

patient's cornea once a day, until the haziness and vascularity covering it have disappeared. I think calomel applied in this way is preferable to the red precipitate ointment, but in the case of irritable nervous children the latter application may perhaps be more easily managed. The ointment should be applied once a day; the lower lid being everted, a small piece of the ointment is to be deposited on its surface, and the eye then kept closed for a few minutes, the lid may then be again everted and the remains of the ointment wiped from its surface by means of a bit of soft rag.

Dark room
by day.

Exercise in
dusk;

Or pad and
bandage.

The patient must be kept in a dark room during the daytime, but exercise should be taken morning and evening, and in fact every means employed to improve his general health. If he can wear a compress and bandage over his eyes, without exciting increased uneasiness, it is advisable for him to do so, as the light is thus shut out from the retina, and the patient is moreover by aid of the compress frequently enabled to move about, and enjoy the fresh air and society of his friends, in place of the solitude of a dark room. With children it is difficult to keep the pad and bandage constantly applied, but, fortunately, their natural buoyancy of spirits overcomes the depressing influence of darkness, and they will bear confinement far better than adults.

Applications
to the skin.

When abrasion or ulceration of the skin at the corner of the eye exists, the part should be smeared over with the tannate of glycerine, or one part of carbolic acid to forty of cod-liver oil; but above all things avoid washing the part with water, and keep it protected from air and dust, the skin being smeared over with one of the above preparations, or with the benzoated oxide of zinc ointment, and then covered with a light bandage.

Causes.

Causes.—The form of pustular conjunctivitis, which attacks the orbital conjunctiva alone, sometimes occurs without any apparent cause; but in the majority of cases the health of the patient will be found to be somewhat impaired. When the cornea is the seat of the disease people say it is frequently associated with a scrofulous diathesis—so much so, that this form of pustular conjunctivitis has been described as scrofulous

Impaired
health.

keratitis.* In very many instances, however, no trace of scrofula is to be detected; nevertheless, I freely admit, that if the word unhealthy is substituted for scrofulous, I coincide in the above opinion, and there can be no doubt that scanty and unwholesome food, want of light and air, and defective hygienic conditions generally, are most influential in developing this disease among the children of the poor. But we must bear in mind the fact that herpes of the cornea may be induced by various sources of irritation applied to the ciliary nerves, either directly or through other branches of the fifth nerve. We may thus explain the occurrence of the disease in instances of eczema or other cutaneous affections of the cheeks, or nasal mucous membrane.

Scrofula
doubtful.

EXANTHEMATOUS CONJUNCTIVITIS.—In concluding the subject of conjunctivitis, I may make a few remarks upon the exanthematous form of the disease. In the case of measles and scarlet fever, very little need be said, for in the majority of instances the conjunctivitis disappears as the disease recedes, and no special treatment is required. Should any complication occur, such as ulceration of the cornea, a reference may be made to the appropriate heading in the following chapter, and it will be unnecessary to discuss the subject here. As a general rule, poppy-head fomentations will allay the irritation which sometimes exists, and any transient intolerance of light which may occur is a symptom of no consequence, and can only necessitate the patient's being kept in a dark room for a few days. Astringents, such as alum and sulphate of zinc, do more harm than good, as a general rule, if applied to the conjunctiva; in fact, a soothing plan of treatment must be employed, and as the primary disease leaves the system, the conjunctiva will rapidly return to its normal condition.

EXANTHE-
MATOUS
CONJUNC-
TIVITIS.
In measles
and scarlet-
fever no
special
treatment.

In the case of variola, especially in parts of the world to which the blessings conferred by vaccination have not as yet extended, the destruction done to the organs of vision by this disease is very terrible. Pro-

In variola.

* The unhealthy sores about the face and ears, and the consequent enlargement of the glands of the neck, which often accompany this complaint, have no doubt mainly suggested the designation.

bably more natives of India are rendered blind from this than any other cause.

Ulceration
of cornea.

During
secondary
fever.

