had come at a late hour and on a busy day, and the symptoms presented no signs of urgency, I deferred further nasal examination and simply ordered a nasal douche. Two days later I was summoned to a coroner's inquest to explain what operation I had performed without permission of the parents, etc. Happily this had only consisted in the introduction of a nasal speculum and the rhinoscopic mirror—not even a probe had been used. It appeared that the patient, on her return from the hospital, had complained of increased headache, had in the course of the day become unconscious, and had died during the following night after several convulsive attacks. At the post-mortem examination a basal purulent meningitis was found and a perforation, probably of a syphilitic nature, in the sphenoid bone near the sella turcica.

Meningitis Affected by Eye Symptoms.

In many cases the meningitis or other cerebral symptoms arose consecutively to an orbital abscess or to one or another of the various eye complications before mentioned. Thus in one case blindness of both eyes developed eight days before the fatal meningitis (Duplay), in another strabismus was observed three weeks before basal meningitis (Grünwald), in another ptosis, dilated pupil, paralysis of eye muscles two weeks before basal meningitis (Demarquay), disease of visual power and ptosis before intradural abscess (Russell), blindness and exophthalmos of both eyes before basal meningitis (Raymond), etc.

Several cases of fatal meningitis have been observed after operation on the adnasal cavities, we will take it not because they were operated on, but on account of the operation being performed too late.

LITERATURE.

¹ Lindenthal, O., *Wien. klin. Woch.*, 1897, No. 15. ² Fraenkel, E., *Virchow's Archiv*, 1896, vol. xliii. ³ Weichselbaum, *Fortschritte d. Med.*, 1887. ⁴ Hajek, M., *Patholog. u. Therap. d. Nebenhöhlen d. Nase*, II, Aufl., Wien, 1903. ⁵ Grünwald, *Lehre von d. Nasenerkrankungen*, München, 1893. ⁶ Hack, *Ueb. Operative Behandlung*, Wiesbaden, 1884. ⁷ Onodi, A., *Arch. f. Laryngol.*, vol. xi, vol. xv, and *BRITISH MEDICAL JOURNAL*, November, 1904. ⁸ Kuhn, *Erkrankungen d. Stirnhöhlen*, 1895. ⁹ Ziem, *Monats. f. Ohrenheilk.*, 1893, etc. ¹⁰ Eversbusch, O., *Graefe-Memisch. Handb. d. Ges. Augenheilk.*, 61 and 62, Lieferg., 1903. ¹¹ Dreyfuss, *Krankh. d. Gehirns in Folge von Nasenerkrankungen*, Jena, 1896.

DISEASES OF THE NOSE IN THEIR RELATIONSHIP TO PATHOLOGICAL CONDITIONS OF OTHER ORGANS.

By ADOLPH BRONNER, M.D.,

Senior Surgeon, Bradford Eye and Ear Hospital; Laryngologist,
Bradford Royal Infirmary.

Nasal obstruction is very common in the north of England, it is frequently overlooked, and its results on the development of children are most disastrous and far-reaching. The chief cause of nasal obstruction in infants is catarrh of the nasal mucous membrane. We know that the lower turbinated bones are (relatively) larger than in adults, and that the posterior and anterior ends of the mucous membrane of these bones are thickened. A slight catarrh of the mucous membrane will thus readily give rise to nasal obstruction. Infants are particularly liable to rhinitis; there is the possibility of infection during birth; they often lie in wet napkins, they are frequently nearly suffocated by flannel bandages, eiderdowns, etc., they crawl about on the cold and draughty floor or the dirty and dusty carpet. In elder children post-nasal growths are the commonest cause of nasal obstruction.

The results of nasal obstruction can be divided into two classes:

1. The effect on the general health and development of the child.

2. The effect on the neighbouring parts and organs.

The most disastrous result is the consequent arrested development of the lungs and chest. The upper part of the chest is generally fairly broad, but the lower part is narrow and contracted. If the child is rickety the deformity is, of course, more marked, but there can be very evident deformity without rickets. The children keep the mouth open, which gives them a stupid expression. They are languid and restless, irritable, sleep heavily, and often wake during the night and scream. They do not get on well at school, and they take a dislike to outdoor sports and exercise. Their speech is frequently much affected, and they have a tendency to stammer and stutter.

