If the stimulus be severe, however, it radiates beyond the vertiginous centre, and next involves the vomiting centre, producing nausea, if not actual vomiting. A still more severe stimulus will travel further and involve the cardiac inhibitory centre, causing faintness, chilliness, and even syncope—the vital phenomena of auditory vertigo. The loss of consciousness, which sometimes occurs in so-called Menière's disease, is probably oftener due to syncope than to any other cause.

We have seen that a nerve-impulse reaching the centre of the ampullar nerves tends to spread first to the vomiting and then to the cardiac inhibitory centre. The oculo-motor centre seems to be less frequently involved in man, although the experiments of Cyon show that nystagmus is a common result of section of the semicircular canals in some of the lower animals. Cases are on record where the latter symptom was found to depend upon ear-disease in the human subject. It is difficult to see how any other explanation than the above can be found to account for the phenomena of Menière's symptoms—not the vertigo alone, but its accompaniments, sickness and syncope. Here it will at least be difficult to find a vaso-motor connection between the labyrinth and the various centres involved.

I shall now consider the relation between auditory and stomach vertigo. For the production of giddiness, it is essential that the brain-area which corresponds to the ultimate origin of the ampullar nerves be stimulated. We have already seen that this vertiginous centre is in intimate physiological relation with the vomiting centre. The latter is directly connected with the vagus. The physiological process in the production of stomach-vertigo is, I believe, as follows. By irritation of the afferent fibres of the pneumogastric, an impression is conveyed to the brain, producing either nausea or actual vomiting, and it then radiates to the physiologically adjacent vertiginous centre, causing giddiness.

In auditory vertigo, then, we should expect the first symptom to be giddiness, because the wave of nerve-impulse is conducted directly to the vertiginous centre. In stomach vertigo, on the other hand, we should expect, first, nausea or vomiting, because the wave of nerve-force has to pass through the vomiting centre first. So far as I have seen, this is borne out by clinical experience.

In the case of ear-cough, an analogous explanation of the phenomenon suggests itself. The auricular branch of the vagus conducts an impression to the respiratory centre, producing the combination of expiratory movements known as cough. In his work on *Deafness, Giddiness, and Noises in the Head*, Dr. Woakes says, in speaking of ear-cough, "Thus, it cannot be said that the conducting of morbid impression along the sensitive fibres, from one region to another, will produce the symptoms; because, if reflex action be excited through a sensitive nerve, this is manifested as muscular contraction in the correlated area."

Now, I think that in the preceding part of this paper it has been shown that impressions may be transferred from one sensory nerve to another, or, rather, to its centre, without inducing muscular spasm. Thus it is in the case of the pain in the knee occurring in hip-joint disease, and again in earache, brachial neuralgia, and mastodynia, which may owe their origin to a decayed tooth.

Again, Dr. Woakes, in support of his theory, has laid much stress on the trophic changes in the larynx which occur in ear-cough. I am strongly inclined to agree with Dr. Orme Green, who ascribes them to the commotion of the larynx. In answer to this objection, Dr. Woakes says that this explanation "failed to commend itself for acceptance, chiefly because such laryngeal complications are so frequently—one might say usually—absent in chronic bronchitis, whooping-cough, and other diseases, in which the larynx is even more violently commoted by cough than in the cases referred to in the context."

In reply, and in conclusion, I simply ask whether inflammatory changes in the larynx have indeed been proved to be, relatively, more frequent in cases of ear-cough than in the diseases named?

CORONERS' INQUESTS.—The following were the disbursements of the different coroners presented to the Committee for Accounts and General Purposes of the Middlesex magistrates: Sir John Humphreys, eastern district, 216 inquisitions from October 2nd to November 10th, £388 10s. 6d.; Dr. Danford Thomas, central district, 150 inquisitions, October 3rd to November 10th, £285 3s. 6d.; Dr. Diplock, western district, 75 inquisitions, October 2nd to November 10th, £147 6s. 6d.; Mr. St. Clare Bedford, City and Liberty of Westminster, 30 inquisitions, October 1st to October 31st, £63 17s. 6d.

