friend, he was somewhat inconstant; and his mind was so fully occupied with his work that more solemn subjects had no chance of consideration.

Lister's mind was well stocked with classical and other learning, and his library was lined with carefully studied books. He was gentle and courteous, and though full of humour he could not abide even those relics of coarseness which survived in "polite conversation" in the nineteenth century. He was always ready to make allowance for the incompetence of those who did their best; he made no enemies, and his position as regards more serious matters was a very different one from that of his great predecessor.

Both, however, were fond of argument, and neither in the course of it could easily brook opposition. Verily it is a matter of thankfulness that they lived at different epochs. It is well that Lister was able to contemplate Hunter's many great qualities and his few obvious defects through the modifying mists of the intervening years.

CLOSING REMARKS.

I have spent the last year in an atmosphere premeated by the spirit of John Hunter; I have had the privilege of passing the best years of my life in the closest intimacy with Lister, and I often ask myself in what way a genius surpasses the average man. After a day passed in the company of such a one, and after meditating on any particular thing that he did, the ordinary man might fancy that there was nothing in it he could not have done equally well himself; and yet the life's performance is so different! The individual touches of the brush might conceivably be made by anyone, but only the artist can produce the picture. That, of course, depends upon the master mind which co-ordinates the details, making them minister to the result. We cannot attain to that, and it is the consciousness of this superiority of the great that makes the position of ambitious mediocrity so painful. But though we cannot reach to the height of Lister or of Hunter we may make our lives more useful by imitating their extreme diligence, their accuracy, and their habit of finishing whatever they were engaged upon before turning to the next matter; by not shirking the long days of labour and nights devoid of ease, or spending too much of our time on pleasures and indulgences.

The problem of life to Hunter was the still unsolved riddle of its meaning and of its origin. Lister was content with the belief that at the present day there is no spontaneous generation. Had he doubted the truth of this doctrine he might possibly have had misgivings as to the truth of the gospel that he preached. Fortunately he did not doubt, for he was a man of firm convictions.

But after all, whether chemical changes are now and always converting dead inorganic substances into living protoplasm is, for practical men, no more important than the more abstruse question as to whether matter is composed of atoms or vibrations. Life for us has another meaning; whilst the blood is moving in our bodies, as John Hunter said, we have life, and the problem for us, taking him for an example, is not simply to keep alive, but to live well.

Nicht dass man lebe, sondern wie,
Ist Mannes würd'ges Streben;
So lang mir Leben Gott verlieh,
Will ich's lebendig leben.

THE De Dion Bouton (1912) Company will send in response to applications addressed to 10, Great Marlborough Street, London, a pamphlet giving "owners' opinions" of their 14, 15, 18, 24, 25, 26, and 30-h.p. cars.

VEDDER, in an interesting article on the etiology of beriberi (*The Philippine Journal of Tropical Medicine*, vol. vii, Sec. B, No. 4, 1912), states that the administration of large amounts of alcohol has not produced neuritis in fowls. Fowls develop polyneuritis when fed on a diet containing a sufficiency of all the alimentary principles, providing no one of the ingredients of this diet contains the neuritis-preventing substance. This neuritis-preventing substance is not volatile, but is destroyed by heat. It is not an inorganic salt, and probably not an alkaloid. Since it has been shown that this substance is not a fat, protein, inorganic salt, or alkaloid, it seems probable that it is an organic base, as claimed by Funk, but Vedder so far has been unable to confirm this.

ACHES AND PAINS CONNECTED WITH THE EYE AND NOSE.*

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IN a society accustomed to listen to deeply scientific papers, some apology seems necessary for bringing forward such a commonplace subject as aches and pains. My excuse is that after twenty-five years of work at the eye, it is more profitable to give the result of experience, and leave original scientific theories to younger men. Besides, commonplace though my subject is, it is one of great importance, for such pains not only call aloud for relief, but in many cases their exact location and character may give us valuable help in diagnosis.

I do not know of any natural classification of pains, so shall first consider the more acute pains, and then the chronic aches, and especially headache.

1. *Pain in the eye itself*, increased by every movement and accompanied by redness and watering, is often due to a foreign body in the eye, even though the patient is not aware of having got such. The commonest place of lodgement is under the upper lid, which must be everted to see it, or on the cornea. If the particle is a small piece of grit in the cornea it may not be visible except by focussing a strong beam of light from a lamp or candle sideways on the eye with a lens.