It does not appear that pustules form on the cornea during the eruptive stages of the disease;* but ulceration and rapid destruction of its tissue are very apt to occur during the stage of secondary fever. This is an important fact in a practical point of view, because it hence appears less necessary to attend to the state of the eyes when the lids are intensely swollen, as they usually are in the irruptive stage of the affection, than subsequently, when the swelling has gone down, and the patient is left in a weak and exhausted condition. The eyes must then be carefully looked to, and any haziness or opacity of the cornea should be a source of anxiety to the practitioner, for it is extraordinary how rapidly destructive changes progress under these circumstances: the corneal tissue is often broken down and destroyed in the course of a few days, prolapse of the iris following, and too often the complete destruction of the eye.

Often very
destructive.

Treatment.

Treatment.—As a general rule, we must trust more to a tonic plan of treatment than to local means. The patient's strength should be supported by every device at our command; his eyes must be kept most scrupulously clean, and the margin of the lids smeared over with sweet oil or fresh glycerine at bedtime, to prevent their sticking together. A strong solution of atropine should be dropped into the eye every morning, so as to keep the pupil well dilated, especially if the cornea is already ulcerated. Should the destructive process appear to be advancing in spite of these precautions, we must puncture the cornea and allow the aqueous to escape, so as to lessen the tension of the eyeball; and in some cases an iridectomy, either with or without extraction of the lens, must be resorted to, as will be explained in the next chapter under the head of ulceration of the cornea.

Support
strength.

Cleanliness.

Atropine.

Evacuation
of aqueous.

XEROPH-
THALMIA.

XEROPHTHALMIA is a very uncommon form of disease, in which the glands of the conjunctiva lose their function, and cease to secrete sufficient fluid to lubricate the surface of the mucous membrane.

* Article by Mr. Marson, Reynolds' "System of Medicine," vol. i. p. 444.

The conjunctiva acquires a shrivelled, skin-like (cuticular) character; the cornea loses its transparency, and vision thus becomes seriously impaired. Xerophthalmia usually arises from long-continued irritation; such as that produced by granular conjunctivitis, or from the action of foreign substances which have destroyed the surface of the mucous membrane. It may be relieved by the application of glycerine or castor-oil to the surface of the eye, but we know of no means by which it can be cured.*

Dry con-
junctiva.

Castor-oil
a palliative.

INJURIES OF THE CONJUNCTIVA.

FOREIGN BODIES ON THE CONJUNCTIVA.—The form of injury most commonly presented to our notice is the superficial one, produced by a foreign body lodged on the surface of the mucous membrane. As a general rule, small particles of dust, or similar substances, which happen to find their way into the eye, cause a considerable amount of irritation of the peripheral branches of the fifth nerve, and by reflex action, a profuse flow of tears from the lachrymal gland, and this washes the offending particle out of the eye, or towards the caruncle, upon which it may often be found deposited.

FOREIGN
BODIES.

Natural
removal by
tears,

But this effort of Nature is frequently thwarted by the patient, who, after a foreign body has found its way into his eye, should seize the cilia of the lid, behind which it has lodged, and gently draw the lid forward from the globe of the eye, thus facilitating the action of the tears in washing away the offending particle. In place of this, the majority of people commence rubbing away at the lids, and in their frantic efforts to remove the cause of their suffering, drive it more firmly into the conjunctiva.

often
thwarted
by patient.

Should the foreign body happen to be situated on a part of the mucous membrane of the lid corresponding to the cornea, as it rubs against the latter structure during the movements of the lids, it excites the most intense irritation and pain. That it is from contact with the cornea that these distressing symptoms are

Pain from
contact
with
cornea.

* "Handy-Book of Ophthalmic Surgery," by J. Z. Laurence and R. C. Moon, p. 58.

principally induced, there can be no doubt, for if the particle be lodged on any part of the mucous membrane which is not so situated—as, for instance, in the oculo-palpebral fold—it excites comparatively little irritation. So much is this the case, that patients now and then come under our notice, suffering from conjunctivitis depending upon the presence of a foreign body, which may have been lodged on the conjunctiva for some time, while its existence has never been suspected.*

Insects.

Insects not uncommonly find their way into the eye, and may excite the most intense inflammation by their acrid secretions. The flying bug of this country (India) is a good example; it exudes some substance from its body of a highly irritating character, and it is not uncommon to meet with instances of severe conjunctivitis which have been excited in this way. Barring cases of this kind, insects, as a general rule, do not produce more irritation than other foreign bodies lodged on the conjunctiva.

