or cases in the other. So invariably did this obtain, that, immediately on hearing, after an interval of varying extent, during which no cases had occurred in either place, that a person had been attacked at Leith, I made preparations for the reception of patients in Edinburgh; and I do not remember having been once disappointed in my anticipations.

Notes on the Progress of the Epidemic, etc., during the months of October, November, and December 1853.

Oct. 3rd. Two or three sporadic cases occurred about this date in Edinburgh and Leith.

Oct. 27th. A simultaneous outburst in Edinburgh and Dundee, in different quarters of their respective towns.

Oct. 30th. Several isolated and grouped cases occurred in Edinburgh. Communication was distinctly traceable between several foci.

Nov. 1st. About this date epidemic spread in London, Dublin, Dundee, and various other parts of Britain.

Nov. 12th. Several sporadic cases occurred in distant parts of the town.

From Nov. 13th to 21st there were no cases in hospital or in town.

Nov. 22nd. A fatal case occurred in Leith, and another in Edinburgh.

Nov. 26th. One of the dogs on which I had been experimenting died of cholera: and on the 27th another: the remaining animals recovered slowly but completely.

Nov. 29th. Two or three cases in Edinburgh. At Dundee the disease raged with great virulence: the mortality being about 45 per cent. Up to the 10th there had been one hundred and sixty cases, of which seventy-two were fatal.* At Arbroath, though much more limited in its diffusion, the disease was still more fatal: the deaths included a medical student and a cholera nurse.

Dec. 6th. Several new foci formed: the cases equally fatal as at the first outburst of the disease.

Dec. 14th. During the previous week, several fatal cases had occurred in distant parts of the new town, among the middle and upper classes, who were attacked in a comparatively large ratio throughout the epidemic.

Dec. 20th. Five cases were reported in town and one in Edinburgh. During the previous week there had been a few sporadic cases.

Dec. 21st. Broke out in Glasgow, and also made its appearance in various of the smaller towns and villages of England and Scotland.

[To be continued.]

Crichton Royal Institution, Dumfries, July 1854.

NOTES ON OPHTHALMIC DISEASES.

By J. VOSE SOLOMON, Esq., Surgeon to the Birmingham and Midland Counties Eye Infirmary; lately Honorary Surgeon to the Birmingham General Dispensary.

[Continued from page 483.]

PATHOLOGY AND TREATMENT OF FOREIGN BODIES INTRUDED WITHIN THE ANTERIOR CHAMBER OF THE EYE.

I do not purpose, on this occasion, to treat of dislocation of the lens into the anterior chamber, or of hydatids within the eye; but I shall confine my observations to that class of cases in which substances, entirely extraneous to the body, such as pieces of metal or stone, have been driven within the anterior aqueous chamber.

This cavity may be generally described as being limited by the iris and pupillary aperture behind, by the cornea in

front, and by the same membrane, with a narrow belt of sclerotica, and the pillars of the iris, at the sides.

The cornea, as already noticed, is a very tough structure, capable of resisting much violence. It derives additional strength from its arched form; and as it completes, in union with the sclerotica, an almost perfect sphere, the force of a blow upon the exterior of the eye becomes weakened in consequence of the diffusion of its vibrations over the surface of the globe, and the point struck is rendered less liable to rupture or penetration than it would be otherwise.

Accordingly, we find that while cases of impaction of a foreign body in the outer surface of the cornea are frequent, the intrusion of one within the anterior chamber is comparatively rare. It must be driven with considerable force, and be of hard texture, in order to obtain the latter position.

The *shape* of the foreign body is generally either acicular, cuneiform, or flat and thin with sharp edges,—as, for instance, a scale of stone, glass, or a small fragment of percussion cap. I have seen in different cases lead shot, grains of gunpowder, a bit of brass, a fragment of the cutting edge of a steel chisel, a scale of granite, long and slender pieces of hard iron, lodged in the situation under consideration.

As regards the *position* of the foreign body: in some instances that have come before me, it has projected from the concave surface of the cornea into the aqueous humour. In others, it has been fixed in the iris, or adherent to its surface. In one case, it had attachment to both cornea and iris, forming a miniature suspension bridge. In another, a piece of steel, a quarter of an inch in length, penetrated the upper circle of the corneo-sclerotic union, and hung down in front of the iris and aperture of the pupil. In several, the floor of the chamber has been the seat of the foreign body. This variety of situation is explicable by reference to the laws that govern projectiles. In some instances, if the sensations of the patients may be relied on, spasmodic action of the sphincter of the lid has been instrumental in pressing the foreign body through the cornea into the aqueous chamber.

The lodgment of a foreign body in the latter situation is a much less serious accident than its penetration more deeply into the eye, provided the retina has not, at the moment of the accident, suffered concussion.

The wound in the cornea corresponds, when recent, very exactly to the diameter of the penetrating substance, contrasting remarkably in this respect with the wound inflicted by a bullet on soft contractile parts, the orifice of which will admit only a medium sized bougie.

SYMPTOMS. The *symptoms* experienced from the intrusion are, as in injuries of other important parts, not always the same. The patient may at once suffer most agonising pain; or it may be so trifling as to be little regarded. In nearly all cases, considerable alarm is excited by the accident, and great anxiety is expressed for the removal of the foreign body.