2. *Sharp neuralgic pain*, coming on every night for weeks or months and hindering sleep, is not uncommon. It is not only in the eye, but around it, and shoots over the top of the head and down the side of the nose, and may affect one or both eyes. Such pain points to chronic iritis, and is important to recognize if vision is to be saved. It is often mistaken for neuralgia, but in the latter there are the typical tender points, while in iritis there is generally to be seen, on careful inspection, a slight pink blush in the sclerotic round the cornea—that is, ciliary injection, which points to deep-seated disease of the eye. In many cases the eye is tender on pressure over the closed lids. The pupil is fixed, and often partly blocked with lymph, and vision is more or less affected. Such cases often occur in apparently healthy young adults as the result of syphilitic infection.

3. *Acute Iritis*.—A somewhat similar, but often more severe pain, coming on with marked signs of irritation—injection, photophobia, and lachrymation—and a dull muddy look in the iris, with contracted pupil and little or no loss of vision, indicates acute iritis, commonest in young adults. It is easily mistaken for simple catarrhal conjunctivitis, in which there may be similar signs of irritation, but the diagnosis is made by observing that the pain is worse in iritis, and is not confined to the eyeball, and also in iritis the pupil is sluggish or immovable. Further, in conjunctivitis there soon appears a sticky secretion, which is absent in iritis.

4. *Acute Glaucoma*.—The same acute pain and irritation, coming on suddenly in a person over 50, with dilated pupil and great loss of vision, indicates acute glaucoma. In this case the pain is proportionate to the vascular disturbance, and may be agonizing and accompanied by vomiting. The loss of vision is far greater than in iritis; in very acute cases even perception of light may be lost in a few hours. The condition is not, properly speaking, an inflammatory one, but is congestive like strangulated hernia, and unless quickly relieved it leads to permanent loss of sight.

5. *Gout in the eye* is not common, but it is well to remember that it may occur, and be very alarming. It comes on suddenly at night with great pain in the eyeball, which is acutely congested and irritable; but the pupil is clear and moves freely, and vision is not affected. The pain may pass off in a few hours and the other symptoms soon go, but the attack may soon return, or may be succeeded by typical gout in the toe.

6. *Sphenoidal Sinusitis*.—A very severe bursting pain, generally described as in the middle of the head, but sometimes shooting up to the ears, with marked constitutional symptoms, is caused by suppuration in the sphenoidal sinus, and less severe but still marked neuralgic pains

* Read before the Ulster Branch of the British Medical Association.

arise from acute conditions in the other sinuses—probably accidental blocking of discharge in a chronic inflammation of the sinus, as they are often relieved by painting or spraying with adrenalin. Suspicion should be directed to the nasal sinuses by the fact that there is commonly a history of severe influenza recently, or of long-standing nasal trouble, with crusts of dried pus in the nostrils, and perhaps an offensive smell. Pus from the sphenoidal sinus finds its way into the pharynx and not into the nostrils, but it is seldom that one sinus alone is affected, and there is pretty sure to be suppuration in some of the other sinuses—ethmoidal, frontal or maxillary—discharging into the nostrils. Acute symptoms are, however, comparatively rare in these cases, and chronic headache, to be discussed presently, is far more frequent.

7. *Malignant Disease.*—Constant or frequently recurring pains, rather vaguely localized about the back of the nose and shooting up into one or both ears, especially if occurring in an elderly person, call for careful examination, as they may be due to malignant disease. In some such cases pain is an early and prominent symptom, but on the other hand it may be entirely absent. I have seen a case of carcinoma in the posterior wall of the naso-pharynx, spreading its roots, apparently, in the bodies of the cervical vertebrae, and running to a fatal termination, quite painless from first to last.

Headache.

Coming now to some forms of headache, there are two due to nasal disease which often escape detection for long periods.

8. Hypertrophy or cystic enlargement of the middle turbinated bones is, I believe, a fairly frequent cause of headache in young adults. This hypertrophy is different from the hypertrophy of the inferior turbinateds seen in children and young people associated with adenoids. The headache may be a dull frontal one, with a feeling of weight or tension about the bridge of the nose, and sometimes a little redness of the skin there also. It comes on in the afternoon, and is made worse by heat and damp. I have more than once heard from country patients sad complaints of their inability to enjoy the social attractions of a "swarry" owing to the headache brought on by the atmosphere of the hot and crowded room. In such cases, if one paints the inferior turbinated bones with a little cocaine and adrenalin to cause the mucous membrane to shrink, one will see the middle turbinated bones, large, rounded, and smooth, pressing against the septum.