MIDDLESEX LUNATIC ASYLUM.—On the motion of Mr. A. W. Gadesden, the plans and estimates for the extension of the County Lunatic Asylum at Banstead, by which 120 additional female patients may be received, were submitted to the court and approved. It was also resolved that the sum of £18,000 be granted by the court towards the cost of erecting and furnishing the new buildings, the sum to be raised by mortgage of the county rates in the usual manner.

DISLOCATION OF THE LENS, WITH REMARKS ON THE OLD OPERATION OF COUCHING.*

By EDWYN ANDREW, M.D.,

Surgeon to the Shropshire Eye, Ear, and Throat Hospital, Shrewsbury.

MOST writers on injuries to the eye, producing dislocation of the lens into the vitreous body, are inclined to take a grave view of the condition; but, from a number of observations made, my opinion is much more favourable; in fact, I have been surprised, under such circumstances, to notice the great power of recovery the eye possesses, and the excellent vision obtained by the aid of glasses, with little or no treatment besides rest. In the majority of such favourable cases, it must be allowed that the lens has been dislocated with its capsule entire, and the external coats of the eyeball left intact. When, from greater violence, other lesions are added, such as rupture of the lens capsule, or rupture of the external coats, with admission of air containing the dreaded germs of the present day, the prognosis becomes more and more unfavourable in proportion to the addition of these evils; recovery becomes much more slow, as the iris is generally implicated; the vision obtained is less perfect; much more active treatment is required; and, when these evils are conjoined with admission of air, often general inflammation is set up, requiring immediate extirpation of the whole eyeball.

It seems, then, to me, that simple dislocation into the vitreous body of the lens encased in its capsule causes little or no irritation, and most commonly has a favourable termination. Without referring to the spontaneous dislocation of the lens, and usually the very slight disturbance therefrom, the two following cases are recorded, out of several others, in support of the above views.

CASE I.—G. J., aged 70, a labourer, whilst breaking stones, received a severe blow on the right eye from one of the fragments; the pain produced was only temporary, but vision was so impaired that he was unable to continue his work, the left eye being previously affected with incipient cataract; after five weeks' rest, therefore, he presented himself at the Eye Hospital.

On examination, the right pupil was found round and contractile; the iris was flat and vibratile; tension normal or *minus*; the cornea was clear; there was little or no conjunctival injection; the disc was clearly seen; there were no moving bodies, and the lens was distinctly visible, resting on the lower surface of the eyeball. With +2½ and 4, he could read for near sight No. 4 of Jäger, and for far sight ⅔ of Snellen.

As there was no sign of any irritation, merely a placebo was given. Six months later the right eye was perfectly quiescent; the media were clear, and vision same as before. In the left the cataract had advanced. He was told to report himself, should he feel the slightest uneasiness in his eyes, but he has not done so for the last eighteen months.

CASE II.—J. P., aged 73, came in March last for injury to his right eye, also from stone-breaking, six months previously. There was detachment of the inner half of the iris, forming a double pupil, not contractile. The iris was slightly inclined backwards, and very vibratile; tension was normal, or slightly increased; the cornea was clear; there was no injection. The lens was partially dislocated outwards and backwards; the inner margin was very visible, from having a fringe of pigment adhering to it. It was slightly hazy, but the disc could be seen through it indistinctly. With +10 letters of 16 could be made out with the greatest difficulty, but for distance ⅔. He said he had lost the sight of his left eye for twelve years from a slight injury. On examining this left eye, there was a small central contractile pupil with a vibratile iris. Tension was normal, the media clear, and disc distinct; there were no moving bodies; and the lens was found dislocated to the lower fundus, movable, and apparently anchored in this position by the lower part of the suspensory ligament. The edge was readily seen by a black circular margin; the capsule seemed shrivelled with a white centre (nucleus?). With cataract glasses, to his astonishment, he could make out No. 1 Jäger and ⅔ Snellen. Seeing the happy result of accident in his left eye, I determined to imitate the proceeding in his right eye. He was placed under ether; a small opening was made near the corneal margin with a narrow bent flat needle, and an instrument made of a piece of stiff wire, having a rounded point, and a line to half a line of its extremity bent at a right angle, was introduced, and the suspensory ligament torn through except at its lower part. The instrument was now placed sideways in front of the lens near its upper margin, and pressed back so as to push the lens downwards and backwards in its capsule to the lower fundus of the eye. On recovery from the ether, the patient