As regards the *traumatic ophthalmia*, its degree and kind will depend much upon the nature of the injury, the susceptibility of the ocular tunics to disease, and upon the previous habits, present idiosyncrasy, and general health of the patient. In some cases, which are exceptional, inflammation of the posterior internal tunics will be the primary disorder; whereas, in others, these become only secondarily affected. The prevalent idea in the mind of practitioners who meet, for the first time in their experience, with a case of foreign body in the anterior aqueous chamber, is that vision will be destroyed by suppurative of the eyeball (ophthalmitis), unless removal of the foreign body shall be soon accomplished: such an apprehension is happily not realised, but the practice, which it instinctively suggests—extraction of the irritant through an incision of the cornea—is in accordance with the axioms of scientific surgery. The exemption from suppuration is due to the iris becoming the *focus* of the primary ophthalmia in the large majority of cases, and its behaviour under inflammation is, as is well known, that of a serous membrane: inflammatory lymph is exuded, false membranes or cysts are formed, but pus-cor-

* I cannot vouch for the accuracy of the dates, or of the number or kind of cases occurring on particular days. My data were derived from various informants and sources. They are, however, sufficiently accurate for my present purpose; which is merely to show that, between the outbursts of the disease—sporadically or epidemically—and the condition of the atmosphere (so far as the ordinary means of observation enabled me to form a judgment) there subsisted no fixed or definite relation.

puscles are not very frequently met with.* Indeed, if we except those occasional instances in which a yellow exudation lies on the floor of the anterior chamber (hypopion), it may be asserted that, in the injuries we are considering, suppuration of the eyeball (ophthalmitis), never does occur. The occurrence of hypopion may be expected when the cornea has sustained contusion as well as laceration, and if the patient should be in a cachectic condition at the time of the accident. In some, such is their idiosyncrasy, that all lesions of surface are prone to be followed by suppuration. And it is remarkable that an injury of precisely the same kind, affecting the eyes of the same individual, shall be sometimes followed by suppuration in the one, and comparatively slight inflammation, or by a subacute posterior internal ophthalmia, ending in amaurosis in the fellow organ. A soldier was struck by a musket shot, which entered one temple and passed, in a direct line, out at the other temple. The vision of one eye was destroyed by suppuration, and that of the other by amaurosis.† A painful illustration of the same pathological fact is occasionally afforded by cases of extraction for cataract; an operation equally well performed on the eyes of the same patient, upon the same day, shall be followed by ophthalmitis of one eye eventuating in suppuration of the globe, while the fellow organ shall proceed to a good recovery.

The duration of the first attack of iritis, ensuing from the presence of a *small* foreign body situated so close to the iris as to admit of ready investment by lymph, the patient being healthy and judiciously treated, will be from three to four weeks. But when a long piece of slender metal extends from one of the walls of the chamber, or transfixes it in an antero-posterior direction (cases x and xi), the ophthalmia, attended by excruciating neuralgic pains, may continue for several months. In case xi, the iritis had existed 110 or 111 days when I extracted the piece of steel, and in seven days afterwards the man resumed his work. In the absence of an operation for the removal of the foreign body, its inclosure, or adhesion to the iris by inflammatory lymph becomes the natural process of cure; and the surgeon must bear the fact in mind, lest, by using bleeding and mercury too freely for the iritis, he should prolong the ophthalmia. The iritis is here both bane and antidote.

The patient having recovered from the primary traumatic ophthalmia, may enjoy the natural functions of the organ for some time; but ultimately, in obedience to that law of the animal economy which determines bodies that are foreign to its organisation to the surface, nature begins the work of expulsion, which is manifested by the occurrence of secondary iritis accompanied by excruciating neuralgic pains; and having once commenced, she, with intervals of repose, resumes her operations from time to time. In some cases the cornea, from pressure of the intruded body, ulcerates near its inferior border; and, by that means, the foreign body gains the exterior of the eyeball,‡ and is readily withdrawn. An interesting example of this process will be given, when we treat on the subject of foreign bodies in the *posterior* chamber and the parts within the eye that are behind it.

The commencement of the work of extrusion occurred, in a case under my care, in *four months* after the cessation of the primary traumatic iritis; whereas, in an instance communicated to me by my friend and neighbour Mr. Swain, it was delayed *eleven years* (case xii); and then the patient entered upon a martyrdom of pain, iritis with severe neuralgia occurring four and five times in one year.

In the intervals of the recurrent seizures of iritis, violent nervous pains in the eye, around the orbit, and in the head, disturb the patient, of which mental anxiety, and the attendant disorder of general health, and errors of diet, have appeared to be excitants. In case x, the assumption of

dorsal decubitus was, for the six years the piece of steel remained in the eye, immediately attended by pain in the eye; the night after its removal by operation the patient slept soundly, lying on his back, for the first time subsequent to the intrusion of the foreign body.