LIME AND OTHER CAUSTICS.

QUICKLIME AND OTHER CAUSTIC SUBSTANCES, by their chemical action on the tissues, destroy the vitality of the mucous membrane, and a slough forming, the part can only heal by means of a cicatrix. The cicatricial tissue, in contracting, may cause entropium; or union of the palpebral and orbital surfaces of the mucous membrane may occur (symblepharon).

Cause cicatrices and adhesions.

From time to time we meet with cases in which molten lead has run into the eye, and it is sometimes surprising to observe, how effectually the stratum of steam formed over the eye by the heated substance will protect the part from injury. But should the destructive action of the molten lead extend to the connective tissue of the conjunctiva, a slough forms, and the wound healing gives rise to a cicatrix, or to symblepharon.†

The effects of lime may be confined to the superficial layers of the conjunctiva, but this is seldom the case, and it generally induces disorganization of the parts with which it comes in contact. One of the first things

* "Injuries of the Eye, Orbit, and Eyelids," by Mr. G. Lawson, p. 3.

† See case reported by Mr. Hutchinson, *Ophthalm. Reports*, vol. i. p. 217.

commonly noticed on examining the eye of a patient after lime has fallen into it, is, that the cornea has become opaque in those parts which have come in contact with the lime. This haziness may subsequently clear off, but the damage done more frequently leads to necrosis of the cornea, and destruction of the eye.

LACERATED WOUNDS of the conjunctiva are occasionally met with, the mucous membrane being torn open to a greater or less extent by some sharp-pointed instrument. A considerable amount of ecchymosis generally takes place in such cases, causing the patient much anxiety; but otherwise wounds of the kind are not generally of an urgent nature, and usually heal very rapidly.

LACERATED WOUNDS.

Heal readily.

Treatment of Conjunctival Injuries.—I need hardly remark that if the injury arises from the presence of a foreign body, the offending substance must be at once removed, whether it be an insect, lime, or any other matter.

Treatment.

I have already described the method of everting the upper lid, p. 19; it is often necessary carefully to explore the whole surface of the mucous membrane, together with the tarso-orbital and semilunar folds, before we can discover the object of our search; and to add to our difficulty, the conjunctiva round the foreign body often becomes swollen and chemosed, covering in the offending substance, and completely hiding it unless most carefully sought for. When found, there is usually no difficulty in dislodging it from the surface of the conjunctiva by the help of a needle or spud; but if very firmly impacted, it may be necessary, with a pair of scissors, to snip off the little fold of conjunctiva in which the foreign body is embedded. The eye should subsequently be closed with a light pad and bandage for a day or two.

Search for foreign body, and remove it.

In instances where lime has fallen into the eye, the pain it causes is often so great, that it is necessary to put the patient under the influence of chloroform before a proper examination can be made. The particles of lime must then be carefully removed, being picked off the conjunctiva with a small spatula or needle. The eye should subsequently be well syringed with warm water, the stream being especially directed beneath the upper eyelid, so as to wash away

In case of lime give chloroform.

Syringe the surface.

every particle of the lime.* Syringing the surface of the eye in this way is equally useful if dust or powder has fallen into it, which might otherwise be difficult to remove.

Management of the inflammation.

After accidents of this kind, severe inflammation of the conjunctiva and deeper structures of the eye may take place, and if so must be treated upon the principles already laid down for such cases. Hot poppy-head fomentations, a few leeches, and the administration of opium, will probably form a chief portion of our treatment. Nor must we forget that as the iris is likely to become involved, a strong solution of atropine should be dropped into the eye so as to dilate the pupil. If there is much pain in the eye, a subcutaneous injection of one-fourth of a grain of morphia over the eyebrow will afford great relief to the patient.

Prevention of adhesions.

When a portion of the conjunctiva has been destroyed, either from the contact of a substance such as lime, or from a burn, our first care will be to prevent, if possible, the injured orbital and tarsal surfaces of the conjunctiva from uniting; a most difficult task to accomplish, in which too frequently our best efforts are thwarted, and an intimate union between the surfaces of the mucous membrane occurs.

