

curvature, and the formation of a leucoma at the part of the cornea most affected. It may be necessary to displace the pupil subsequently by means of iridectomy.\* With reference to operations of this kind, it is almost unnecessary to remark that they should only be practised in extreme cases of conical cornea.

PELLUCID  
PROTRU-  
SION OF  
CORNEA

SPHERICAL PELLUCID PROTRUSION OF THE CORNEA, OR Dropsy of the Aqueous chamber, as it was formerly called, is a very insidious disease, usually following an attack of acute granular conjunctivitis, or keratitis; the toughness of the fibrous structure of the cornea, and therefore its power of resisting the intra-ocular pressure, having been diminished by disease, it slowly yields to the distending force, so as ultimately to bulge forward to a greater or less extent. The pathological condition we are now considering differs essentially from conical cornea in being preceded by some acute affection of, or injury to, the parts; sometimes it arises from deep-seated disease which has produced augmented intra-ocular pressure, and at the same time defective innervation of the cornea by involving the ciliary nerves. In some rare instances it appears to be a congenital affection: I know of a family at present, in which it exists to a most distressing extent, both sons and daughters being equally affected.

follows  
some acute  
affection.

Sometimes  
congenital.

Sclerotic  
involved.

In most cases of pellucid protrusion of the cornea, the sclerotic is also involved, the whole front of the globe bulging forwards; the breadth as well as the convexity of the swelling is thus augmented to such an extent, that it is often impossible for the lids to close over it. Ultimately the cornea may become opaque, and will probably be destroyed by progressive ulceration.

Iris af-  
fected.

In the early stages of this disease the functions of the iris are often impaired; it responds but slowly to the stimulus of light, and synechia subsequently forms between it and the lens. The patient seldom suffers from pain during the progress of this affection; but as the cornea becomes more prominent, he complains of increasing myopia, and experiences a sensation of distension in the orbit, particularly when he attempts to

Myopia.

\* "The Practitioner," vol. ii. p. 176. Mr. R. B. Carter on "Conical Cornea," *Lancet*, February 6th, 1869.

rotate the eye from one side to the other, the enlarged globe turning with difficulty in its socket; and in addition we shall have glaucomatous changes going on in the eye.

*Treatment.*—Cases of spherical protrusion of the cornea are almost hopeless ones. In the early stages of the disease, we may endeavour to stay its progress by tonics and similar means, hoping to improve the nutritive powers of the patient, and thus stop the local degeneration of the cornea and parts around it. Treatment.  
Most un-  
satisfac-  
tory.

Iridectomy would be indicated in a rapidly advancing case; but I fear it would be attended with little, if any, permanent advantage. Repeated paracentesis of the cornea has been recommended, so as to keep the anterior chamber comparatively empty, and thus diminish the intra-ocular pressure. Iridectomy  
or para-  
centesis.

If we perform either paracentesis of the cornea, or iridectomy, in instances of this kind, it is advisable to draw off the aqueous slowly, so as to allow of a gradual diminution of the intra-ocular pressure; otherwise, the bloodvessels of the choroid, being most probably diseased, may suddenly give way, and destructive hæmorrhage occur, necessitating the excision of the globe. By drawing off the aqueous very slowly, we diminish this risk, the intra-ocular circulation adapting itself by degrees to the gradually diminishing tension of the eyeball. Draw off  
aqueous  
slowly.

Should the disease have advanced so far as to interfere with the action of the lids, the sight of the eye being destroyed, it will be better to excise the anterior half of the globe. This will be the more desirable if the other eye is not affected, which we may thus hope to save from sympathetic irritation. Abscession.

#### WOUNDS AND INJURIES OF THE CORNEA.

INJURIES OF THE CORNEA, as Mr. Cooper\* remarks, present themselves of every size, from the minute puncture of the surgeon's needle, which does not even cause the escape of the aqueous humour, to cuts and lacerations the most extensive; but there is no puncture or scratch, however slight, which is devoid of risk; INJURIES  
OF COR-  
NEA.

\* W. White Cooper on "Wounds and Injuries of the Eye," p. 98.

and no wound, within certain limits, from which the eye may not recover under favourable circumstances. The earlier the age the greater are the restorative powers, and if the patient is healthy, the less disposed is the eye to take on inflammation; even in advanced age, the recovery from operations is often surprising.

**ABRASION.**

A common accident.

Very painful.

Photophobia.

Appearance of the part.

Quickly repaired in health.

May suppurate.

*Treatment.*Oil.  
Belladonna.