A very important question has recently been discussed, as to whether children with nasal obstruction are more liable to infection (local and general) than children who can breathe through the nose. We know, thanks to the excellent work of StClair Thomson and others, that no micro-organisms are found on the posterior parts of the healthy mucous membrane,

and that the air passing into the naso-pharynx through the normal nares is practically free from germs. These stick to the moist mucous membrane, and are destroyed there. In cases of nasal obstruction the mucous membrane and the tonsils become diseased, and the micro-organisms entering through the mouth settle on these affected parts, grow there very rapidly, and give rise to general and local infection—tubercle bacilli, diphtheria bacilli, germs of scarlet fever, measles, whooping-cough, etc.

In infants nasal obstruction is especially deleterious. Infants involuntarily breathe through the nose, and have frequently great difficulty in learning to breathe through the mouth. If you watch an infant asleep you will see that the tongue is pressed tightly against the hard palate, and that the breathing is entirely nasal. When there is nasal obstruction the infant does not readily adapt itself to mouth breathing; it sleeps restlessly, and is constantly waking and screaming. There is also increased difficulty in suckling. The child cannot suckle long together—it has to stop every few seconds to open the mouth and get breath. The result is imperfect oxidation of the blood, and impaired nutrition.

Nasal obstruction also affects the neighbouring organs and parts to a considerable extent. The mouth is generally open, and thus the muscles of the face and jaws become extended and relaxed. The gums are dry and inflamed, which often causes malformation and disease of the teeth. The hard palate is high and very arched. The upper front teeth become displaced. The nasal septum is bent. The mucous membrane of the nares is swollen, and often shows polypoid degeneration.

REFLEX SYMPTOMS.

We have all of us heard a great deal too much and are utterly sick of the so-called "nasal reflexes." At one time every disease or pain of the human body was proved, by nasal specialists, to be of nasal origin. Personally I do not believe that a small innocent spur of the nasal septum does give rise to hundreds of ailments. Numerous and varied reflex symptoms are, however, very frequently due to disease or irritation of the mucous membrane of the nares, and can be cured by local treatment of the same, and by that only. Many cases of asthma, hay fever, vasomotor rhinitis, spasm of the glottis, catarrh of the trachea, of the bronchi, irregular heart, cardialgia, conjunctivitis, asthenopia, contraction of the field of vision, neuralgia, megrim, epilepsy, vertigo, enuresis, hysteria, dysmenorrhoea, etc., are often of nasal origin, though of course not always.

Many cases of asthma are of nasal origin. In every case of asthma the nares should be most carefully examined, and any obstruction, polypus, etc., removed, and any diseased mucous membrane treated with the galvano-cautery. And yet I am constantly seeing cases of asthma which have been under treatment for years, and in which the nose has never been examined. Many of these I have relieved by treating the nares, but only after irreparable damage has been done to the patient's health and lungs.

In every case of hay fever the nares should also be examined and, if necessary, treated. Although cases of genuine hay fever are not very common in this country, a similar disease—so-called pseudo-hay fever—is very common. This is due to a condition of hypertrophy of the mucous membrane of the nares or to nasal polypi. Any change of temperature, dust, bad smell, can bring on symptoms similar to those of hay fever: sneezing, watery discharge, nasal obstruction, with severe headache, epiphora, etc. These cases can all be cured by the application of the galvano-cautery to the diseased mucous membrane or the use of the snare.

I do not for one moment wish to affirm that all cases of asthma and hay fever are due to nasal disease or nasal polypi; but many certainly are. If the nares are not normal they should always be treated. Even if this does not cure the asthma it must have a beneficial effect on the patient's general health and development. Francis has recently published a pamphlet on some 400 cases of asthma. He claims to have cured or relieved the majority of these by applying the galvano-cautery to the mucous membrane of the septum. Fleiss, of Berlin, recently wrote a paper on the connexion between the nose and the genital organs, which has raised a great deal of discussion. He examined and experimented on the nares of numerous women during the period of menstruation, and found that if you apply cocaine to the anterior part of the lower turbinate, or to the tubercle of the septum, you relieve the pain. If you destroy the mucous membrane over these areas, menstruation is permanently less painful. These

experiments have been frequently repeated, but with varying results.

Diseases of the nose, hypertrophy, atrophy, or polypoid degeneration of the mucous membrane, ozaena, are extremely common in the north of England; in fact, so common that they are not infrequently looked upon as a normal condition and not treated! And yet they are often of far-reaching importance. The inflammation in the nares may spread directly to the neighbouring organs: the throat, trachea, lungs, ear, eye, accessory nasal cavities, and from these into the meninges, brain; or pus coming from the nares may cause local inflammation elsewhere, or give rise to septic gastritis, neuritis, and general cachexia, due to chronic septic poisoning.

EAR.