9. Chronic suppuration in the accessory sinuses is, as mentioned above, a frequent cause of headache. In some at least of these cases the headache is not due to the direct local influence of the diseased tissue, but to the circulation of toxins in the blood. My reason for this belief is that in cases of chronic sinus disease which have run on for years without treatment, one sees that the skin is a very unhealthy colour—a dirty yellow. After a few weeks of treatment, during which the pus has been washed away instead of being swallowed, the change may be most striking; the skin becomes clear and rosy, and at the same time the headache disappears. Sinus disease most frequently arises from influenza, except in the maxillary sinus, where it often arises from the teeth. If the maxillary, frontal, or anterior ethmoidal sinuses are affected, the pus will appear in the nostrils, which will be filled with dirty yellow crusts very hard to get rid of; if the posterior ethmoidal or sphenoidal sinuses are affected the pus will drain into the naso-pharynx, where it is seen in sticky yellow strings or dry flakes.

10. The severe and continuous headache which is caused by tumours, gummata, etc., in the brain has no direct connexion with the eyes, except that the occurrence of such severe headache calls for careful examination of the optic discs. If the sharp outline of either disc is blurred and its vessels overfull, it is probably due to a beginning papillitis, and is strong evidence that the headache is due to a new growth. Papillitis occurs in about 90 per cent. of brain tumours, both it and the headache being due to increased intracranial pressure.

11. The last ache which I wish to notice is the headache arising from errors of refraction, especially from astigmatism; and this, in my experience, is far the commonest cause of headache. In 1,000 consecutive eye cases in my private practice, I find that 45 per cent. came on account

of some inflammation, degeneration, or injury of the eye, while 55 per cent. came on account of errors of refraction, 40 per cent. astigmatism, 10 per cent. hypermetropia or presbyopia, and 5 per cent. myopia. This may seem a high percentage of astigmatism, but it is to be remembered that where the error is a simple spherical one it is often passably corrected by glasses picked up at an optician's, whereas astigmatism calls more loudly for thorough examination and treatment.

Astigmatism.

Almost every case of astigmatism suffers from headache, not generally very severe—and, indeed, it has been said that the more severe a headache is the less likely it is to be due to the eyes. But headache due to eyestrain is very constant and wearing, often coming on at the same hour daily for months without intermission, except perhaps on Sundays and holidays, when the strain is less; and such intermissions should always direct attention to the eyes. In other cases headache only comes on when something has affected the general health to some degree. As Dr. Berry of Edinburgh says, overexertion of the eyes when the nervous system is below par is far the commonest cause of ocular headache.

It is to be noted that it is specially the low and not the high degrees of astigmatism which give rise to headache; this is probably owing to an involuntary but very tiring effort of the ciliary muscle to correct the slight astigmatism by irregular contraction. Such low degrees of astigmatism are compatible with fairly good sight, so often pass undetected when vision is only roughly tested. One sign may be noted as hinting at astigmatism, and that is that the patient reads several of the smaller lines of test type incorrectly. With hypermetropia or myopia it is common to see a patient read down to a certain line, say $\frac{1}{2}$, correctly, then stick. But with a slight degree of astigmatism he may read $\frac{1}{2}$, $\frac{3}{4}$, and $\frac{1}{4}$ all incorrectly, making mistakes in every line. If asked about his sight he says it is excellent, and is quite surprised to find that it can be improved. Some years ago one of our champion golfers came to me saying that he thought he needed glasses for office work. He had slight astigmatism, but said that he had splendid sight for distance, and was very sceptical when told that glasses would help him even out of doors. However, he agreed to try them, and shortly afterwards told me that he could follow the flight of a golf-ball as he had never done in his life before.

Not every astigmatic person needs to wear glasses constantly, and often they are only necessary for reading, writing, and other near work. But where headache is troublesome it may be necessary to wear the glasses all the time; and this brings me to a point I wish specially to emphasize, which is that the correction of errors of refraction is not a mere mechanical affair, and should not be entrusted to the optician. The patient's age, occupation and state of health, and the difference between the two eyes, if any, have all to be considered. Last month, for instance, I saw a girl who is at a boarding-school in a country town in Ulster. Her sight was poor and she needed glasses, but on inquiry I found that she was working nine and a half hours daily, and that on very Spartan fare! It was necessary not only to attend to her eyes, but also to open her mother's eyes to a sense of the situation.

If time permitted I might discuss many other aches and pains, but I have discussed only the more frequent and important, in the hope that these notes will give a basis of discussion to the experienced, and possibly may be of some help to the beginner.

THE net personalty of the estate of the late Dr. C. Theodore Williams has been sworn at £118,798.

THE firm of E. Leitz (18, Bloomsbury Square, London) have recently issued a guide to photomicrography primarily prepared for users of apparatus made by the firm, but discussing also general principles. Among the subjects dealt with are the selection of a place for setting up the apparatus, the mode of photographing solid objects, and the method of obtaining stereoscopic photographs. Photographic details are well discussed, as are also the preparation of lantern slides and cinematograph pictures. The firm has also issued a pamphlet giving directions for the use of the large metallurgic microscope with camera for the study of metals.