LONDON JOURNAL OF MEDICINE,

A MONTHLY

Record of the Medical Sciences.

APRIL 1852.—No. XL.

ORIGINAL COMMUNICATIONS.

CASES OF FOREIGN BODIES IN THE EYE-BALL.

By WHITE COOPER, Esq., Ophthalmic Surgeon to St. Mary's Hospital, and Senior Surgeon to the North London Eye Infirmary.

SINCE the publication of my paper on Gun-shot Wounds of the Eye, in this Journal of November 1851, three cases of severe injury to that organ have fallen under my observation ; and as points of interest are presented by each, it is proposed to relate them with the addition of a few remarks.

CASE I. FRAGMENT OF FLINT EMBEDDED IN THE EYE—EXTRACTION. Thomas Trigg, a tall, spare, feeble man, aged 65, residing at Merrow, near Guildford, was received into the North London Eye Infirmary, under my care, on the 22nd of November, 1851.

Six days previously, whilst breaking stones on the road, a chip of flint flew up and struck him with great force on the right eye, cutting through the cornea and burying itself behind the iris, between it and the crystalline lens. Active treatment was adopted ; but his condition, when seen by me, was as follows.

There was acute inflammation of the conjunctiva, sclerotic, and iris ; a vesicle projecting from the lower third of the cornea, near the mesial line, marked the seat of the wound through which the fragment had passed. The iris projected forwards, and was adherent at this point posteriorly, but it was also bulged by a yellowish body, a portion of which was visible through the pupil, though that was contracted and somewhat distorted. There was hypopyon ; and though the

Fig. 1.

lens was opaque and sight utterly extinguished, the intolerance of light was distressing. The patient complained of unceasing agonising pain in the eye, which gave him no rest night or day.

The old man appeared quite worn down by suffering, and was by no means in a condition to bear active treatment. The pulse was slow and irregular, the skin cold and pallid, and the nervous system in a state of extreme depression. He was also under the influence of mercury, which appeared to have been very properly administered. He had travelled to town by rail, in a third class carriage, and had afterwards walked a considerable distance, which had materially aggravated his previous sufferings; the vibration of a railroad being peculiarly calculated to cause a foreign body pressing against the iris to excite irritation. He was immediately put to bed, warm tea administered, and the eye freely fomented. When reaction had been excited, four leeches were applied to the right temple, and an opiate administered. By these and similar means, including perfect quiet in a darkened ward, the acute inflammation rapidly subsided, although the neuralgic pain continued; and on the 25th, I deemed the eye sufficiently recovered to render justifiable an attempt at removal of the foreign body.

The exquisite sensitiveness of the eye, and the intolerance of light, rendered chloroform indispensable; and Dr. Snow, having first ascertained that there was nothing in the condition of the heart to preclude its use, kindly undertook its administration. The patient was placed in the recumbent posture, and when fully unconscious, an incision was made with Jäger's knife through the upper and outer margin of the cornea, about the sixth of an inch in extent. A pair of Charrière's delicate curved iris forceps were then cautiously passed through the wound into the pupil, and after one or two failures, arising from the depth of the substance and the limited space in which to work, the object sought was attained, and the chip, enveloped in yellow lymph, was withdrawn. The eye having been carefully cleansed, the corneal wound was adjusted, the lids closed, and retained with a strip of plaster, and cold water dressings were applied to the eye. The patient remained about half an hour on the couch, and when he had quite recovered from the effects of the chloroform, was replaced in bed, where he immediately fell asleep, and slept tranquilly for some hours.

Nov. 26th. The patient stated that he was "wonderfully easy", more so than he had been since the accident; the lids were quite free from redness or œdema, and there was no undue lachrymation.

29th. Nothing could have been more satisfactory than the progress of the patient so far. He had continued easy, had slept comfortably, and the eyelids bore a perfectly natural appearance.