Mechanical expedients,

Many years ago Mr. Tyrrell inserted metallic plates between the opposed surfaces in cases of this kind, in order to prevent their union, but spoke discouragingly of the result.† More recently it has been proposed that a patient, under these circumstances, should have an artificial eye with a hole in its centre corresponding to the cornea, applied over the eye, which by fitting closely on the globe, and being constantly worn, might have the effect of preventing union between the wounded orbital and palpebral surfaces of the conjunctiva. The proposal seemed reasonable, but unfortunately it is found that union of the wounded surfaces commences sooner or later at the lower part, and this gradually raises and displaces the artificial eye.

rarely successful.

* "Wounds and Injuries of the Eye," by W. White Cooper, p. 277. The eye douche of vulcanized india-rubber, with a rose jet, is recommended for this purpose.

† See article by Mr. Wordsworth, *Ophthalmic Hospital Reports*, vol. iii. p. 216.

Moreover it is seldom under these circumstances that we can get a patient to retain an artificial eye in contact with the eyeball; it generally excites such unbearable irritation in the part.

In slight cases we should endeavour to keep the Lint dressing. lids separated from the globe of the eye by means of a piece of lint, soaked in glycerine or oil and laid between the eyeball and eyelid; but, as I have before remarked, our best efforts are generally inadequate to prevent union between the wounded surfaces of the conjunctiva.

Lacerated wounds of the mucous membrane, with few exceptions, heal very rapidly, and no further treatment is necessary than keeping the lids closed with a pad and bandage for a few days. It is well, if possible, to bring the edges of the wound together with fine silk sutures.

SYMBLEPHARON, or adhesion between the palpebral and orbital portions of the conjunctiva, may be either complete or incomplete; in the latter, one or more bands of cicatricial tissue unite the opposed surfaces, and in complete symblepharon, either the upper or lower eyelid, in one or both eyes, is closely adherent by the whole extent of its surface to the orbital conjunctiva.

SYMBLEPHARON.

Adhesion between the lids and globe.

This state of things may be caused by any accident which sets up destructive changes in the opposing surfaces of the conjunctiva—as, for instance, diphtheritic conjunctivitis, ulceration, injuries, or burns involving the mucous membrane; but the contact of quicklime with the eye is probably the most frequent cause of symblepharon.

Follows various lesions.

Provided the adhesions do not involve the cornea, the patient's sight is unaffected by symblepharon; but under any circumstances, he experiences more or less inconvenience from the constrained movements of the eyeball, consequent on the adhesions, and in many instances from epiphora, the puncta being more or less displaced.

Treatment.—As a general rule partial symblepharon only should be operated on. In the complete form, unless the cornea is involved, it may be inferred from what has been already said, that we can seldom expect to improve the patient's condition by means of an operation. A variety of contrivances have been suggested to keep the surfaces of the conjunctival wound apart, but they have, as a rule, failed most signally.

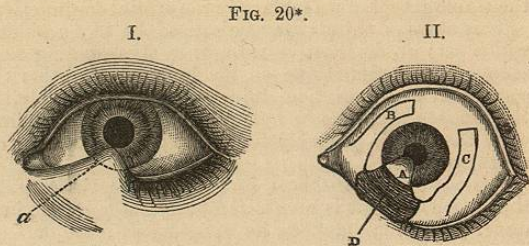
Treatment.
If complete, operations fall.

If partial,
divide
bands.

With regard to partial symblepharon, the bands of adhesion may, in slight cases, be simply divided, and the extremities of the fræna separated by everting the lid frequently, say every hour during the day, and once or twice in the night, until the surface of the conjunctival wound has healed. In more extensive partial symblepharon, the bands of adhesion should be divided first of all close to the globe of the eye, the edges of the wound in the orbital conjunctiva having then been united with fine sutures should be allowed to heal. We may afterwards proceed to treat the palpebral extremities of the fræna in the same way. The lids should be frequently everted, so as, if possible, to prevent the symblepharon from again forming.

Teale's
operation.