The mucous membrane of the middle ear is practically continuous with that of the nose and nasopharynx. Most cases of middle ear disease are due in the first instance to catarrh of the nose. It is therefore absolutely necessary that in all cases of otitis media the nose and throat should be carefully examined, and, if necessary, treated. As long as the nose is diseased the deafness is sure to increase, in spite of all local treatment of the ear. Formerly, before this fact was properly appreciated, aural treatment was most unsatisfactory. I think it was Sir Astley Cooper who said that there were only two kinds of ear disease, one due to wax, which anybody could cure, and the other due to other causes, and these cases could not be cured by anybody, not even by a surgeon.

EYES.

The fact that the nose and the eye are situated so very near together, that they are in direct connexion with one another through the nasal duct, that the venous supply is in direct communication through the frontal and other veins, and that there is a very intimate reflex vasomotor connexion—these facts are proof enough that there must be a very intimate relation between the two organs. If we go carefully into the history of many diseases of the eye, we do in reality find that they are in close connexion with some affection of the nose.

In most cases of rhinitis we find that the disease has extended up the nasal duct, thus causing the mucous membrane of the duct to swell, and preventing the free passage of tears into the nose; or, the inflammation has spread into the lachrymal sac, giving rise to mucocele, and this causes and keeps up inflammation of the conjunctiva and cornea. In all cases of unilateral conjunctivitis, superficial keratitis, the lachrymal sac and also the nares should be carefully examined.

We all of us know how very difficult it is to cure some cases of epiphora, and how the affection returns again and again in spite of the most careful treatment by the ordinary methods: slitting open the canaliculus, passing probes, syringing out, etc. And why? Simply because the seat of the disease is in the mucous membrane of the nose, and until we cure this we cannot possibly prevent the inflammation from spreading up the nasal duct and obstructing the free passage of the tears. I have, in late years, cured many cases of long-standing epiphora, simply by treating the mucous membrane of the nose.

There is a peculiar typical affection of the conjunctiva and cornea, phlyctenular ophthalmia or marginal keratitis, which is very common in children, and which has a great tendency to recur. In these cases there is nearly always some affection of the nares. If we carefully treat and cure the rhinitis, the ophthalmia will probably not recur again.

Supraorbital neuralgia is often due to hypertrophic rhinitis. It disappears after the application of the galvano-cautery to the diseased mucous membrane of the nares. All the symptoms of asthenopia, difficulty in reading, pains in and over the eyes, photophobia, contraction of the field of vision, scotomata, are often caused by nasal obstruction and disease. Orbital abscess is in many cases due to disease of the nose or the frontal sinus.

ACCESSORY NASAL CAVITIES.

Catarrh of the nares often spreads into the accessory nasal cavities, maxillary antrum, ethmoidal and sphenoidal cells, and the frontal sinus, and causes empyema of the same. These cases are extremely common, of very great importance, and often overlooked. Empyema of the maxillary antrum is sometimes caused by a diseased tooth, but in my opinion it is generally due to affection of the mucous membrane of the nares. The rhinitis may disappear, as it is more amenable to

treatment; but the empyema, when once established, is difficult to cure except by surgical interference.

Diseases of the frontal sinus, ethmoidal and sphenoidal cells, are much more frequent than is generally supposed. Most cases of recurrent polypi of the nares are due to these affections. There is a constant discharge of pus, more or less offensive, which drops into the trachea, lungs, and stomach, and not only sets up local inflammation, but also becomes absorbed and can give rise to most dangerous general symptoms. Hunter (*Oral Sepsis as a Cause of Disease*) has recently drawn attention to diseased teeth and gums as a cause of severe local and general infection. These cases are extremely common, and are often overlooked by the medical man and the dentist.

Discharge from the accessory cavities of the nares, if perhaps not quite so frequent, is certainly quite as dangerous.

MENINGITIS.

Empyema of the frontal, ethmoidal, and sphenoidal cells is often the cause of orbital abscess, meningitis, brain abscess, thrombosis of the cavernous sinus, optic neuritis. I have during the last three months seen two fatal cases of thrombosis of the cavernous sinus due to disease of the sphenoidal cells, in which, curiously enough, there were no nasal symptoms, subjective or objective, and the affection of the sphenoidal cells was only discovered at the necropsy.

Specific disease of the nose, especially of the upper part, often causes meningitis, and should be most carefully and thoroughly treated.

GASTRITIS.