30th. The eye was opened this day. There was no inflammation; the cornea was bright, and the wound well united. He had some perception of light, though the traumatic cataract prevented all vision.

He was discharged on the 4th of December, the eye having recovered from the operation, and being free from pain. Subsequently to his arrival at home he had some return of pain, I believe, and perhaps inflammation, but the accounts forwarded were not sufficiently explicit to enable me to form a correct opinion.

CASE II. CHIP OF STEEL IMBEDDED IN THE EYE. Robt. Chicken, aged 35, an athletic man, working as an engine-fitter at the Great

Western Railway, became a patient of mine, at St. Mary's Hospital, on the 9th of December, 1851.

On the previous day, whilst cutting hardened iron with a chisel, a chip struck his left eye, blinding him instantly, and causing severe pain. He forthwith applied at St. Mary's Hospital; and Mr. Bullock, the house-surgeon, on examination, saw that the lens had in that short interval of time become opaque. Rightly judging that the injury was severe, he ordered four leeches to the neighbourhood of the eye, belladonna to the brow, and calomel, with opium, every three hours. At half-past one o'clock on the 10th, (twenty-six hours after the accident), the eye presented the following appearances.

Careful examination detected a clean incised wound in the cornea; and corresponding thereto, was a gap in the iris, midway between the margin of the pupil on the inner side and the ciliary attachment. This wound was peculiar; a flap of the membrane, about one-twelfth of an inch in length, had been cut up, and being attached by its outer border, swung to and fro like a miniature shutter. The wound in the cornea appeared to have closed instantly after the receipt of the injury, for the anterior chamber was full, and the iris retained its proper position; the lens was opaque, and there was barely perception of light; there was much congestion of the conjunctiva and sclerotic; the patient complained of intense pain; and there was hypopyon.

Fig. 2.

Encouraged by the result of the preceding case, and thinking it probable that the chip had lodged behind the iris in the posterior chamber, I decided to make an attempt to extract it.

The patient having been brought under the full influence of chloroform, an incision was made through the outer margin of the cornea; a fine steel probe was then introduced through the pupil into the posterior chamber, and I endeavoured, with the utmost gentleness, carefully avoiding all injury to the parts, to discover the foreign body. Thinking it was felt, a pair of fine iris forceps were used, but after searching as much as prudence would justify, without seizing the chip, and being uncertain as to its precise situation, I considered it proper to desist from any further attempt, especially as blood appeared in the anterior chamber. The lids were therefore closed with plaster, and the patient put to bed, with cold water dressings applied to the eye.

December 11th. I was to-day informed by the patient's wife, that he had led an irregular life, and had suffered from an attack of delirium tremens, from which he had only recovered so recently as the Saturday previous to the accident. There had been rather severe pain in the eye during the night, but the lids looked quiet, and free from tumefaction. He was ordered to continue the calomel and opium and cold applications as long as agreeable.

13th. The eye had become perfectly quiet and free from pain; and on opening it, I was surprised at finding it even less red than at the

time of the operation. The wound in the cornea had healed, the effused blood had nearly disappeared, and the anterior chamber contained its usual quantity of aqueous humour. Beds being in great request, he was made an out-patient.

It was too much to hope that the lull in the inflammatory symptoms would last, but the eye continued quiet for several days. His mouth had become sore, and the quantity of mercury was therefore greatly reduced.

20th. He this day presented himself complaining of pain in the temple and brow. The eye was irritable, the mouth rather freely affected, the bowels were confined. He was ordered to take a pill of colocynth and hyoscyamus; to rub mercurial ointment, with opium, into the temple at night; and to bathe the eye frequently with collyrium belladonnæ cum opio.¹

27th. The eye was in a very congested and irritable state; the iris had undergone change of colour. Two leeches were ordered to be applied every other night to the left temple or mastoid process. The other treatment was continued. Mercurial action still marked.