Mr. Teale recommends the following proceeding in instances of partial symblepharon, and I have on several occasions found this operation useful in cases of this kind. Mr. Teale describes his mode of operating as follows:—Having first made an incision through the adherent lid, in a line corresponding to the margin of the concealed cornea (see Fig. 20* I. a), I dissected



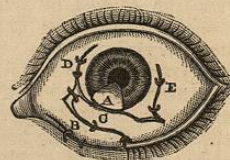
the lid from the eyeball until the globe moved as freely as if there had been no unnatural adhesions. Thus the apex of the symblepharon (Fig. II. a) being part of the skin of the lid, was left adherent to the cornea.

In the next place two flaps of conjunctiva were formed, one from the surface of the globe near the inner extremity of the raw surface, the other from the surface of the globe near its outer extremity. I first marked out with a Beer's knife a flap of conjunctiva (B, Fig. II.), nearly a quarter of an inch in breadth

and two-thirds of an inch in length, with its base at the sound conjunctiva, bounding the inner extremity of the exposed raw surface, and its apex passing towards the upper surface of the eyeball. The flap was then carefully dissected from the globe until it was so far at liberty as to stretch across the chasm without great tension, care being taken to leave a sufficient thickness of tissue near its base. A second flap was then made on the outside of the eyeball in the same manner. In making the flaps, conjunctiva alone was taken, the subconjunctival fascia not being included.

The two flaps thus made were then adjusted in their new situation (see Fig. III.). The inner flap, B, was made to stretch across the raw surface of the eyelid, being fixed by the apex to the healthy conjunctiva at the outer edge of the wound. The outer flap, C, was fixed across the raw surface of the eyeball, its apex being stitched to the conjunctiva, near the base of the inner flap. Thus the two flaps were dovetailed into the wound. The flaps having been adjusted in their new position, their vitality was further provided for by incising the conjunctiva near their base, in any direction in which there seemed to be undue tension, and by stitching together the margins of the gap whence the transplanted conjunctiva had been taken, (e.g.,) D, E, Fig. III. One or two other sutures were inserted, with a view to prevent doubling in of the edges of the transplanted conjunctiva.*

III.



HYPERTROPHY AND ATROPHY.

PTERYGIUM consists of an hypertrophy of a portion of the orbital conjunctiva and subconjunctival tissue, which is often very vascular, and has usually a triangular shape, the base of the figure being towards the semilunar fold, and the apex extending to the cornea (Fig. 21). But it by no means follows that a pterygium always spreads from the inner side of the eye;

PTERYGIUM.
Wing-like hypertrophy.

* *Ophthalmic Hospital Reports*, iii, p. 253.

it may exist on the temporal, upper, or lower portion of the conjunctiva, but its apex is usually turned towards, or rests on the cornea, in some cases extending over it so far as to interfere with the passage of light through the pupil. In other cases a pterygium, except that it is unsightly, gives the patient no inconvenience.

Common
in India.

From
ulcers or
dust.

Treatment.
Dissect
away the
growth.

This form of hypertrophy of the conjunctiva is very common among the natives of India, and in the majority of cases begins in superficial ulceration of the margin of the cornea, the pterygium commencing at this spot, and gradually extending itself outwards. In other instances it appears to depend upon the irritation caused by small particles of sand and dust, which, finding their way into the eye, are washed by the tears along the palpebral sulcus to the lacus lachrymalis; the constant irritation thus produced leads to hypertrophy of the conjunctiva at the inner corner of the eye.

Treatment.—The pterygium must be dissected away from the surface of the globe. The patient having been placed under the influence of ether, his eyelids are to be separated with a stop speculum, the thickened conjunctiva is seized with a pair of forceps, or a hook, about midway between the semilunar fold and the cornea, and a cataract knife or a pair of scissors (Fig. 21) being passed beneath the conjunctival growth, it is to be thoroughly dissected

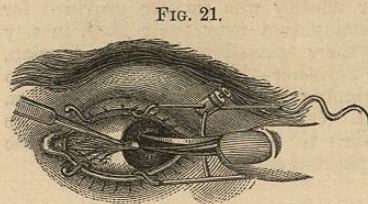


FIG. 21.