Gastritis is often caused and kept up by discharge from the nares and accessory nasal cavities. One of the most characteristic symptoms of ozaena—a disease most common in Yorkshire—apart from the offensive smell, is the peculiar pale ashy complexion of the patient. A bad taste in the mouth in the morning, with vomiting and no appetite, are other common complaints. These symptoms are due to the passing of the offensive nasal discharge, full of bacilli, into the stomach, and their deleterious action on the mucous membrane and on the contents of the same. We know that even the acid contents of a healthy stomach do not kill all the bacilli, as large numbers of them and their spores pass into the intestines unharmed. Bacilli frequently invade the mucous membrane of the stomach and set up extensive inflammation, which causes fatty degeneration of the glands and consequent incurable indigestion. They also act on the stomach contents, decompose them, and produce bodies which are extremely harmful and irritating. We must remember that in cases of ozaena there is a constant trickling down of offensive mucus into the stomach, day and night for years, not only during the periods of digestion, when there is a plentiful supply of hydrochloric acid, which destroys the bacilli, but also between mealtimes, when there is very little HCl.

It is not surprising that under these circumstances the stomach contents are often in a very active state of fermentation and decomposition, and that the mucous membrane is in a condition of chronic inflammation. I have washed out the stomach in several cases of ozaena in the morning, and the offensive condition of the contents surpassed even my most vivid expectations.

HEADACHES.

It is not generally known that headaches are often due to diseases of the nose and nasal accessory cavities. In many cases nasal trouble does not cause the headaches, but only aggravates already-existing symptoms, which are due to other causes. In all cases of chronic headache, the cause of which cannot be found, and in which there are nasal symptoms (nasal obstruction, discharge, sneezing, etc.), the nose and accessory cavities should be carefully examined and if necessary treated. If this were done, a large number of cases of so-called incurable headaches would be relieved. We should also not hear so much of the so-called "nervous headaches," a term which means absolutely nothing, and is only a cloak to cover our ignorance.

Nasal headache is often of a neuralgic character, and it is then generally caused by disease of one or more of the accessory cavities. It is chiefly supraorbital or localized in the middle of the head (behind the eyes) or at the top or back of the head. It is usually intermittent, often very severe, and it comes on at certain fixed periods. It is always at its worst in the morning. This is of great clinical importance in distinguishing between frontal pain due to nasal disease and eye strain. In the latter the pain is always better in the

morning and worse in the evening. A diffuse headache is often due to nasal obstruction or rhinitis, but it can also be caused by disease of the accessory cavities. We all know the distressing symptoms which follow a so-called cold in the head (acute rhinitis). Professor Guye, of Amsterdam, calls the complex of symptoms which follow nasal obstruction or rhinitis "aproxesia," the inability to concentrate the thoughts on any one subject. These symptoms—diminished capacity for work, loss of energy, dislike to go anywhere or do anything, forgetfulness, loss of memory, general mental depression, etc.—have in some cases been so severe as to cause patients to commit suicide.

OVER-ZEAL.

In conclusion, I should like most strongly to dissociate myself from those enthusiastic practitioners who think that every little spur or deviation of the nasal septum, or slight hypertrophy of the mucous membrane of the nares, is most dangerous and harmful, and must always be removed. Nor do I believe that all diseases are of nasal origin. But I do think that in all cases of asthma, hay fever, laryngitis, bronchitis, deafness, headache, gastritis, etc., the nares should be carefully examined, and, if necessary, treated. Every patient who suffers from nasal obstruction or nasal discharge should be thoroughly treated, especially in childhood. In fact, it should be part of the routine examination on the part of the physician, to ask the patient if he can breathe with his mouth shut, if one or both sides of the nostril are not occasionally blocked, if he can smell and taste, and if there is any discharge from the nares. If this were done thoroughly, a good many mistakes in diagnosis would be prevented, and many patients saved from much unnecessary suffering.

NASAL DISEASE AS A CAUSE OF HEADACHE.

By A. L. WHITEHEAD, M.B., B.S.LOND.,

Ophthalmic and Aural Surgeon, General Infirmary, Leeds.

It is now a well-recognized clinical fact that headaches may in some instances be caused by nasal disease, but the relative frequency of this cause, the special character of the pain, and the detection of the various conditions of the nose giving rise to pain are not so well known.

Practically we find that diseases of the nose giving rise to headache may conveniently be placed in three groups. First, acute and chronic catarrh, or suppuration in the nose or its accessory cavities; second, deformities or diseases which cause mechanical interference with the functions of the nose; third, cases of latent obstruction, which are specially apt to escape detection.

In the first group of cases the pain is usually located at the root of the nose and the frontal region, less frequently in the occipital and vertical regions. We are all familiar with the headache which at times accompanies an ordinary nasal catarrh—a pain which may in some cases be little more than a sense of weight and fullness, but in others may vary from a dull aching pain across the root of the nose and in the frontal region to one of the greatest severity.