30th. He complained much of sore mouth, and less of the eye, where, however, the process of disorganisation was clearly proceeding. He was ordered to take two grains of iodide of potassium in infusion of quassia twice daily, and to continue the leeches according to circumstances; the brow was to be rubbed with anodyne lotion.

January 3rd, 1852. Still much pain in the eye and temple, extending over the side of the head; bowels confined; eye congested. Three leeches were applied to the left temple immediately; an ounce of *mistura magnesiae sulphatis cum magnesia* was ordered to be taken every morning; and one grain of extract of opium at bed-time.

6th. There was great amendment; he had been nearly free from pain during the last twenty-four hours, and the eye was less congested; it was, however, soft to the touch at the upper and outer part. He was ordered to take half a grain of extract of opium every night; and to go on with the mixture in the morning.

With slight variations and occasional leechings, this treatment was continued until the 16th of February, by which time the eye had become quiet, but the process of atrophy had made manifest progress. He was now ordered *mistura quinæ*, an ounce twice a-day, and to continue the collyrium, which had been steadily used throughout with great advantage. He had resumed work, and stated that the eye had not suffered in consequence.

His condition at present is such as might be expected. The eye has diminished about one-third in size, and is soft; the iris is discoloured; the pupil distorted, contracted, and drawn downwards and inwards; the sclerotic is of a yellowish brown hue; all vision is extinguished.

CASE III. PENETRATING GUN-SHOT WOUND OF THE EYE. On the 3rd of last January, I was requested by Mr. Ancell, of Norfolk Crescent, to visit one of his patients, who had received a formidable injury to the left eye a few days previously. He was standing on the brink of the Serpentine, when a gun, loaded with partridge shot, was

¹ The formulæ mentioned are those of the Hospital Pharmacopœia.

discharged at the distance of about thirty yards from him, and a pellet, glancing from the water, struck his eye, instantly extinguishing the sight. The elevation of his head above the level of the water at the time, was about eight feet.

He was of a tall, rather corpulent frame, lived well, and bore the general aspect of plethora. Acute inflammation speedily set in, and continued with severity, notwithstanding the most judicious treatment.

His condition, when seen by me, was as follows, premising it by stating that his eyes were naturally full, and the irides grey, with a yellowish pupillary margin.

The left eye was acutely inflamed, the conjunctiva, sclerotic, and iris being all involved. Just beneath the circumference of the cornea, nearly in the mesial line, there was a ragged wound, the surface of which had a peculiar whitish appearance, as if it had been scorched. In the centre was a black spot of prolapsed pigmentum nigrum. From this point, the conjunctiva, surrounding the lower half of the cornea, was raised by chemosis. The iris was much discoloured, being of an olive green, streaked with reddish lines, and the pupil was drawn down in a linear figure to the wound. Immediately after the infliction of the injury, the anterior chamber had been filled with blood, which retained the iris in its place; but as this became absorbed, the iris prolapsed through the wound, dragging the pupil down as described, and as shown in the sketch. It may be mentioned that the patient insisted that the shot could not have penetrated the eye; but on this point I believe him to have been in error.

Fig. 3.

To proceed with the description of his condition on the 3rd of January:—the pupil was absolutely immoveable, and there was not the faintest perception of light: there was severe pain in the ball of the eye and temple, with hemicrania aggravated at night. When the eye was turned briskly outwards, a sharp pang was felt, and a flash of light was excited. On the most careful examination, the crystalline lens seemed perfectly clear and sound.

The opinion at which I arrived, after mature consideration, was, that the shot had entered the eye, and, passing under the lens without wounding it or opening its capsule, had lodged either in the upper and posterior part of the sclerotic, or had possibly passed through that and buried itself in the orbit; but most probably the former.

The treatment agreed on by Mr. Ancell and myself, was absolute quietude, depletion by repeated applications of leeches, mercury to the extent of affecting the mouth, opiate fomentations and belladonna to the brow.

The symptoms slowly gave way; and on the 22nd of February, when the eye was again examined by me, it had undergone the following changes.