Rest.

ABRASION OF THE CORNEA is by no means an uncommon accident; any foreign body, striking the surface of the cornea, may scratch off a portion of its epithelium. These corneal abrasions are often followed by acute pain in the eye, and sometimes, in neglected cases, by destructive inflammation. The patient usually comes to us with the eye firmly closed, suffering from considerable pain, lachrymation, and photophobia, and complaining of a sensation as if a foreign body were lodged in the eye.

The moment the lids are opened a gush of tears takes place from the eye, and the palpebral and orbital portions of the conjunctiva will be found more or less congested. If the cornea be examined by oblique light, we may notice that the abraded portion has a glistening appearance, and is surrounded by a slight ridge, occasioned by the free margin of epithelial cells bordering the injured part. The outline of the excoriation is generally very irregular, and its size will of course vary according to the extent and nature of the injury.

A simple abrasion of the cornea, if it occurs in a healthy person, and is properly treated, generally heals in the course of three or four days; the epithelium is re-formed, and the parts assume their normal condition. But if the patient be out of health at the time of the injury, or if the case be carelessly treated, simple abrasion may induce troublesome keratitis even leading to ulceration or abscess of the cornea.

*Treatment.*—In a case of abrasion of the surface of the cornea, it is well to open the lids carefully and drop some olive oil into the eye, then smear the extract of belladonna over the lids, and lastly apply a pad of cotton-wool and a bandage, so as to keep the parts at rest for twenty-four hours. If after this the patient continues to suffer from pain, it will be advisable to drop a solution of atropine into the eye, and order poppy-head fomentations to be employed frequently, the pad and bandage being applied in the interim.

After an accident of this kind, if the irritation has run on to inflammation or ulceration, we shall have to treat the case upon precisely the same principles as those I have already laid down, when discussing the subjects of keratitis and ulceration of the cornea. In abrasion of the cornea no irritant lotion should on any account be used; rest is the chief means we must employ, and if this be attained, in most cases the epithelial cells will very soon be reproduced, and the functions of the eye restored.

CONTUSIONS OF THE CORNEA resulting from direct injury are uncommon, on account of the rapidity with which the lids close and prevent the impact of a foreign body upon the eye. Nevertheless, cases of contusion of the cornea do occur, and in old and sickly people are at times followed by rapidly-advancing destructive changes in the part, independently of complications, such as detachment of the retina or choroid, which are likely to take place under the same circumstances. After contusion, the cornea may rapidly assume a hazy appearance, the patient suffering great pain in the eye, and the conjunctiva becomes deeply congested; in unfavourable cases, these changes may run on into suppurative keratitis, in spite of our best efforts to prevent it; and if necrosis of the cornea commences under these circumstances, it will almost certainly terminate in the entire destruction of the eye.

The cornea itself is seldom ruptured from a blow, although the sclerotic near the margin of the cornea may be torn open by direct violence.\*

PENETRATING WOUNDS OF THE CORNEA, provided they are not complicated with prolapse of the iris, will, if their edges fall into accurate apposition, usually heal very rapidly. On the other hand, wounds with jagged edges, or those accompanied with loss of substance, heal with difficulty; and as a general rule, an opaque cicatrix remains to mark their position on the cornea, and materially interferes with the patient's sight if it be situated in the axis of vision.

The complication which principally interferes with the healing of wounds of the cornea is a prolapse of the iris, preventing the apposition of the edges of the

CONTUSIONS rare.

May be followed by sup-puration.

PENE-TRATING WOUNDS. Heal well if edges fit.

Prolapse of iris may occur.

\* W. White Cooper on "Wounds and Injuries of the Eye," p. 192.

wound, and of frequently involving the iris to a greater or less extent in pathological change. Unfortunately, in extensive wounds of the cornea, it is often impossible to thrust back and retain the iris in the anterior chamber; if it be thus replaced, the aqueous, accumulating, is apt to burst open the edges of the wound, and as the fluid escapes, the elastic vitreous pushes the lens and iris forwards against the cornea, and a further prolapse occurs.

*Treatment.*

*Treatment.*—Theoretically we might suppose, that to dilate the pupil with atropine, or to contract it with the Calabar bean, so as to drag the iris away from the wound in the cornea, would be a rational and effective plan of treatment. Unfortunately, the iris will not dilate under the influence of mydriatics, however powerful they may be, if the anterior chamber is empty, and the iris compressed between the cornea and the lens. Atropine, therefore, although it should always be employed, is not often of much use in extensive wounds of the cornea; in small ones it may be useful, as it is possible that the pupil may then be made to dilate, and the edges of the wound in the cornea falling into apposition, the aqueous is retained, and the full effects of the drug may then be induced so as to draw and keep the iris away from the rent in the cornea.