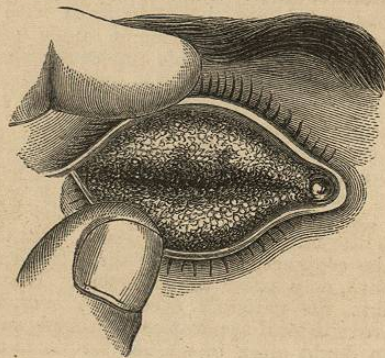
away from the sclerotic as far outwards as the semilunar fold, and also from the front of the cornea, should it have extended so far; the edges of the wound in the conjunctiva should then be brought together with one or two fine silk sutures. The success of the operation depends upon our removing the whole of the hypertrophied conjunctiva. After the operation cold-water dressing may be applied to the eye, until the wound of the conjunctiva has

healed. I have performed this operation for years past in numerous cases, and never saw it followed by a dense cicatrix, much less by one which drew the eye inwards, or limited its movement in any way.

HYPERTROPHY OF THE CONJUNCTIVA is by no means uncommon occurrence, following suppurative or other forms of conjunctivitis. The villous structure is principally involved, and the disease is therefore generally confined to the palpebral portion. Hypertrophy of the conjunctiva is frequently erroneously described as "granular conjunctivitis," or "granular lids," the enlarged villi presenting much the appearance of the granulations of a wound* (Fig. 22). The distinction between them has already been sufficiently insisted on in an earlier part of this chapter.

HYPERTROPHY.
From inflammation.
Villi chiefly enlarged.

FIG. 22.



This affection may be complete or partial, one or both lids, or only a portion of either of them, being involved.

On everting the eyelids, the mucous membrane appears red and rough, presenting in fact very much the appearance of a healthy granulating sore. The uneven surface of the conjunctiva, by rubbing against the cornea, in the course of time may render it opaque and

May cause opacity of cornea.

* "Lehrbuch der praktischen Augenheilkunde," von K. Stellwag von Carion, p. 404.

vascular; but this hypertrophy of the conjunctiva is by no means so frequent a cause of vascular opacity of the cornea as granular conjunctivitis.

Treatment.

Improve the general health.

Treatment.—In the majority of instances of hypertrophy of the conjunctiva, the state of the patient's general health will be found to be at fault, and this we must improve by tonics, or other appropriate treatment, before we can hope for any amendment in the condition of the conjunctiva.

Scarification.

An almost incredible variety of local applications have been advocated from time to time for the cure of this affection. I recommend the following plan of treatment in severe cases:—The lids should be everted as shown in Fig. 22, and the hypertrophied conjunctiva may then be scarified, the bleeding being encouraged by wiping away the clots of blood, as they form, with warm water. When the bleeding has ceased, the mucous membrane should be dried with a soft cotton rag, and a strong solution of tannic acid may be painted over the part. This application should be used about twice a week, and if it does not succeed in reducing the enlarged villi, we may employ a solution of chromic acid in the same way.

Tannic acid.

Chromic acid.

Acetate of lead.

In less severe cases, the lids having been everted, the conjunctiva may be sprinkled over with powdered acetate of lead; or sulphate of copper may be applied to the surface of the hypertrophied tissue; a crystal of the latter salt lightly drawn over the surface of the conjunctiva twice or three times a week for a month, may prove advantageous. Tannic acid dusted into the patient's eyes every morning, has been a favourite local application with many surgeons, and is no doubt often of marked service in cases of this kind.

ATROPHY.
From conjunctivitis.

Forms white patches.

Pannus and entropium.

ATROPHY OF THE CONJUNCTIVA most commonly results from diphtheritic or granular conjunctivitis; chemical agents, by destroying the tissue, may induce similar results.

The atrophied structure presents a white and shining appearance, and as a general rule occurs in patches. In consequence of the naturally smooth and soft mucous membrane being replaced by the atrophied tissue, irritation of the cornea, and ultimately vascular opacity of that most important structure, are frequently produced. The atrophied conjunctiva is further apt to

contract, so that the lids are shortened from side to side, and their margins incurved (entropium).

We are of course utterly unable to restore the atrophied mucous membrane, but fortunately we may prevent or correct its baneful effects, by the means I have described under the heads of entropium and vascular opacity of the cornea.

RELAXATION OF THE CONJUNCTIVA is seldom met with unless among old people, and then it occurs from the absorption of the adipose tissue of the orbit, and the sinking inwards of the eyeball, the conjunctiva being left hanging loosely from its attachments over the globe. The folds thus formed are most marked towards the inner angle of the eye.