The globe was perceptibly diminished in size, and was flaccid to the touch; the sclerotic had a dingy yellowish brown hue, the iris was dull green, the pupil fixed in the condition first described, by a fringe of dark red adhesions, binding it to the capsule of the lens. The seat of

the wound was indicated by a small red spot: all pain had subsided, but there were occasional flashes of light. The sight was extinguished.

The following case, taken from the twenty-sixth volume of the *Annales d'Oculistique*, presents such remarkable features, that I am induced to quote it for the purpose of referring to it presently.

CASE IV. SEVERE INJURY TO THE EYE:—SUBSEQUENT OPERATION: RECOVERY OF SIGHT.

On May 22nd, 1850, a gunsmith, named Nicholas Borguet, presented himself to Dr. Ansiaux, at Liege, for advice. His right eye had been wounded by a fragment of iron eight days previously. This being sharp, had inflicted a severe wound in the inner portion of the sclerotic, and had left a longitudinal cicatrix about two millimètres in length.¹ The fragment had been removed from the eye at the time of the accident, and the organ was remarkably free from inflammation; there was no pain, and the only complaint made by the patient was, that he could not see. After examination, Dr. Ansiaux arrived at the conclusion that there was no foreign body in the eye, but thought it highly probable that traumatic cataract existed; and the pupil having been dilated, a capsulo-lenticular cataract was discovered on the 24th. A probe was now passed through the wound to ascertain positively whether there was any foreign body in the eye, and it easily penetrated so deep into the eye-ball, that its extremity was made to appear in the pupil as it was pushed towards the nose.

Dr. Ansiaux determined to profit by this, and introduced a cataract needle through the wound into the posterior chamber. The crystalline, being soft, was broken up, and some fragments depressed, whilst others were pushed into the anterior chamber. The needle was then withdrawn, and cold water dressing applied to the eye.

27th. Borguet presented himself without any inflammatory symptom, there being nothing more than a slight injection of the eye. The fragments of the lens and of the capsule were seen floating in the anterior chamber on the least movement of the head. The only abnormal symptom was a slight sensation of dust in the eye. Frictions with Neapolitan ointment were ordered to the forehead and temple.

29th. He continued the same. The patient would not, however, take any sort of precaution, but went about, without attempting to retain the horizontal position, strongly recommended.

30th. Borguet presented himself with a violent inflammation of the eye, which was greatly injected. Although he complained of frontal pains, there was little appearance of iritis, as the iris retained its colour. It was rather considered that this was inflammation, caused by the commencement of absorption of the fragments pushed into the anterior chamber, which already presented evidences of such an action. Eight leeches were ordered to the temple, a dose of calomel, and belladonna collyrium; the feet to be placed in a mustard bath, and strict repose to be observed. This treatment was sufficient (says the writer). At the expiration of eight days Borguet was quite well, and absorption of the fragments of the crystalline was accomplished without the least further obstacle. Vision was re-established in the eye.

REMARKS. A striking feature in two of the cases which have been related, was the marked relief of inflammatory action which followed

¹ A millimètre is 0·03937 of an inch.