In large wounds atropine inert.

Excise a recent prolapse.

Let us suppose that a portion of the iris protrudes between the edges of a *large* wound of the cornea: if the case is a recent one, it is advisable to excise the protruding iris with a pair of scissors, and then, with a spatula, gently to disengage any of its fibrous structure that may remain entangled in the edges of the wound, so as to enable the latter to fall into accurate apposition. Atropine must then be instilled into the eye, and a compress and bandage carefully adjusted over the closed lids; in this way we may hope to prevent any further prolapse. In old-standing cases it is useless attempting this plan of treatment, as the iris will have become so completely united to the cicatricial tissue of the wound, as to render its disengagement an impossibility.

Apply atropine and compress.

In instances, however, of wounds of the cornea not complicated with prolapse of the iris, a solution of opium should be dropped into the eye, three or four times a day; it tends to soothe the irritation, and, to-

gether with a carefully applied pad and bandage, keeps the eye at perfect rest—a matter of the greatest importance in cases of this kind. Should there be pain or irritation, the eye may be well fomented with a decoction of poppy-heads; and one or two full doses of opium administered. If, in spite of this, the pain in the eye continues, a few leeches applied to the temple will often give relief.

In all cases, rest, both of body and mind, is very necessary for the injured eye; and in simple wounds of the cornea, when combined with a little patience, may be all that is required. Among sensitive subjects we may add to this treatment a few drops of liq. opii sed. and infusion of bark, to be taken three or four times a day.

Rest in all cases.

In severe wounds of the cornea, whether they be contused or incised, we should always be prepared to find that detachment of the retina, or some such serious complication, has occurred in the deeper structures of the eye.

Deeper complication.

If the wound in the cornea is a *small and recent* one, and a nodule only of iris protrudes through it, we may be able to return it into the anterior chamber.\* Under these circumstances it will be well to puncture the prolapsed iris with a broad needle; we thereby relieve any slight congestion of its protruding vessels, and allow the aqueous to escape from behind it—both important points to be attained; atropine must then be applied to the eye, and a pad and bandage carefully adjusted. We may hope that by these means the wound in the cornea will heal, and the iris be retained in its normal position.

In small, recent wounds, return the iris.

For the reasons already stated, we cannot expect any success from this proceeding in large wounds of the cornea, where a considerable extent of the iris is prolapsed; and even if we excise the prolapsed iris, as above directed, there is always a risk that the wound in healing will retain a portion of the iris in the cicatricial tissue, which may be the means of setting up sympathetic irritation in the sound eye—a disaster against which the surgeon can hardly be too much on his guard. The method of treatment which is most

Iridectomy preferable to excision.

\* W. White Cooper on "Injuries of the Eye," p. 107.

generally applicable in these cases, is to perform an iridectomy, removing all the protruded portion of the iris, and thus preventing the chance of a further prolapse, or the ill consequences arising from the iris becoming involved in the cicatrix. But in performing an iridectomy under these circumstances, we must bear in mind the fact, that there is no anterior chamber, the lens being thrust against the posterior surface of the cornea; to make an iridectomy, therefore, the patient must be placed under chloroform so as to relax the muscles, no stop speculum can be used, and the section in the cornea must be performed with a very narrow-bladed knife, which can be made to transfix the margin of the cornea only, thus keeping clear of the lens.

FOREIGN BODIES

cause much irritation.

Easily removed if superficial.

Stains may be left.

**FOREIGN BODIES IN THE CORNEA.**—It frequently happens that particles of dust, bits of coal, straw, and such like substances find their way into the eye, and becoming fixed in the epithelial layers of the cornea, excite considerable irritation and pain, intolerance of light, and profuse lachrymation. There is generally but little difficulty in detecting the presence of a foreign body on the cornea, especially if the part be examined by the lateral method of illumination; and the sooner an offending particle is removed from this situation the better, for the patient by constantly rubbing at the lid, is apt to drive the offending particle deeper into the cornea, and it may then give rise to severe inflammation of the eye.

