without delay.

the operation, and we should never delay the removal of the foreign body for one hour longer than is necessary. If the eye is already inflamed, this will be an additional reason for immediate interference, rather than an indication for delaying the operation. Should there be any difficulty in seizing the foreign body, it is advisable to make a larger opening in the cornea, and to excise a portion of the iris, removing it from the eye together with the foreign body.*

Rarely becomes encysted.

Instances have been recorded, and I have myself met with them, in which particles of steel and similar substances have become encysted in the iris, and yet given rise to no irritation; but cases of this description are so rare, and destructive inflammation of the globe of the eye so constant a result of the presence of a foreign body in the iris, that we are not justified in trusting to nature in such cases.

Dilate the pupil in all cases.

In wounds of the iris, whether incised, or resulting from the presence of a foreign body in the eye, it is advisable to dilate the pupil with atropine, before venturing on a prognosis, or any particular line of treatment; because the lens may have been wounded, and the point of injury, which is perhaps covered by the iris, may not be apparent until the pupil is fully dilated. A complication of this kind would, of course, materially affect the prognosis, a traumatic cataract in all probability resulting from the injury to the lens.

DETACHMENT OF IRIS from a blow.

DETACHMENT OF THE IRIS from its ciliary border may be complete, that is, the whole of the iris may be detached; or a mere slit may exist in its ciliary border. An accident of this kind usually occurs from an injury, as for instance from a blow with the fist upon the eye.

Extent of injury concealed by blood.

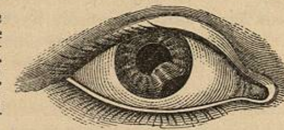
In these cases the nature of the accident may not be detected in the first instance on account of the effusion of blood which takes place into the anterior chamber. It will be necessary, therefore, to be guarded in our prognosis, as it is impossible to determine the extent or nature of the injury, or if it be complicated with detachment of the retina, until the effused blood has become absorbed.

* See cases in point, by F. Horner: *Ophthalmic Review*, vol. i. p. 166.

False pupil formed.

If a portion of the iris has been detached from its ciliary border, as soon as the aqueous becomes clear, we shall notice a false pupil, varying in size according to the extent of the detachment of the iris (*vide* Fig. 28). The part of the pupil corresponding to the detached border of the iris is uninfluenced by the stimulus of light, its nerves and contractile tissue having been torn through at the point of separation of the iris from its ciliary border. In instances where the line of separation is narrow, it often requires a very careful examination of the parts to detect the lesion, and to account for the otherwise inexplicable irregularity and inaction of a portion of the pupil.

FIG. 28.



Sight impaired.

A patient's sight is usually somewhat impaired by an accident of this kind, the irregularity of the pupil interfering with perfect vision; and if the rent in its ciliary border is a large one, a number of extraneous rays of light enter by the artificial pupil, and falling on the retina, produce considerable confusion in the visual image.

Case of total loss of iris.

In a remarkable instance the whole of the iris was removed by Von Graefe; and what is most curious is the fact recorded by Mr. Soelberg Wells, that the patient's vision was as perfect without his iris as with it. Mr. Wells remarks of this case*—"The field of vision of the right eye, in which the iris had been extracted, is normal; the sight most excellent, so that the patient can count fingers at the distance of 120—140 feet, and can read the smallest print. He possesses great power over the dispersed rays, and does not find himself in the least dazzled by the light. And, lastly, to crown all, the accommodative power of this eye, with its *irideremia totalis*, is almost perfect ($\frac{1}{6}$—$\frac{1}{7}$)."

Vision unimpaired.

Treatment nil.

We can do little in the way of treatment, in cases of detachment of the iris, beyond keeping the eye at rest, for the accident is irremediable, so far as the reparation of the injury is concerned.

* *Ophthalmic Hospital Reports*, vol. ii. p. 199.

Laceration of the Pupil.

Laceration of the Pupil.—A few cases of laceration of the pupillary margin of the iris have been recorded, following blows, and unaccompanied by either a wound or external injury to the globe of the eye.* It is difficult to conceive how an accident of this kind can take place from concussion, nevertheless a rent of the pupillary border, and in other cases rupture of the fibres of the iris, have been known to follow it. As the opening in the iris is nearer the axis of vision than in detachment of its ciliary border, the defect of sight is greater, because the rays of light fall on the retina nearer the macula lutea.

Visual disorder greater.

TUMOURS OF THE IRIS.

Cysts of Iris often follow a clot of blood.

Cystic tumours of the Iris are rare, and when met with, as a general rule, follow an injury to the eye, and the formation of a clot of blood in the substance of the iris; but independently of accidents cystic tumours do occasionally grow from the iris. They usually appear as a small transparent vesicle springing from a broadish base attached to the anterior surface of the iris. Mr. Hulke remarks—"An examination of all the cases which I have been able to collect shows: I. That cysts, in relation with the iris projecting into the anterior chamber, originate in two situations, 1, in the iris; and 2, in connexion with the ciliary processes. The first lie between the uveal and the muscular stratum of the iris, and are distinguished by the presence of muscular fibres upon their anterior wall; the second lie behind the iris, and bear the uveal as well as muscular strata on their front. II. It also shows that these cysts are of more than one kind; that there are, 1, delicate membranous cysts, with an epithelial lining and clear limpid contents; 2, thick-walled cysts, with opaque thicker contents (whether these are genetically distinct from 1 we are not yet in a position to determine, but it seems probable that they are so); 3, solid cystic collections of epithelium, wens or dermoid cysts; 4, cysts formed by

Varieties.