the performance of the operations. *A priori*, it might have been anticipated that the additional infliction of an incised wound upon an eye already inflamed, together with the irritation inseparable from the introduction of forceps into so sensitive an organ, would have brought on acute ophthalmitis: far from it. In the first case, the most decided relief was afforded, and the previously existing inflammation rapidly subsided. In the second, although the attempt to remove the chip of iron was unsuccessful, the wound healed kindly, the pain subsided, and for several days, until in fact secondary inflammation set in, the progress of the case was highly satisfactory. And this was more remarkable from the fact of the patient having, only two days before the occurrence of the injury, been suffering from delirium tremens—the effect of excessive drinking. I have quoted Case iv. as an additional illustration of the singular immunity from destruction which some eyes seem to enjoy. How often does it happen in ophthalmic practice, that an operation for extraction of cataract, performed with the utmost skill and gentleness, and under the most favourable circumstances, is followed by destructive inflammation, whilst other eyes will bear with impunity an amount of violence scarcely credible!¹ In the case mentioned by Dr. Ansiaux, for instance, we find an extensive cut through the sclerotic and choroid, opening the capsule of the lens, and yet failing to excite dangerous inflammation. Eight days afterwards—a period at which the eye might fairly be considered prone to inflammation—a probe was thrust into the eye behind the iris, so far as to be visible in the pupil; then a needle was introduced, and the lens broken up, a proceeding necessarily attended with violence. The fragments of the lens, which might be regarded in the light of foreign bodies, were left floating or resting in the anterior chamber. Yet, in spite of all these provocations and the subsequent carelessness of the patient, six days passed over without inflammation; and, to crown all, when at length it did set in, it was easily subdued, and vision was restored to the eye.

Inflammatory symptoms, excited by a foreign body in the eye, are doubtless efforts on the part of nature to expel it; or, failing that, so to enclose and imbed it in lymph, as to render it harmless. There have been instances mentioned by Ammon,² Salomon,³ Grüllich,⁴ and Mackenzie,⁵ where foreign bodies, lying in the anterior chamber, have been in this manner encysted, and have ceased to be productive of irritation. We may fairly ascribe the absence of acute inflammation after such operations as have been described, to the circumstance that art has achieved the object for which nature was vainly striving, and that the relief afforded, more than counterbalanced the injury inflicted.

When a foreign body has lodged in the eye, and cannot be ex-

¹ The ophthalmic practice of our forefathers was in many respects so rough, that it is a marvel that any eyes survived it. Heister recommends, as a means of removing foreign bodies, “to blow some levigated pearl or crabs’ claws through a quill under the eyelid, that as these are washed out by the tears, they may also take away the foreign body with them.” Powdered glass was used by others for the same purpose. Truly this was carrying into practice the recommendation of the wit to the man who had swallowed a fly, “swallow a spider to catch it.”

² Gräfe and Walther's Journal, vol. xiii, p. 418.

³ Ibid., vol. xiv, p. 457.

⁴ Ammon's Zeitschrift für die Ophthalmologie, vol i, p. 336.

⁵ Treatise on Diseases of the Eye, p. 336.

tracted, atrophy of the globe is a common result. The active symptoms—of which neuralgia is one of the most distressing and lingering—gradually subside. The iris remains permanently discoloured, and the fibres indistinct; the pupil, distorted and motionless, is bound to the surface of the capsule of the lens by dark adhesions; the lens may be converted into an osseous cataract, or, if the capsule has been opened, may undergo absorption; the sclerotic, thinned in texture, permits the dark hue of the choroid to be seen imparting to it a dusky tint, whilst the surface of the soft and shrunken globe is traversed by a few large tortuous purple vessels. Such, if the eye be not in the first instance destroyed by suppuration, are the general characteristics; and the appearance of the iris is one test by which our judgment may be guided as to the presence of the foreign body in the eye, for patients often declare that it is impossible that it *can* be in the eye. Iritis, excited by a simple wound, may be expected to subside, and the iris to recover its natural colour, under the use of mercury. Not so when a foreign body has lodged in the eye. A blue or grey iris then becomes a dingy green, and a brown iris acquires a muddy reddish colour, doubtless from the interstitial deposit, to which the change of colour is due, not being removed by absorption. It has been said, that a yellowish, more or less elevated swelling of the membrane, indicates the locality of the foreign body. It may be so when it is in contact with the iris; but I have not observed it in other cases, though, when the substance is in the posterior chamber, the pupil is often drawn in an angular form towards it.

During the secondary inflammation, arising under the circumstances described, the repeated application of two or three leeches to the temple or mastoid process is of essential service. A larger number are not desirable, the object being simply to unload the vessels, without exhausting the system.