It is to be remarked that, frequent as are the inflammatory seizures, the *pupil* commonly remains circular, or nearly so, and patent. The surface, rather than the parenchyma, of the iris seems to suffer. Hence fringes around the pupil, and nodules or layers of lymph in or upon the structure of the iris, are not met with except, as already said, around the foreign body. Exceptions, as respects the pupil, are afforded by cases where the foreign body, *e.g.* a scale of stone, lies upon that aperture; and where, after repeated attacks of iritis, the posterior chamber and the choroid and retina become (which they are very slow to do) compromised by extension of inflammation; in either of these events, the pupil is liable to be closed by a lymph cataract. I have only met with it under the former of these circumstances.

In one case, where the foreign body remained six years in the anterior chamber, incomplete amaurosis resulted; in another, vision was impaired through considerable distortion of the pupil.

Mention must not be omitted that the lymph around a foreign body becomes, after organisation into a cyst, of a rusty brown colour, irrespective of the oxidability of the contained body. I have seen it of exactly the same shade as the iris to which it was attached. Age augments its toughness up to a certain but indeterminate period, when it is apt to degenerate; and the loosened foreign body produces continuous irritation, until eliminated, or removed by art. A blow upon the eye has sufficed to rupture a cyst. The formation of a cyst prevents not only contusion of the iris, and the mischief consecutive to such injury, but also the oxidation of metallic bodies, a process which is certainly, according to my experience, though the contrary has been said, attended by considerable irritation of the eyeball.

The recurrent attacks of iritis do not implicate the cornea or aqueous epithelium beyond the point at which the foreign body may happen to make pressure and induce ulceration, as in case xi. The cicatrix of the wound originally made by entrance of the foreign body, frequently disappears altogether. The cornea retained its transparency in a patient under my care, although a small bit of cast-iron abutted from it into the aqueous humour for eight weeks; and then the oxidation of the metal produced the ordinary rusty coloured spot.

When the primary traumatic ophthalmia seizes the retina and choroid, and not (as is more usual) the iris, serious sympathetic disturbance of a similar nature is prone to arise in the opposite eye, over which treatment has little control. In such cases time is not seldom the best of physicians. But when the primary ophthalmia is iritic, the fellow eye continues healthy unless it be overworked.

The long residence of an extraneous body in the anterior chambers, although unattended by acute symptoms, as in case xiii, ultimately induces disease of the retina. An exception to this will be found in case xiii, the only change of vision in which is the occurrence of long sight (presbyopia) fourteen years after the accident. As, however, scleritis recurs nearly every two months, the patient's vision will most probably be compromised ultimately by inflammation extending to or arising in the posterior and internal tissues.

The following cases will illustrate many of the preceding observations.

CASE X. LARGE PIECE OF STEEL REMOVED FROM THE ANTERIOR AQUEOUS CHAMBER OF THE EYE SIX YEARS AFTER ITS INTRUSION; THE PATIENT RECOVERING WITH USEFUL VISION. J. F., aged 35, a machinist, of highly nervous temperament, and of strumous diathesis, sustained an accident, early in October 1845, to his right eyeball, from the penetration of a slender piece of steel, one-fourth of an inch

* The primary iritis has in several cases commenced on the third day subsequent to the intrusion. When iritis occurs after extraction of a cataract, it is generally on the fourth or fifth day following the operation.

† Dr. Thompson's "Report of Observations made in the Military Hospitals in Belgium after the Battle of Waterloo."

‡ Case i, Ophthalmia Sketches.—*Proc. Med. and Surg. Journal*, 1852.

long, through the upper margin of the sclerótica into the anterior aqueous chamber. "In the first instance," said the patient, "it did not enter far into my eye, but the top eyelid instinctively shut with great force, and pushed it two-thirds of its length into my eye, and the part remaining out cut a great gash in my eyelid. I got several parties in my shop to try to extract it with pliers; but, owing to the end being taper, they only assisted my eyelid in pushing it inwards. I went to Mr. — [an ophthalmic specialist of note] half an hour after the accident, but it not being daylight I was desired to visit him at ten in the morning. I did so; but the steel was now quite imbedded in my eye, and the inflammation was so great that he said he could not do anything till it was subdued." The patient on hearing this urgently entreated that it might be extracted, which was refused. At the expiration of a few days, he expressed a wish to his surgeon to place himself under treatment at a public institution, upon which he was thus cautioned: "My friend, do not allow any one to interfere with the steel; my advice is—keep it in." He was an out-patient at the public institution for about fifteen days: his eye was then "a mass of jellied blood", which hid the steel from view. Upon the 3rd of Nov. of the same year he consulted me, when I noted the following appearances and symptoms. A piece of steel, of black colour, lay in front of the upper circle of the iris, but not upon that membrane; it penetrated the superior margin of the sclerotic near the middle, immediately behind its union with the cornea, and passed into the aqueous chamber almost in a perpendicular line. The penetrating point was nearly central to the pupillary aperture, and slightly inclined towards the cornea; the eye was exceedingly irritable, and watered abundantly when exposed to light; the conjunctiva, sclerótica, and iris were inflamed; the pupil was circular, and not remarkably contracted; the cornea was transparent; severe aching pains were experienced in the eyeball, forehead, and temple. The patient appeared much reduced in strength by the sufferings, physical and mental, incident to the accident, and by the antiphlogistic treatment which had been requisite for its relief. The vision of the left eye was not impaired, but became intolerant of use when the injured organ was most painful. He anxiously inquired of me if I could, and if I would remove the piece of steel? I endeavoured to explain to him the impropriety and difficulty of operating upon an organ when inflamed, adding that the operation ought to be undertaken immediately upon subsidence of the ophthalmia, and not until then.