In acute suppuration of the antrum or frontal sinus the pain is experienced in the same areas, but is constant and usually more intense, and in the case of antral suppuration there may be pain localized in the antrum with infraorbital neuralgia, and in either case there may be tenderness on palpation over the sinus affected.

In chronic suppuration there is often no pain at all, but in some cases severe frontal or occipital headache is present, frequently every day, showing a remarkable tendency to recur at particular and regular periods of the day. The headache in these cases is almost invariably present when the subject awakes in the morning; as the day advances the pain becomes less severe, and usually passes off entirely during the latter part of the day.

There is no fixed relation between the area over which the pain is experienced and the particular sinus affected, even in cases which are apparently precisely similar, although the seat of pain is usually constant in the same case. Frontal pain seems to be just as frequent when the antrum is affected as when the frontal sinus is attacked. In disease of the antrum, the pain is usually frontal, in frontal sinus disease it may be frontal or occipital, when the sphenoidal sinus is affected it may be occipital or may be felt at the back of the eyes.

Pain is invariably present in acute sinus suppuration and

in about half the cases of chronic empyema. I have notes of several cases in which constantly recurring headache was the only symptom of chronic sinus suppuration, and the frequent use of the handkerchief directed attention to the nose. In such cases, where the headache is severe, no importance may be attached by the patient to the presence of a nasal discharge from which only slight inconvenience is experienced. In some instances the suffering during an attack is so great that the patient is entirely incapacitated from work, and the resemblance to the typical forms of migraine so marked that the differential diagnosis may be difficult.

Syphilis may attack the nose, causing ulceration of the mucous membrane and necrosis of the bone, and may give rise to a purulent discharge with severe pain. In these cases the pain is usually worse towards and during the night. The tuberculous affections of the nose are not usually accompanied by much pain.

In the second group of cases the headache is almost invariably frontal, and is associated with constant nasal obstruction on one or both sides. In the third group the symptoms are very similar, but there is no obvious obstruction to nasal respiration during the daytime. The congestion of the mucous membrane over the turbinate bones is intermittent, and always worse when the subject assumes the horizontal position. In both these groups the tendency is usually for the pain to be present in the early morning and to pass off during the later hours.

The actual cause of the pain in the head in all three groups of cases seems to be (a) the pressure of hypertrophied and swollen parts upon each other, more especially the middle turbinate against the septum; (b) actual congestion and inflammation of the nasal mucous membrane; (c) retention of pus; (d) the disturbance of the blood and lymphatic circulation at the base of the skull: this may probably be reflex, since it is possible to have a complete nasal obstruction without any headache whatever. The differential diagnosis of empyemata of the sinuses of the nose is beyond the scope of this paper, but the presence of a purulent discharge in the middle meatus or between the middle turbinate and the septum is an indication of an affection of one or more of the accessory cavities for which surgical interference may be required.

In the second group of cases a careful examination of the nose will reveal the presence of the obstruction to nasal respiration. It must be remembered that the obstruction may be in the posterior portion of the nose, and posterior rhinoscopy will demonstrate an obstruction in a nose which may appear perfectly free to anterior inspection. Growths and inflammatory swellings in the nose, spurs, and deviations of the septum and various forms of hypertrophy of the turbinates may be present.

In the third group the abnormally erectile character of the mucous membrane over the turbinate bones may not be detected at the first examination, but a furrow or depression in the mucous membrane over the septum will often be seen opposite the turbinate, caused by the pressure of the turbinate during the intermittent periods of enlargement. The characteristic history of restless sleep, morning headache, dry mouth and throat on awakening will be obtained.

In all cases it must not be forgotten that headaches and nasal suppuration or obstruction may exist together, but it does not follow that the nasal disease is the cause of the headache.

CONCLUSIONS.

The following facts seem to be clearly established:

1. Nasal disease is undoubtedly the cause of headaches in a certain percentage of cases, although it is doubtful whether it is possible for headache to be produced by any nasal condition which does not give rise to discharge, or to obstruction to normal nasal respiration.
2. In all cases of persistent headache, a careful examination of the nose should be as much a routine practice as the examination of the urine, the teeth, and the eyes; since in some instances the nasal symptoms may be ignored by the patient, and a careful examination of the nose will be necessary to establish the diagnosis.
3. Suppuration in the accessory sinuses and marked nasal obstruction, constant or intermittent, should be thoroughly treated.
4. Small spurs, deviations, and hypertrophies not causing obstruction should be left alone, as no relief will be given from the headaches by treatment of these.
5. If the middle turbinate bones are enlarged and pressing