I have on several occasions been consulted as to the propriety of attempting to restore sight to an eye damaged by accident. The patient has probably perception of light, and clings to the hope that he may regain some useful vision, by submitting to an operation. There are two points to be borne in mind, in reference to a question of this description. Is it possible to improve the sight? is it desirable?

There will probably be two proceedings open for consideration, namely, the removal of the opaque lens, and the formation of an artificial pupil. If the injury has been comparatively slight, and the eye is generally healthy, though dark from traumatic cataract, sight would be restored by removing the lens from the field of vision. If there has been iritis, which has bound down the pupil to the capsule of the lens, but the globe remains firm, and the retina sound, artificial pupil, with or without destruction of the lens, may offer a fair prospect of restoring sight; but if there be atrophy of the globe, fluid vitreous humour, a discoloured and paralysed iris, there is certainly serious disorganisation, and an operation would be of little avail.

Then, as to the propriety of operative interference:—if the patient has one sound and strong eye, the other being blind, it becomes a serious question, whether the restoration of imperfect sight to the latter may not be a positive disadvantage. An artificial pupil could scarcely be made perfectly in the centre: consequently the axes of the

two eyes would not correspond, and double vision would exist. If the lens were removed, the sight of the two eyes would materially differ, and perplexing confusion be caused. In more than one instance, I have been actually requested by persons—generally artizans, who have received an injury impairing, but not extinguishing, the sight of one of their eyes—to ‘put the eye out’ (as they expressed it), so annoying and trying was the confusion it caused. So persons who have cataract partially formed in one eye only, acquire a habit of closing that eye when reading, as it interferes with the other. It is our duty, therefore, before undertaking an operation, to satisfy ourselves that we shall leave the vision of the patient better, and not worse than we found it. But when from any cause the sight of the uninjured eye has become imperfect, and threatens to depart, then a great boon may be conferred upon the individual by calling into use, by well-applied skill, an eye which had been previously useless.

Chloroform is of essential service in facilitating operations on inflamed eyes. Without its aid, indeed, they could not be satisfactorily performed; for, when the eye is in this condition, its sensibility to light and to touch is so increased, and the spasmodic action of the orbicularis palpebrarum and muscles of the globe is so violent, that force is required to keep the lids open, and the eye must be held steady by instruments—proceedings highly objectionable. All this is obviated by the use of chloroform; and, by attention to two points, it may be used with perfect confidence. First, it should be administered on an empty stomach, as vomiting then very seldom arises. Secondly, as soon as the operation is concluded, the lids should be secured by a strip of adhesive plaister, extending from the brow to the cheek. This prevents any disturbance of the wound during the return to consciousness; and, by supporting the lids and eye, if vomiting should occur, prevents expulsion of the contents of the globe. Sichel’s canula-forceps are most useful in extracting foreign bodies from the interior of the eye: indeed, if the body is not too large for their grasp, I should never use any other description. For the preliminary corneal incision, Jäger’s double-edged, spear-pointed knife is the best instrument with which I am acquainted.

There is an affection which the patients whose cases have been related have hitherto escaped (I can speak as to three of them, at least), which is occasionally a sequence of foreign bodies in the eye-ball. I allude to that formidable inflammation of the uninjured eye, called by Dr. Mackenzie *Ophthalmia Sympathetica*, on which some valuable remarks are contained at p. 302 of Dr. Jacob’s *Treatise on the Inflammations of the Eyeball*. It is an inflammation which involves the various tissues of the eye, coming on five or six weeks after the infliction of the injury on the other eye, just when the patient is congratulating himself on having escaped from the trammels of an irksome confinement. It occurs most frequently in feeble cachectic habits, and in constitutions prematurely worn out by dissipation; and, for this reason, it is unfortunately very little amenable to treatment. To improve the general health, and give vigour to the system, is the chief indication; but a guarded prognosis should always be pronounced, as it is a tedious and intractable disease.