Treatment. I directed soothing applications to the eye, with perfect rest of it, and exclusion of bright light. A nutritious and easily digestible diet, a grain of calomel, with two and a half of Dover's powder at intervals of eight hours, two grains of quinine three times a day, and counterirritation to the nape, were ordered. The patient's circumstances and views did not comport with the observance of absolute rest of his visual organs, so that he occasionally performed a little work requiring great nicety of execution. When the weather permitted he took outdoor exercise, which seemed essential for the renovation of his constitutional vigour. At the expiration of about six weeks the eye became tranquil. The proper time had, I conceived, now arrived for the extraction of the foreign body through an incision of the cornea. As an act of courtesy, I requested the patient to call upon the practitioner whom he had first consulted, and hear what he might say. He did so, and was told to "keep it in". Influenced in part by this advice, and very much by my not positively assuring him that the natural appearance of the eye would be preserved after the operation, but still more by his great desire to perfect a piece of machinery which he had invented, the operation was procrastinated. When the eye became so irritable, inflamed, and painful (which was often the case) as to hinder his avocations, he was all anxiety for an immediate operation; when the organ was tranquil, he was all anxiety to perfect his invention.

In April, and again in July (1846), he suffered from acute iritis of the injured eye, which yielded in three or

four days to the free use of a vapour bath; a pill of one grain of calomel and five of cathartic extract being taken every night to relieve obstinate constipation.

At this period—nine months after the accident—the steel was remarked to be sheathed with organised lymph, which gave it a brown hue. The iris had lost its natural lustre and grey colour, and had become of a dusky brown. The size of the pupil was not affected by the ophthalmic attacks. The retina was sound.

In Dec. 1847, twenty-six months subsequent to the injury, a vesicle formed over the sclerotic end of the steel; it was punctured, with relief to the ocular irritation of which it was productive.

After this I heard no more of my patient for nearly four years (September 1851), and almost six years from the occurrence of the accident, when I was requested to call upon him preliminary to undertaking an operation for the removal of the foreign body. On my visit, I found him improved in general health; his ingenuity and indomitable perseverance had brought their pecuniary rewards. He told me he had suffered much during the last six years from severe neuralgic pains in the eyeball, which at times almost drove him to acts of desperation; these attacks, with the anxieties incident to his avocations, had worn down his health and emaciated him. Ever since the intrusion of the steel he had been unable to lie on his back without suffering violent pain in the eyeball; if by chance he assumed this position when asleep, he would certainly be awakened by the pain.

During the last twelve months the eye had been more than usually painful, and the vision of the fellow organ weak, and clouded by *muscae volitantes*. Inquiries elicited that he had received, a year ago, a smart blow on the outer side of the eyeball from a piece of bullet-shaped steel, which displaced the foreign body, and rendered the organ more than usually painful. An examination of the right eye discovered the piece of steel, denuded of its fibrinous coat, and tilted forwards and toward the right side of the cornea. It had now a slanting direction in the chamber, instead of a perpendicular one. The conjunctiva exhibited a number of minute vessels, of dusky red colour; the sclerótica was more dull than natural; the cornea was perfectly transparent; the iris presented a dull leaden hue, and had lost its natural fibrillated texture; the pupil, of normal size and contour, remained motionless on sudden exposure to bright light; the pupillary aperture had lost its natural jet black colour, and was of a greenish hue, indicating that the vitreous cells had at some time participated in the ophthalmia, which had at various times attacked the globe. In the centre of the anterior capsule of the lens was an opacity, which would be coverable by the head of a very small pin. It is probable that at some period the end of the intruded steel had made pressure upon this part of the lens. The eye became somewhat irritable under examination, and appeared more sensitive to touch than natural; newspaper print could not be read when the sound organ was closed.

On the 10th of Sept., with the assistance of my friend Professor Berry, I extracted the piece of steel by making a quarter section of the cornea, cutting close to, but not into, the site of the sclerotic end of the steel; then with a small pair of sharp pointed forceps I seized the intruded body about its middle, and with a steady continuous motion pressed it back through the original point of intrusion. I determined upon this proceeding in preference to any other, as it secured the iris and aqueous membrane of the cornea from all risk of injury, and myself from the inconvenience of having to deal with a detached body lying loosely in the anterior chamber,—a condition under which I have seen operators foiled.

Sept. 11th. He felt easier than he had done for the past three weeks. *He could lie on his back last night without being disturbed by pain in his eye, the first time in the last six years.*

Sept. 12th. In the act of undressing himself yesterday evening the patient struck his eye, which had ever since been most painful. He was unable to bear the light of

day. He declined taking medicine, or applying any sort of remedies except belladonna to the brow.

Sept. 16th. The pain was mitigated; the wound was united; he could indistinctly discern objects. There was considerable conjunctival and sclerotic redness. He consented to the application of a blister behind the ear, and to take a terebinthinate mixture (3iij to 3viiss); also some good mutton tea.

Sept. 18th. He was much better in all respects. The sclerotic redness was considerably lessened; the eye was more tolerant of light, yet very irritable.