* Read in the Section of Ophthalmology, at the Annual Meeting of the British Medical Association, Worcester, August 1882.

at once noticed improvement in vision. During the evening, and also the next day, there were some general injection, slightly increased tension, and also slight vitreous haze; but the tension soon disappeared by the application of eserine twice a day, and the haze gradually diminished, so that at the end of the week he could read, with cataract glasses, 14 Jäger and $\frac{3}{4}$ Snellen. At the end of a fortnight, the disc was almost distinct. Words of 4 Jäger were read with difficulty and $\frac{3}{4}$. From the condition of the iris, perfection of sight in this eye would be simply impossible.

Do not these and other similar cases show the performance of the old operation of couching in the roughest manner, but producing results, as we see in one instance mentioned above, and after a period of twelve years, so good that it is rarely equalled by the best mode of extraction? Do they not point out that the almost universal condemnation of this old operation of our forefathers requires to be modified; for, disastrous as the results of couching have been, and having succeeded to the hospital practice of a surgeon who chiefly depressed, I speak with some authority, and believe that, in suitable cases, these bad results have been rather due to laceration of the capsule than to the forced dislocation of the lens.

Putting aside a large number of cases for which couching is quite unsuitable, and confessing that I have only had the courage to carry out my opinion in a few cases, still, with all reserve, I feel that, in a limited number of patients with senile cataract, such as those of great age with severe cough, or a marasmic constitution; or where suppuration or hæmorrhage has followed extraction in one eye; or where previous examination of the patient before the lens has become opaque, has shown very fluid vitreous humour, and some others, recourse may be had to this operation, now outside the pale.

Should other surgeons agree with me that art ought to accomplish equally well what accident effects so rudely, and nature spontaneously, I think they will find my plan of operating the most desirable, as it will decide in such cases whether depression is advisable; for should the vitreous humour be fluid, on detaching the suspensory ligament, except at its lower part, the lens will fall away from the pupil, when this movement may be continued by the aid of the instrument downwards and backwards to the fundus, where it will remain partially fixed by the remains of the ligament; but, should the lens retain its position, the operation of extracting it in its capsule will probably be the better one.

Von Graefe has stated that a lens, perfectly freed from its detachment, is less likely to set up glaucomatous symptoms than one partially detached; but, in the plan proposed, the lens is practically free, although still adherent at one part.

ON THE USE OF ESERINE AS A PRELIMINARY TO EXTRACTION IN CASES OF CATARACT.*

By CHARLES BELL TAYLOR, M.D., F.R.C.S.,

Surgeon to the Nottingham and Midland Eye Infirmary.

IN selecting an operation for cataract, the surgeon will always have two ends in view; first, to adopt such a method as will secure the smallest percentage of positive failures, and second, one that will give the most brilliant results, both as regards appearance and vision.

Unfortunately, these two ends are not always compatible. What may be done in the way of cataract operation, I shall illustrate by two patients who are subjects of double extraction with central and movable pupils, who are kind enough to attend here to-day; as also by another patient who has had both eyes operated on in the manner I am about to describe.

No one—if you will pardon a slight digression—who has had experience in ophthalmic surgery, can have failed to appreciate the advantage of a background of iris when extracting small chips of steel or other foreign bodies from the surface of the cornea. Unless the eye can be turned in such a direction as to obtain this advantage, there is apt to be a want of precision in our proceedings; and, when the foreign body is situated exactly opposite the black expanse of the pupil, it may be either overlooked altogether, or attempts at extraction may be attended by unnecessary denudation of the cornea. A drop of eserine obviates this inconvenience, and the foreign body, thrown into strong relief, is readily removed without doing violence to any of the tissues not actually involved.