Astringent lotions usually constrict the conjunctiva sufficiently to overcome any inconvenience the patient may experience from this condition; but if these fail, a portion of the superfluous membrane must be snipped off; the edges of the wound unite and effectually remedy the complaint.

SEROUS EFFUSION taking place into the connective tissue of the conjunctiva is by no means an uncommon occurrence among old and anæmic people, suffering from a relaxed condition of the mucous membrane; it may be induced by an attack of simple conjunctivitis or some such cause. The effusion generally comes on suddenly, and the œdema may be so great that the conjunctiva bulges forwards over the cornea, having much the appearance of a yellowish, jelly-like mass; there is no purulent discharge from the eye. There is little or no pain in the eye, and although it often happens that the patient is much alarmed as to his condition, we may quiet his fears by assuring him that, beyond the slight amount of stiffness caused by the effusion, no ill effects are likely to follow.

Serous effusion may, however, occur quite independently of old age, from inflammation of the conjunctiva, or of the neighbouring structures, or from remote causes—as, for instance, disease of the heart or kidneys. Excluding these cases, simple serous effusion is a matter of little or no consequence: it generally appears suddenly, and slight pressure over the lids by means of a compress and bandage causes it to disappear after a few hours. Should the œdema

No cure.

RELAXED CONJUNCTIVA. In the aged.

Use astringents.

ŒDEMA.

1. Passive in the aged.

No discharge,

or ill effects.

2. From inflammation or dropsy.

Apply pressure.

- Puncture.** be very considerable, we may puncture the jelly-like mass with a needle, and allow the serum to escape, subsequently applying a pad and bandage over the eye.
- EFFUSION OF BLOOD.** EFFUSION OF BLOOD may take place into the connective tissue of the conjunctiva, either as the result of a blow or from violent straining—as, for instance, in whooping-cough. It occurs likewise from fracture of the bones of the orbit, and in fact from any cause by which the bloodvessels of the part are ruptured. The effused blood is at first of a deep red colour, usually disposed in blotches of greater or less extent beneath the conjunctiva, often encircling the cornea; as it becomes absorbed, various hues of discoloration are produced. It occasionally happens that the mucous membrane is slightly raised from its normal position by a clot of blood of this kind: under any circumstances, it presents a very unsightly appearance, and we are generally applied to for the relief of the disfigurement, rather than of the pain or inconvenience which it causes.
- Disfiguring.** Blood effused in this situation is usually speedily absorbed, and the process may be generally hastened by applying a compress and bandage over the eye. Should the effusion depend on the straining efforts made by a person suffering from whooping-cough, it is not likely to become absorbed until the violence of the fits of coughing has lessened; we may, however, safely relieve the minds of friends from any anxiety they may feel as to the ultimate issue of the case.
- Soon absorbed.**

TUMOURS OF THE CONJUNCTIVA.

- ENTOZOA.** ENTOZOA occasionally grow in the connective tissue of the conjunctiva; Hydatid Cysts,* and Filaria,† have been met with in this situation.
- POLYPI.** A POLYPUS may spring from the mucous membrane of the conjunctiva, appearing generally as a small tumour, but occasionally increasing to the size of a hazel-nut. These growths are usually pedunculated, and of a light pinkish colour, soft, and in fact presenting precisely the same appearances as similar forma-

* "Ophthalmic Medicine and Surgery," W. Jones, p. 685 3rd edit. † "Annales d'Oculistique," t. xv. p. 133.

tions in the nostrils or other parts of the body, with which also they are identical in structure. Polyphi in this situation cause the patient no pain or inconvenience, unless they attain a considerable bulk. They may be removed with a pair of scissors, being snipped off together with a fold of the conjunctiva from which they grow. Easily removed.

FATTY TUMOURS of small size sometimes spring from the connective tissue of the orbital conjunctiva. These tumours have a yellow, unctuous appearance, and seldom cause any pain or inconvenience to the patient except from their size and unsightly appearance. There is no difficulty in removing them: the tumour must be seized with a pair of forceps, and cut away with a fold of the conjunctiva from which it springs. The eye should subsequently be kept closed with a pad and bandage, till the wound in the conjunctiva has healed. must be removed.