Upon the night of the 20th the eye felt as if it would burst: the patient had imprudently fatigued his vision during the previous day. On my visit the next morning, I found the conjunctival and sclerotic vessels loaded with blood, those of the former of a brick red colour; the eye was very irritable, painfully affected by light; circumorbital pain was present. He was ordered, and took in one dose, fifteen grains of Dover's powder, which made him sleep the greater part of that day, and gave him a good night as well. The eye was much improved on the following morning.

It is unnecessary to give a diurnal account of the patient's recovery. For an attack of influenza, which supervened on the 19th, he took quinine with benefit to his general health and ophthalmic complaint. In thirteen days after the performance of the operation he occupied a light room, and amused himself in reading a newspaper, by looking with the right eye through a niche made by placing the palms of his hands together, so that only a line of print was admitted to the retina at one time. He had often tried this experiment prior to the operation, but could not decipher the words.

Sept. 26th. Epiphora was the most troublesome symptom, for which he used Scheele's hydrocyanic acid, diluted with twice its volume of water, as an eye drop.

Sept. 28th. The drops not having proved sufficiently calnative, their strength was increased (R̄ Acidi hydrocyanici, aquæ destillatæ, āā ʒi). After this application all uneasiness in the eye and the epiphora completely subsided. The application of the drops produced an aching pain in the eyeball, which was replaced in the course of a few minutes by an agreeable soothing sensation, under which the visual power was sharpened.

Oct. 1st. Three weeks after the operation the patient walked to his manufactory, a distance of two miles.

The vision of the left eye became clear after a month's residence at the sea-side.

The points that especially demand notice in this case are: the ten weeks' duration of the primary traumatic ophthalmia; the temporary concealment of the foreign body by effused blood; the curative efficiency of the vapour bath, aided by hepatic and intestinal depuration, in the recurrent iritic seizures; neuralgic seizures, so agonising as to tempt the patient to commit suicide; and the inability to lie on the back.

May we not state that prompt surgical interference would have given normal vision, and would have prevented much pain and loss of time? Case XIV will furnish an affirmative reply.

CASE XI. A PIECE OF STEEL, EXTENDING FROM THE CORNEA TO THE IRIS, RETAINED IN THE EYE ONE HUNDRED AND ELEVEN DAYS: REMOVAL OF THE FOREIGN BODY: PERFECT VISION REGAINED. T. S., aged 32, a healthy broad-shouldered man, of a rather phlegmatic temperament, was, while engaged at the Britannia Nail Works of this town in setting a pair of nail-cutters, struck in his left eye by a shave off that instrument, which penetrated the front chamber of the eyeball. On the next morning, he applied for relief at a public institution, and subsequently sought the advice of several surgeons, all of whom counselled non-interference. A gentleman of large experience in such cases assured him "it would rust away"; and another applied a magnet to the cornea, in expectation of withdrawing the foreign body, which was favourably placed for traction.

In three days after the intrusion, the eye became acutely

inflamed, and racked by excruciating pains, which shot through the brain to the back of the head. These pains continued night and day; when in bed, some relief was obtained by kneeling, and burrowing the head in the pillows. For sixteen weeks, less one day, he endured these torments; at the expiration of which time my advice was sought. I collected from him the preceding particulars, also that he had been bled, ptyalised, and kept in a dark room, etc., for the ocular inflammation, under the direction of Mr. F. Jukes, with the best effect as regards the iritis, as will presently appear.

The patient was at this time much reduced in bulk and strength. His left eye presented slight iritis, affecting principally the smaller circle, and external redness; there was no lymph within the pupil; the anterior aqueous chamber, of normal dimensions, was intersected by a small rod of iron, which extended in a direct line from near the middle of the cornea to the outer side of the papillary aperture; the cornea at its point of contact was grey, and a slight nebulous halo surrounded this spot; the aqueous humour did not escape from the corneal wound; in all other respects, the cornea and aqueous epithelium were transparent. I conceived, when viewing the eye obliquely, that the grey spot bulged a little, but I was not sure.

The man having consented to any operation that might be considered expedient, I determined to first attempt the withdrawal of the steel through the cornea, and, if I failed in that, to make a small section of the cornea near its sclerotic border, and extract the foreign body with forceps. The patient being seated in a chair, I stood behind him, and, having fixed the lids and globe with the left hand, with a small pair of forceps in my right, I succeeded in my second attempt in seizing and drawing out the corneal point of the steel, to the great joy of the operative.

All suffering was now at an end. Some mild remedies of the usual kind were prescribed for the iritis. In three days after the little operation, the man superintended his work for the first time since his accident, and in a week was himself hard at work.

At the time I write, the structure and functions of the eyes are perfect; there is no opacity of the cornea, no irregularity of size or form in the pupil.