When consulted in cases of this kind, the surgeon should seat his patient in front of a good light, and standing behind him, with the aid of an assistant, he should keep the eyelids wide open, the patient being at the same time directed to look steadily forwards; with a small spud or cataract needle he may then pick the offending particle off the cornea. If it happens to have been a little bit of iron, or coal, or in fact any substance likely to stain the cornea, although the particle is detached, the discoloration may remain, and we should not attempt its removal; it will wear away in the course of a few days, as new epithelial cells are formed.

It often happens, in cases of this kind, that before we see the patient, the foreign substance has been lodged in the eye for some days, and has set up so much irritation that it is utterly impossible for the patient to hold his eye steady for an instant, in order

that the surgeon may remove it. Under these circumstances, it is well to allow the patient to inhale a little chloroform or æther, and the operation may then be completed without any difficulty. If there should be any objection to chloroform, better apply a stop speculum to the eye, and having fixed the eyeball with a pair of forceps, we can command the eye and quickly effect our object. After the removal of the foreign particle from the cornea, a few drops of castor-oil may be dropped into the eye, and the lids kept closed for twenty-four hours with a pad and bandage.

Apply oil, pad and bandage.

**Cases of Impaction.**—The foreign body may, however, strike the cornea with sufficient force to be driven deeply into the laminated tissue, and it then gives rise to the most severe irritation, and it may be, inflammation of the eye. The hyper-action thus induced may become localized around the offending particle, and suppuration taking place, it is gradually loosened from its position by the disintegration of the surrounding tissue, and so cast out of the eye. An ulcer thus formed usually heals up tolerably quickly, a small nebulous spot alone remaining to indicate the position the foreign body occupied.

If deep, may escape by suppuration,

In other cases no such localization of the inflammation occurs around the offending particle, but spreading from the seat of injury, it gradually involves the whole cornea, and ultimately the deeper tissues of the eye, terminating in general inflammation of the globe.

or cause an abscess.

When called to attend a case where a foreign body has become impacted in the cornea, our first duty is obviously to remove it as soon as possible. If the eye is painful and irritable, it will be advisable to administer chloroform; and the point of a cataract needle, or spatula, being inserted beneath the foreign body, it is to be lifted from its bed. It is surprising how firmly particles of iron or dust may become wedged into the laminated tissue, and without the aid of chloroform, it often requires the greatest patience on the part of both surgeon and patient to dislodge them. After removal, the eyelids must be kept closed for a day or two with a pad and bandage.

Remove at once with needle.

Often firmly fixed.

If the foreign body has given rise to abscess or suppuration of the cornea, the case must be treated upon

the principles already laid down with reference to these affections (p. 254).

Seldom  
become  
encysted.

It does not often happen that foreign bodies become encysted in the cornea, but occasionally we meet with instances of the kind. Thus, a grain of gunpowder, or some such substance, becomes imbedded in the cornea, and probably gives rise to some slight irritation in the first instance; this gradually subsides, and the particle remains encysted, causing no further inconvenience. Under these circumstances it would hardly be wise to attempt its removal; but these are exceptional cases, and by no means invalidate the general rule, that a foreign body should be extracted from the cornea as soon as possible.

Perforation  
of cornea.

*Cases of Perforation.*—We sometimes meet with instances in which a chip of steel, or other hard substance, has been driven against the cornea with sufficient force to perforate it, its inner extremity wounding, perhaps, the iris and lens. It is upon a consideration of the size and position of the particle, and the complications to which it may give rise, that our prognosis and treatment must be based. If the foreign body is a large one, it follows as a general rule, that it will excite much more irritation and inflammation in the eye than a smaller one would do. So again with regard to its position—if in the axis of vision it will almost certainly injure the cornea, to such an extent as to interfere with the subsequent perfection of vision.

Wounds of  
iris or lens.

Prognosis  
from size  
and posi-  
tion.

From escape  
of aqueous.

So far the features of such a case are sufficiently obvious; but it requires a certain amount of experience, and a careful study of the parts, to determine if a foreign body, which has perforated the cornea towards its circumference, has wounded the iris or lens. In most cases where the cornea is thus transfixed, the aqueous escapes, and the iris and lens are thrust against the inner extremity of the foreign body, and thus placed in imminent peril.

Examine  
under chlo-  
roform

by trans-  
mitted  
light.