Now, if a background of iris is a convenience when operating for the removal of foreign bodies from the surface of the cornea, it is equally advantageous when operating for extraction of cataract; while a deep anterior chamber, and a pupil so contracted as to reduce the

chances of subsequent prolapse to a minimum, are so manifestly in favour of the operator, that I cannot doubt that the instillation of eserine will speedily become generally adopted as the first step in the operation of extraction for cataract, as also in some cases where it is necessary to form an artificial pupil, or to remove foreign bodies from the cornea. I generally apply the solution half-an-hour or twenty minutes prior to commencing the operation; which, premising that I always secure complete control of the eyeball by forceps that pierce the sclerotic, may be accomplished, according to the varying exigencies of each individual case, by one or other of the following methods.

First, I use an extremely narrow-bladed knife; enter it with the edge directed upwards in the corneo-sclerotic junction on a line with the pupil; bring the knife out exactly opposite, and then cut upwards with a gentle sawing motion until close to the corneo-sclerotic junction of the upper third of the cornea, when the edge of the blade is turned forwards and the section completed. I then excise a few fibres of the upper segment of the sphincter of the iris, lacerate the capsule, and extract in the usual way. It is only in very exceptional cases that I find it necessary to administer anæsthetic; and, in a majority of patients, I am in the habit of manipulating the knife so as to get a portion of iris across the edges, completing the iridectomy and section at the same time.

The only delicate portion of the operation now remaining is the laceration of the capsule, which, when possible, I dispense with, and extract the lens and capsule entire by careful manipulation on the surface of the cornea. The operation may be simplified by a preliminary iridectomy, which I accomplish by a small incision midway between the upper edge of the pupil and the corneo-sclerotic junction, lacerating the capsule at the same time. If this be done half-an-hour before the extraction, the aqueous humour is resecreted, and the only risky part of the operation is completed when the eyeball is thoroughly under control. Or, instead of completing the incision, I leave a bridge in the upper third of the cornea, make an incision in front of this bridge, perform a slight iridectomy and lacerate the capsule, dividing the bridge as the last stage in the operation; or a bridge may be left at the angle of the wound, which is subsequently divided with scissors. If it be desirable to extract without iridectomy, I make an incision with the pupil under eserine, and extract when the contraction caused by eserine has been overcome by atropine, which takes place in about half-an-hour.

The Use of Eserine as a Preliminary to Extraction.—Iridectomy purposely effected with the knife, or half-an-hour before the removal of the lens, or under the protection of a bridge which is subsequently divided, is, so far as I know, a novel feature in the operation of extraction for cataract. In my hands, eserine has proved specially useful; and I have here a patient in whom the iridectomy was effected in the left eye with the knife in the right eye half-an-hour before extraction. The two other cases of double extraction in which the iris is untouched demonstrate the brilliant results which are obtained by preserving a central and movable pupil; and, had it been practicable, I could have introduced several patients illustrating what I conceive to be the advantage of one or other of these modes of procedure in suitably selected cases.

ON BENT TIBIÆ IN CHILDREN: CAUSE AND TREATMENT.*

By CHARLES STEELE, M.D., F.R.C.S.

IN this short paper, I do not intend to dwell upon either the characteristic forward bending of rickets or the severe cases of bent tibiæ associated with deformity of the knees or ankles, but to speak of those milder cases where the inner surface of the shaft of the tibia, instead of being straight from the upper to the lower extremity, presents a curve outwards and backwards; and, in doing so, gives a twist to the ankle, which carries the foot with it, and compels the toes to turn inwards. This unseemly appearance is very objectionable in children belonging to the upper classes; and by it, in some instances, I have detected the cause, and confirmed my diagnosis on examination.

These children, with their feet and legs naked, cannot possibly turn their feet outwards when walking, unless they straddle their knees; but as, under proper treatment, the curved tibiæ approach the normal straight line, the feet naturally turn straight, and can be turned outwards. If not detected and treated early, bandy legs probably result; and the condition can be remedied, whether late or early, by the use of irons, persistently applied for some time. But irons are objected

* Read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association in Worcester, August 1882.

* Read in the Section of Surgery at the Annual Meeting of the British Medical Association in Worcester, August 1882.