CASE XII. A PIECE OF STONE RETAINED ON THE FLOOR OF THE ANTERIOR AQUEOUS CHAMBER FIVE YEARS: VISION OF THE EYE TOO INDISTINCT FOR READING, THAT OF THE FELLOW EYE UNAFFECTED. A little Irishman (J. Camel), residing in Green's village, of spare and wiry frame, and about forty years of age, received, while breaking Rowley rag stones on the 18th of May, 1849, an injury to his right eye, by the entrance of a piece of stone through the cornea into the anterior aqueous chamber. In seven days afterwards he applied to me at the Birmingham Eye Infirmary. A flat piece of stone was lying in the centre of the floor of the chamber; its posterior surface was in apposition with the iris. The cornea presented a small cicatrix. The conjunctiva was injected, and there was a circumcorneal zone. The iris was normal, and contracted briskly on sudden exposure to light. The patient complained of pain in the eyeball and forehead, and was affected with slight intolerance of light. He was advised to become an in-patient, and to have the foreign body removed, to which he assented. A delay, however, of about a week, took place, when, the irritation having nearly subsided under the influence of leeches to the temple, calomel, and Dover's powder at bed-time, and perfect rest of the organ, Pat respectfully declined any further interference, and denied himself to visitors. I saw no more of him till eighteen months subsequent to the accident (November 1851), when he declared that he had suffered neither ophthalmia nor other inconvenience, of the truth of which I am not confident, since the iris evinced signs of past inflammation; it was darker and less bright than natural, and the pupil was drawn toward the foreign body which occupied its old situation, and was adherent to the iris by opaque lymph, but not encysted. He stated his vision to be perfect.

It is now (July 1854) five years and two months since

the intrusion of the foreign body. The iris is of normal appearance, but darker than its fellow, which is blue; the pupil, which is slightly oval, contracts freely; its lower margin is in a subdued light, somewhat concealed by an angular point of the stone. The latter appears free of lymph adhesions, except a few minute pedicles at its lower border or base. The stone is wedged between the cornea and iris, the latter being indented by it. Camel says that during the last three months its vision has failed him; letters run one into the other, which with the fellow eye is not so. In other respects he has not suffered any kind of inconvenience.

In this patient the vision of the injured eye, after recovery from the primary ophthalmia, continued good for five years, since which symptoms of amaurosis have appeared. Whether the removal of the foreign body would now check their further progress, or lead to their subsidence, is a point that experience alone can decide.

CASE XIII. A SMALL PIECE OF STEEL IMPACTED IN THE IRIS FOR THE LAST SIXTEEN YEARS: AFTER SUBSIDENCE OF THE PRIMARY TRAUMATIC OPHTHALMIA, THE FUNCTIONS OF THE EYE WERE UNDISTURBED DURING ELEVEN YEARS, WHEN A SUCCESSION OF ATTACKS OF IRITIS OCCURRED: THE EYE IS AT THE PRESENT TIME (1854) PRESBYOPIC, AND SUBJECT TO FREQUENT ATTACKS OF NEURALGIA AND OPHTHALMIA. J. P., forty-five years of age, a stout, healthy, and temperate man, suffered in 1838 an accident to his left eye, while engaged in tool-making, by penetration of a piece of hard steel into the iris. He applied to a public institution; and in three weeks, the attendant ophthalmia having subsided, resumed his work. No attempt was made to extract the foreign body. His vision continued good, and inconvenience was not experienced till eleven years after the accident (1849), when severe headache occurred; and, in November of the same year, he consulted my friend Mr. Swain, his club surgeon (to whom I am indebted for many of these notes), for an iritis of the left eye. The piece of steel was at this time adherent to the iris at the outer side, and a little above the transverse diameter of the pupil. On subsidence of the ophthalmia, Mr. Swain, very wisely as I think, counselled removal of the foreign body through an incision of the cornea, which was, however, overruled in consultation with an eminent ophthalmologist. In the course of the next year, 1850, several attacks of iritis occurred, and, in the intervals, severe neuralgic pains in the eye and temple distracted the patient.

In 1851, iritis, attended with severe neuralgia, again affected the patient during April, May, and June; and in the following October, neuralgic warnings of another similar seizure having been met by a free vesication, inflammation was averted. In December the textures and function of the eye were natural, the pupil contracted freely on sudden exposure to light, and the man was pursuing his work; but errors of diet induced severe pain in the organ.

In the spring of 1852 iritis recurred, on subsidence of which vision was impaired.

July 14, 1854. An opportunity was courteously afforded me by Mr. Clarkson, who has attended J. P. the last two years, of examining the case. I found the piece of steel of the size of a large pin's head, in the situation already described; the pupil was cordiform and tagged at its apex to the foreign body, which was encysted. The iris was pressed slightly backwards by the foreign body; the colour of the former was somewhat lighter than normal; the pupil contracted briskly on exposure to bright light, but did not dilate, from the mechanical cause named, consentaneously with the right one; the eye was presbyopic.

The patient stated that during the last two years he had been liable to neuralgic seizures, followed by ophthalmia, which had recurred about every two months. The accession was generally in the night time, when the eye felt as if it was being torn by instruments, and there was aching pain in the temple; at the end of two hours the eyeball became red and very intolerant of light. Epiphora was not troublesome. In some instances the attack subsided by

morning; more frequently it continued a month. A dose of opium sufficiently powerful to induce stupor considerably mitigated pain, and, in Mr. Clarkson's opinion, shortened the average duration of the attacks; when the sufferings were more than usually intense and the eyeball very red, blistering the left temple and side of the forehead gave much relief.

