mr. E. H. Shaw, who found the structure to be fibrous tissue only. His report in full appears at the end of this communication.

On dissecting out the cyst, which was about 2 in. in length, it was found to be in the course of the eighth cervical nerve, which apparently ran into it close to the intervertebral foramen, and issued from it at the point of junction with the first dorsal trunk. No nerve fibres could be detected in the cyst wall microscopically at the time of operation. The cyst was removed, the nerve being divided on either side of it, and the ends sutured together with catgut. The wound was then closed with fine silk sutures.

After-Progress.

Union took place by first intention, and immediate recovery was uneventful; there was some pain in the whole limb for the first few days, and considerable hyperaesthesia of the hand and forearm for eight or nine weeks, which prevented thorough massage and electrical treatment being carried out. During this time also there was an area of solid oedema which extended from 2 in. above the wrist-joint down to the middle of the palm, fairly sharply defined above and below and limited to the anterior aspect. The subjective sensory symptoms gradually passed off and definite eighth cervical anaesthesia remained; the movements of all the digits were much impaired, all the intrinsic muscles of the hand being paralysed. The *main-en-griffe* position was marked, hyperextension of the proximal phalanges being slightly less in the index and middle fingers than in the others. Massage and electrical treatment were employed regularly, and a splint used to correct the deformity of the hand.

On July 22nd, 1908, electrical testing of the muscles of the upper limb was carried out by Dr. Harrison Orton, and showed complete loss of reaction in the flexor sublimis digitorum and all the intrinsic muscles of the hand. No qualitative changes were observed in any other muscles of the limb, but in the flexor carpi ulnaris the contractions were decidedly feeble. The anaesthesia remained as before, the whole hand showing signs of malnutrition—namely, cold, shiny, congested skin, roughness of the nails, etc.

RESULT.

Since that time much improvement has taken place in the appearance and general usefulness of the hand, though the electrical reactions when tested in January, 1910, remained unaltered, nor is there any return of voluntary power to the affected muscles. There was no return of sensation over the eighth cervical area for more than a year after operation, but it has now been completely regained, together with the nutrition of the skin.

REMARKS.

The chief points of interest in the case which have led me to publish it are:

1. The situation of the nerve lesion, marking the distribution of the anterior primary division of the eighth cervical nerve.
2. The transformation of the nerve trunk into a cyst.