WARTS OF THE CONJUNCTIVA are occasionally met with. They usually grow from the surface of the mucous membrane, near the margin of the cornea, and are of a greyish colour. Their surface is smooth, and a few fine hairs may usually be seen growing from them.

These small tumours should be removed, and a portion of the conjunctiva from which they grow should be included in the incision, otherwise they are almost sure to return. To be removed.

CYSTS OF THE CONJUNCTIVA are rarely met with; they are seldom larger than a pea, and their semi-transparent appearance, particularly when examined by oblique light, at once indicates their nature. These cysts have been known to contain hydatids.

A cyst growing in this situation should be completely removed, together with a fold of the conjunctiva from which it grows. Should be removed.

EPITHELIOMA of the conjunctiva rarely commences on the mucous membrane of the globe of the eye, but has in many instances been known to spring from the connective tissue of the palpebral conjunctiva. I have already described the leading symptoms of this form of disease when discussing the affections of the eyelids, and it will therefore be unnecessary for me to enter further on the subject at present.

CANCER.—Medullary and melanotic growths occa-

sionally spring from the conjunctiva. Several cases of the kind are recorded by M. Wecker.*

DISEASES
OF THE
CARUNCLE.

DISEASES OF THE CARUNCLE.—The caruncula lachrymalis is a small, reddish, conical body, situated at the inner canthus of the eye. It is composed of a mass of Meibomian glands, and is covered by a continuation of the conjunctiva. A few fine hairs grow from its surface.

Hyper-
trophy.

The caruncle participates in all the affections to which the conjunctiva is subject, and in some few cases it becomes chronically enlarged, looking like a small mass of florid granulations springing from the inner angle of the eye. Under these circumstances it may extend itself behind the upper and lower lids, and if touched is apt to bleed.

Apply tinct.
opii, or
cup. sulph.

Tincture of opium applied to the enlarged gland every day, by means of a camel's-hair pencil, usually effects a cure in such cases; or it may be necessary to smear it with sulphate of copper. It is not advisable if it can be avoided to excise the superfluous growth, because, should the caruncle subsequently become atrophied, the lachrymal puncta are displaced inwards, and troublesome epiphora, with its consequences, occurs.

Must not be
excised.

A polypus springing from the caruncle should be snipped off with a pair of scissors, and the surface from which it grew touched with caustic; a little bleeding is apt to occur after this operation, but a sponge pressed firmly over the corner of the eye for a few minutes will stop the hæmorrhage.

* "Maladies des Yeux," tom. i. p. 199. See also a case in "Handy-Book of Ophthalmic Surgery," by J. Z. Laurence and R. C. Moon, p. 60.

CHAPTER VIII.

DISEASES OF THE CORNEA.

General pathology—Vascular opacity—Keratitis—Keratitis punctata—Acute suppurative keratitis—Subacute—Ulceration—Hernia—Staphyloma—Fistula—Opacities—Conical cornea—Spherical, pellucid protrusion of cornea—Injuries of the cornea—Abrasions—Contusions—Penetrating wounds—Foreign bodies—Arcus senilis—Tumours.

BEFORE commencing the consideration of the various diseases of the cornea, it will be well to take a general view of the pathological changes to which it is liable. GENERAL PATHOLOGY.

The cornea we know to be a non-vascular structure; and formerly, when hyperæmia was regarded as the first and most essential step in inflammation, it was difficult to see how the cornea could be the seat of it. But now that we have learned to look rather to the elements of a tissue as the point of departure for inflammatory changes, and to regard vascularity and hyperæmia, however important, as accessory phenomena, the cornea becomes one of the most appropriate tissues for the study and illustration of the modern doctrines of cellular pathology.

Inflammatory changes, then, begin in the cornea, as in other parts, with a rapid multiplication of the cellular elements of the tissue, and the migration of leucocytes from the neighbouring vessels. In slighter cases this process may be superficial, and limited to the epithelial layers; but in severer ones the corpuscles of the proper corneal tissue, beneath the anterior elastic lamina, take part in the proliferation. This multiplication of cellular elements, either in the epi- Nature of inflammatory changes.