CASE XIV. A PIECE OF BRASS IMPACTED IN THE IRIS THREE DAYS: EXTRACTION: THE PATIENT RETURNED TO HIS LABOUR TEN DAYS AFTER THE OPERATION. W. F., thirty-six years of age, healthy, rather phlegmatic, engaged as a plumber's brassfounder, while unscrewing a brass screw on the 24th March 1853, a fragment of it flew up and penetrated the right eyeball. On the following day, being a holiday, he drank freely of malt liquor. On the second day of the accident he applied to me, when I noticed a small piece of brass imbedded in the iris near to its nasociliary margin, and a little above the equator of the pupil; the iris, naturally of a medium blue shade, was darker and somewhat less bright than normal, the pupil contracted on sudden exposure to light, but did not dilate to the same extent as that of the corresponding eye, when shaded by the hand; the aperture was also smaller than normal. Conjunctiva injected; some of the muscular arteries could not be emptied by pressure. Rapid movements of the eye were attended by a sense of soreness; there was aching pain in the right temple, but not any oculodinia.

As the patient had been indulging in his cups, it seemed desirable prior to an operation to purge him smartly and to administer sedatives, which was accordingly done; six leeches were applied to the right temple.

Upon the fourth day of the accident the iris had resumed its natural colour, and the external redness had lessened; the patient was put to sleep by chloroform, and a small section of the cornea being accomplished, the foreign body was readily removed. Mr. Geo. Jones kindly assisted me. In ten days afterwards the patient resumed his work. His recovery would have been accelerated had he not declared himself to be an habitually moderate drinker, which led me to deprive him of beer for the first seven days after the operation, whereas his moderation had consisted in the consumption of about two quarts of ale daily. His cure was rapid after an allowance of his accustomed stimulus. At the time I write his vision is perfect in both eyes.

TREATMENT. A foreign body that has entered the anterior aqueous chamber, should be removed through a small section of the cornea as soon as possible after its intrusion. An operation is contraindicated while the eye is inflamed, or the extraneous body concealed by blood. If there should be an open wound in the cornea, and near its margin, the foreign body may be extracted through it, after it has been dilated by the knife to a sufficient length for the withdrawal of the forceps charged with the foreign body. When there is a choice of situation for the incision, it should be made near to the foreign body, about one-twelfth of an inch from the margin of the sclerótica, with a Beer's or Wenzel's cataract knife, care being taken to allow the aqueous humour to escape before the instrument is withdrawn, which will obviate an immediate prolapse of the iris. The length of this incision must have reference to the diameter of the foreign body, and of the instrument to be employed for its removal; also to the manipulatory skill of the operator: it will not need to exceed one-fourth of the circumference of the cornea. The selection of a suitable pair of forceps, and the administration of chloroform, are important. Our object in making the incision one-twelfth of an inch from the margin of the cornea, is the prevention of prolapse of the iris, and of extravasation of blood into the chamber from the wounded conjunctiva.

In the event of blood being extravasated, from the cause mentioned, or from a wound of the iris, in sufficient quantity to conceal the foreign body, the operator will do well, unless experienced in these or analogous cases, to postpone the extraction until its absorption has taken place.

When, after the withdrawal of the foreign body, the iris

prolapses through the wound, its reduction is to be attempted by gently rubbing the cornea, with the palm of the thumb placed over the upper lid, and then suddenly exposing the eye to bright light; if this proceeding fail, chloroformic anæsthesia should be (if not already) induced, and gentle pressure made upon the protruding part with the silver end of a curette, the instrument being carried into the chamber.

The object of the operation having been attained, the lids must be kept closed by strips of soap plaster for three or four days, when a light linen bandage may be substituted. The diet should be nourishing, and easily digestible. If the patient is addicted to intemperance, or aged, alcoholic stimulants will accelerate recovery.

This operation, very simple in the hands of those accustomed to operate for cataract by extraction, has never been, in my experience, followed by other than a favourable result. In no instance has sympathetic disturbance of the opposite eye supervened. In no case has it been needful to "amputate the cornea" in order to remove a foreign body from the anterior chamber. These statements would be quite superfluous, were it not that contrary ones have been put forth, to the great injury of patients, and opprobrium of the surgical art.

A very general agreement exists among British ophthalmic writers of the propriety of the removal of foreign bodies through an incision of the cornea. There is, however, one dissentient, who has expressed himself thus: "I do not think it advisable to remove foreign bodies so situated (viz. in the iris) in general; but when the foreign substance is large, is evidently leading to disorganisation and suppuration of the globe, and is at the same time giving rise to severe pain, their removal becomes quite necessary, and may easily be accomplished by a section of the cornea, etc." The author has omitted to illustrate by any case, either his pathology, or the success of his practice of operating upon eyes on the eve of suppuration. In cases x and xi, recorded by me in this paper, the intruded body was large, and the pain great, but suppurative inflammation of the globe did not occur: nor indeed is there, I believe, a case published, in which such has been the case; consequently, as one of the three conditions that, according to our author, must concur in a case before it will be justifiable to operate, never does happen, his rule practically precludes surgical interference in all cases. It is in cases where either the vitreous body, retina, or choroid has become the seat of the foreign body, and not the iris, that disorganisation and suppuration of the globe may be anticipated.