The intense pain, intolerance of light, and lachrymation to which these more serious injuries of the cornea give rise, render it necessary to administer chloroform before making our examination, in order that we may be enabled to inspect the parts thoroughly, as well as to assist us in removing the foreign body. The lids having been separated we must examine the seat of the injury by transmitted light; the position and re-

lations of the foreign body are thus to be carefully studied. If the iris is in its normal position, being well away from the cornea, it indicates the fact that the aqueous humour still fills the anterior chamber, and that the inner extremity of the foreign body, unless it be of some considerable length, may not have wounded the iris or lens. Under these circumstances the case will be a comparatively simple one, provided no deep-seated inflammation of the eye has been excited. On the other hand, we may discover or suspect, from the escape of aqueous or the depth of the penetration, that the iris or lens has been wounded. If the iris has suffered, the case may be complicated by iritis; and if the capsule of the lens has been injured, a traumatic cataract will add still further to the difficulties we shall have to contend with.

Supposing, however, that both the iris and lens have escaped injury; having the patient still under the influence of chloroform, we may generally lay hold of the foreign body with a pair of forceps, and remove it from the eye without difficulty.

If simple,  
remove  
with for-  
ceps.

But if from the action of the eyelids, or the patient's endeavours to rub the substance out of the eye, he has driven its outer extremity inwards, and flush with the cornea, or it may be deeply into its laminated tissue, it will then be impossible to take hold of it with a pair of forceps, and any forcible attempts to do so would probably drive it completely into the anterior chamber. It is advisable, under these circumstances, to enlarge the wound in the cornea, and then seize hold of the foreign body and remove it; it has been recommended in cases of this description to pass a broad needle through the margin of the cornea, the flat blade of the instrument being inserted beneath the inner extremity of the foreign body; the latter may thus be pushed outwards, till its projecting end can be taken hold of with a pair of forceps, and extracted from the eye.

If deep,  
employ a  
needle.

A solution of atropine should subsequently be dropped into the eye, three or four times a day, so as, if possible, to keep the iris away from the wound in the cornea, and a pad and bandage should be carefully applied. If the eye is much inflamed, cold compresses may with advantage be used, and opium must be administered internally, so as to allay the irritation in the

Atropine.  
Pad and  
bandage.

part. Leeches will be necessary if the inflammation runs high.

If on examining the eye we find the foreign body has wounded the iris or lens, but can still be withdrawn from the cornea, we shall, of course, lose no time in removing it; but if it has fairly passed through the cornea, and fallen down into the lower part of the anterior chamber, or is seen sticking in the iris or lens, we can no longer hope to seize it with the forceps; having once passed through the cornea the elastic lamina closes over it, and defeats all our attempts to get at it in this way, and a different method must be employed. The management of these cases will be found described under the head of wounds of the iris and lens, the corneal injury being a matter of very secondary importance.

If in anterior chamber, use other means.

**ARCUS SENILIS.**  
SENILE DEGENERATION OF THE CORNEA.—This condition of the cornea is characterized by the presence of the *arcus senilis* or white margin, which Mr. Canton describes as follows:—"The arcus senilis, if closely examined, will be found to be composed of two parts, the outer having a greyish white, or dusky tint, the inner one being milky in colour. These are separated from each other by a clear, unaffected line of cornea, and through this the iris can be distinctly seen."\*

Appearance of.

Progress.

This alteration in the margin of the cornea usually commences in its upper section, and in both eyes at the same time; subsequently the lower portion is similarly affected, so that the eye then presents two white crescents, an upper and a lower one; they gradually advance, and ultimately coalesce, and the cornea is then surrounded by a whitish band as above described. This band usually extends only a short distance from the margin of the cornea, but in some instances it encroaches on the more central parts, and may involve a very considerable portion of the cornea, but such cases are rare.

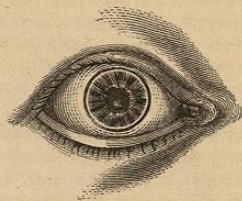
This formation is not to be confounded with the grey line which corresponds to the border of the sclerotic,

\*E. Canton on "The Arcus Senilis, or Fatty Degeneration of the Cornea," p. 6.

where it is bevelled off to overlap the cornea: the true arcus senilis presents precisely the appearances described by Mr. Canton and depends upon fatty degeneration of the cornea, its transparent structure being converted into a semi-opaque band, of the extent and configuration depicted in Fig. 27.

Due to fatty degeneration,

FIG. 27.



from age

As a general rule, the arcus does not appear before a man has reached the age of forty-five or fifty, but it may come on in younger people; when it does so, it may be taken

as an indication of a constitutional tendency to fatty degeneration of the tissues. There can be no doubt that the arcus senilis is hereditary; that is, the gouty or other diathesis upon which it depends passes from parent to child, and with it the tendency to early fatty degeneration of the cornea, the muscular tissue of the heart, and other organs of the body.

or hereditary tendency.