* "Injuries of the Eye, Orbit, and Eyelids," by G. Lawson, p. 123. See also M. Wecker's "Maladies des Yeux," p. 399. Case in point, *Ophthalmic Review*, vol. ii. p. 213.

deliquescence in myxomata. III. As regards treatment, puncture, simple or combined with laceration, is so generally unsuccessful, that excision is always preferable. It is evident that the chances of success will be proportionate to the completeness of the excision, and the practicability of this will vary with the size of the cyst and the extent of its connexions, and with its position in or behind the iris."* It is clearly advisable, therefore, to excise the cyst together with the segment of the iris from which it springs, as speedily as possible, otherwise the abnormal growth may excite dangerous irido-choroiditis, or sympathetic disease in the other eye.

Should be excised.

Condylomata may often be seen springing from the iris in cases of parenchymatous inflammation, and I described their appearance when speaking of that affection. Should the condyloma increase to any considerable size, it may, by coming in contact with the cornea, excite keratitis, which no treatment will relieve until the cause of the irritation has been removed.

Condylomata.

The syphilitic history of the case would lead us to a correct diagnosis of the disease; and its treatment is comprised in that already recommended in parenchymatous iritis. There is only one condition of the parts, that I am aware of, which could be mistaken for the disease in question, and that is the presence of neoplastic growths, such as are sometimes observed on the iris in those who suffer from leprosy; but the appearance of the patient, under these circumstances, would at once correct an erroneous impression as to the nature of the disease. It is possible, of course, that a leprous patient may contract syphilis, and therefore suffer from condylomata of the iris, but such cases are rarely met with.

Generally syphilitic; Sometimes leprous.

Medullary Cancer of the iris is occasionally seen. A case of this kind, under Mr. Dixon's care, presented the following characters:—The patient appears to have been a healthy man, twenty-five years of age. It was quite uncertain how long the tumour had been in existence, but when first seen it almost filled the anterior chamber; it was a greyish, jelly-like mass, with opaque points scattered through it, and was

Cancer of Iris. Case.

* *Ophthalmic Hospital Reports*, vol. vi. p. 16.

abundantly supplied with minute bloodvessels; the cornea was transparent, and until the mass covered the pupil the man could see perfectly.* Mr. Dixon removed the eyeball, and the patient made a rapid recovery; and up to the time of the publication of the report no return of the disease had occurred.

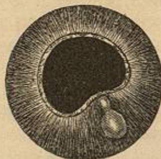
Successful removal.

Another case of a very similar nature, is detailed in the same number of the Ophthalmic Reports, by Mr. Cowell. But cancer commencing in the iris is a comparatively rare affection; and malignant disease of the internal tunics of the eye usually finds its nidus in the choroid, and gradually invades the other structures contained within the eyeball.

Cysticercus of Iris.

Cysticerci of the Iris are occasionally met with; Fig. 29 is a copy of a drawing from one made by Mr. Teale, jun., showing the position of a cysticercus attached to the iris, which he removed, together with a portion of the iris, by an iridectomy. The eye, prior to the operation, presented the following appearances:—On the surface of the lower part of the iris was seen an opaque body, constricted in the middle, and rather larger than a hemp-seed, which was evidently causing some distress to the eye. The conjunctiva was slightly injected; the cornea was bright, but dotted on its posterior surface with minute spots, as in corneo-iritis; the iris was active, except at the situation of the white body, near which it was adherent to the capsule of the lens; tension normal. Reading No. 16, Jaeger.†

Fig. 29.



Appearance.

In instances of this kind the plan of treatment adopted by Mr. Teale possesses considerable advantages over any other, the cysticercus being removed from the eye, together with the portion of the iris to which it was attached, by an iridectomy.

Removal by iridectomy.

Leprous affections of the Iris are extremely common among persons suffering from leprosy—in fact, in cases of this disease of long standing, it is rare to

* *Ophthalmic Hospital Reports*, vol. v. p. 230.
† *Idem*, vol. v. p. 320.

find the iris and cornea healthy. I have observed that as a general rule the cornea is affected before the iris in these cases, and that plastic iritis is more common than the parenchymatous form of disease. Leprous tubers form on the iris as they do on the cornea, and especially on the conjunctiva, *vide* page 293.

FUNCTIONAL DISEASES OF THE IRIS.

Mydriasis.

Mydriasis is an abnormal dilatation of the pupil, occurring independently of disease of the deeper structures of the eye; so that, although the pupil does not contract on exposure to light, and the patient suffers from impairment of vision, in consequence of the excess of light admitted into the eye, still this defect is remedied by placing a diaphragm, with a small hole drilled through it, in front of the eye. The outer rays of the cone of light impinging on the retina being cut off, the defective vision is in great part corrected; and the patient, while looking through the hole in the diaphragm, sees well. This contrivance will not, of course, overcome defects due to loss of accommodation, depending on causes similar to those which induce the mydriasis. The same result may be attained by causing the pupil to contract by the application of Calabar bean to the eye. The above definition of *mydriasis*, therefore, excludes all cases of dilatation of the pupil depending on deep-seated disease of the eye.

Simple dilatation of pupil.

Mydriasis may be confined to one eye, or both eyes may be affected. The cause of the dilatation of the pupil may be the suspension of the functions of the third nerve, the circular fibres of the iris being thus paralysed, for when this nerve is divided the pupil remains dilated. The same effect may be induced by irritation of the cervical branches of the sympathetic, which are distributed to the dilatator pupillæ: this muscle being thrown into action, the pupil dilates.*

Causes: paralysis of third nerve.

Irritation of sympathetic.

The Treatment must evidently depend on the nature of the disease. In some few instances it appears to arise from reflex action, excited by the presence of a foreign body on the cornea or conjunctiva; or it may be that some more distant branch of the sentient nerve

Treatment.

* J. Bell on the Pathology of Certain Forms of Dilated Pupil. *Edin. Med. Journal*, No. X., p. 917.