The primary traumatic iritis incident to the residence of a foreign body in the chamber, does not generally demand exceedingly active treatment. A few leeches—six or eight—to the temple, calomel and opium at night, morning aperients, and the application of an anodyne liniment to the brow for the relief of the circumorbital pain, comprise the principal remedies: rest, a moderated light, and a light nutritious diet, are important adjuvants.

Severe neuralgic pains, and intense intolerance of light, must not betray the surgeon into severe depletive measures. Opium will relieve both of these distressing symptoms. (See note in case x, Sept. 20th.) The recurrent iritic seizures are more easily relieved than the primary one, and require less depletion and mercury. A collyrium of belladonna may always be used with relief and advantage when the iris is inflamed. The patient J. P., case XIII, has of late years suffered from scleritis only, the iris being unaffected; and in him so passive has the inflammation become, that opium in full doses, and blisters to the temple, are his sheet-anchors. If the iris was the seat of inflammation, blisters would aggravate the diseased action; but the attendant neuralgia might be, and indeed often is, relieved by vesication on the forehead and temple.

The practical surgeon will not fail to discover, in the recurrent ophthalmia we have described, a close resemblance to those attacks of iritis or scleritis that sometimes, annually or nearly so, affect persons of a rheumatic diathesis: in each the sthenic type becomes gradually lost; in each

perfect vision is perhaps time after time regained; in each the retina eventually suffers; in both salivation and other depressing measures prolong the ophthalmic disorder.

Birmingham, August 1854.

REPORTS OF SOCIETIES.

EPIDEMIOLOGICAL SOCIETY.

MONDAY, JULY 3RD.

B. G. BABINGTON, M.D., F.R.S., President, in the Chair.

USE OF VEGETABLE AND MINERAL ACIDS IN THE TREATMENT OF EPIDEMIC DISORDERS OF THE BOWELS. BY J. H. TUCKER, ESQ.

The author commenced by alluding to the remarkable but well established fact, that in 1849, the cider districts of Herefordshire, Somersetshire, and part of Devonshire, were to a great extent exempt from the epidemic ravages of cholera, while the disease was raging around. Upon further inquiry, it was ascertained that this exemption was confined a good deal to those individuals who drank cider as a common beverage, and that those who partook of malt liquor occasionally suffered. He also remarked that in some parts of France, and in Normandy more particularly, where cider is the common beverage, cholera is seldom known to exist; and further, that Switzerland was reported to be free from its visitation.

Having adduced these facts in proof of the prophylactic power of cider, the author expressed his opinion that other vegetable acids would be found of service, such as lemon juice, orange juice, and sour wines made from grapes, or even from gooseberries; and as it would be found impossible to supply the whole of London with a sufficient quantity of pure cider, Mr. Tucker suggested that *vinegar* might be found an useful substitute, in case of another outbreak of cholera, provided that it could be obtained in a state of purity. In confirmation of his view of the sanative and medicinal virtues of vinegar, the author quoted Hippocrates, who (*de Naturâ Muliæbri*) employed white vinegar medicinally; Plutarch and Livy, who refer to the use of vinegar by Hannibal in his passage over the Alps, when he is said to have "softened the rocks with fire and vinegar"—an operation which the author facetiously regarded as rather metaphorical than chemical, as the vinegar swallowed by the troops probably sustained their strength, and thus in effect softened the asperities of their rough way. The author also quoted from Roman history the story that "Scipio Africanus is said to have gained a great battle with a few skins of vinegar, the troops refusing to march until the general had obtained a supply". Cæsar was also reported to mention in his *Commentaries* the supply of vinegar to the troops; and Mr. Tucker remarked that the drink of the Romans in all their campaigns was vinegar and water, and, sustained by that beverage, they conquered the world. Other modern authors (Sir John Pringle, Sir Gilbert Blane, and others) were also quoted, in proof of the antiseptic and medicinal properties of vinegar. The author then proceeded to show that acid drinks were not only preventive, but remedial, in epidemic disorders of the bowels. Cases were related, in which not only persons were exempt from attacks of cholera, raging around them, who drank large draughts of cider, but a case which yielded to the diluted juice of some apples. The efficacy of the *mineral acids*, especially the sulphuric, in diarrhoea, and especially in choleraic diarrhoea, was also advocated, by reference to numerous facts and authorities. He also referred to some established facts connected with the spread of epidemic dysentery in the army, and showing the efficacy of vegetable acids in that disease.

In conclusion, Mr. Tucker suggested a necessary caution relative to the use of the wretched and unwholesome substitute for vinegar commonly sold in the London shops.

MONDAY, AUGUST 7TH.

B. G. BABINGTON, M.D., President, in the Chair.

PRACTICAL RESULTS OF QUARANTINE. BY T. SPENCER WELLS, ESQ.

[Mr. Wells's paper is published as an original article at page 83 of the current number.]

Dr. McWILLIAM thought the most remarkable circumstance mentioned by Mr. Wells was the escape of Isola from the contagion by means of a rigorous quarantine. At a previous meeting, Dr. Gavin denied the truth of a statement made by Sir William Pym, to the effect that persons were not usually liable to a second attack of yellow fever. That question had