I am not aware of a single instance in which this disease has advanced so far towards the centre of the cornea as to interfere with the perfection of vision. I cannot say that in operating for cataract, the presence of an arcus senilis influences me in the selection of one or other of the various modes of removing the lens; I have frequently performed the flap extraction with the most favourable results, although an extensive arcus senilis has been present.

Does not interfere with vision, or operations.

Instances have been recorded of an arcus senilis disappearing under a course of treatment calculated to increase the vigour of mind and body, among those whose constitutions have been impaired from overwork, ill-health, and other depressing influences.

**LEPROUS AFFECTIONS OF THE CORNEA.**—Among the natives of India, and in fact among all classes affected with leprosy, it often happens that both corneas become nebulous, the opacity commencing at the extreme margin of the cornea and extending year by year towards the axis of vision: vessels may from an early stage of the disease be seen protruding from the sub-

conjunctival zone into the cornea, and from time to time these vessels become much congested, the hyperæmia lasts for a month or two and then subsides; but after each attack of this kind the opacity of the cornea increases both in extent and density, and so the patient's sight is slowly but surely lost for all practical purposes.\* Changes in the transparency of the cornea such as I have above described, are due to the growth of leprous elements in the tissue of the cornea, and consequently we can only hope to influence the condition of the eye by acting on the primary cause of the disease. I have seen so many leprous patients improve under a long continued course of tonics, combined with arsenic, change of climate, and a generous dietary, that I am by no means disposed to abandon cases of leprous opacity of the cornea to their fate. We cannot cure the disease, but I am persuaded we can often stop its progress for years, if not for life, and thus preserve the eye among other organs of the body from destruction.

*Leprous tubers of the cornea* are seldom met with unless similar growths are seen springing from the iris. They commence as small pale elevations situated on the margin of the cornea; as the little tuber grows it becomes vascular, and gradually extends itself over the surface of the cornea. Both eyes are, as a rule, attacked, and the tubers are placed symmetrically on corresponding spots of the cornea. The tubers take years to grow, but nevertheless they surely and gradually increase in size until they may entirely cover the cornea. As far as my experience goes treatment is of little avail in this form of leprosy; an eye once affected by tuberos growths will, in spite of all we can do, gradually be destroyed. Nor is it of any advantage to excise these leprous tubers—they are certain to grow again, even if the base of the excised tuber is freely attacked with chloride of lime. Leprous tuber of the iris and cornea is, without exception, one of the least hopeful affections of the eye we have to deal with; the only consolation in cases of the kind is, that the progress of the malady is a very protracted one.

\* Some years since, I sent a patient suffering from leprous disease of the cornea to Mr. J. Hutchinson, and from this patient Plate XXIX. was drawn of the series of Chromolithographs of Diseases of the Skin, published by the New Sydenham Society.

## CHAPTER IX.

## DISEASES OF THE IRIS.

*Hyperæmia—Plastic, serous, parenchymatous Iritis—Treatment—Corelysis in Synechia—Traumatic Iritis—Wounds of the iris—Detachment—Tumours—Mydriasis—Myosis—Tremulous iris—Hippus—Artificial pupil—Excision of iris—Iridesis—Iridectomy—Changes in the aqueous—Foreign bodies in the anterior chamber—Irido-choroiditis.*

## HYPERÆMIA AND INFLAMMATION.

In commencing the consideration of the diseases of the iris, it may be well briefly to recall the different elements of its healthy structure, which may severally become the subjects of pathological change.

The colour of the iris, depending as it does upon the amount and tint of the particles contained in its pigment cells, naturally varies in different individuals. As a general rule, the irides are of the same colour, but we occasionally meet with instances of a congenital difference in this respect, although they may be otherwise perfectly healthy.

Whatever the colour of the healthy iris, it has a brilliant, shining, fibrous aspect, and any alterations in its textural character are symptomatic of disease, although the change may be so slight, that it can only be appreciated by comparing the diseased with the healthy eye.

The state of the pupil, again, is an important element for consideration in diseases of the iris and deeper structures. In the healthy eye the surfaces of the iris and its pupillary margin are quite free in the aqueous humour; the pupil has a circular form and a wide range of motion, quickly responding to every change in the degree of illumination (see p. 18); but it frequently happens that, from inflammatory or other causes, adhesions form among the fibres of the iris, or

Colour of healthy iris.

Its texture.

Form and mobility of pupil.