depend; their details must vary with the particular circumstances of individual cases.

Ectropium from fistula.

Ectropium may be induced by the contraction of a fistulous opening, or rather, from the tissue around the opening contracting, and becoming adherent to the orbital wall. But a fistula seldom occurs in this situation unless as a sequence of disease of the bone, and I need hardly remark, that it is useless attempting to cure the ectropium under these circumstances, until the diseased bone has been removed; it will then be necessary to perform one or other of the operations above described, in order to restore the lid to its normal position. If the eversion is not very considerable, which it seldom is in these cases, the adherent tissues round the opening of the fistula may be carefully dissected away, so as to leave the lid free, and allow of its being dragged away from the cicatricial tissue and the eye closed. The edges of the wound thus made may be brought together with wire sutures, and, as a general rule, it will be well, in addition, to excise a portion of the conjunctiva, so as to insure its contraction. The eyelids must be kept closed, for some days after the operation, with a pad and bandage.

Remove dead bone.

Replace the lid by operation.

Lawson's operation for ectropium.

Mr. Lawson has formed a new eyelid for a patient who had a complete ectropium of the upper lid. He dissected the lid from its attachments, pared at two points the corresponding tarsal margins, and united them by two fine sutures, and thus obtained a fixed level surface upon which to transplant a portion of skin. The parts were then left, and on the fourth day, when the wound was covered with healthy granulations, he transplanted a piece of skin of the size of a threepenny-piece, and two days later another portion, of the size of a silver fourpenny. Both pieces rapidly united to the granulating surface, and the space between them was speedily filled up with new cicatricial tissue. A new lid was thus formed, which was sufficient to protect the eye from exposure: but the presence of two pieces of skin, different in appearance to the ordinary integument of the eyelid, gave the patient a peculiar and rather unsightly look. The skin which was ingrafted not only soon became vascular, but acquired sensibility, and after ten or twelve days could appreciate the slightest touch with a blunt

Forming a new lid.

instrument. The conditions essential for this operation are:—1. That the new skin should be applied to a healthy granulating surface. 2. That skin only should be transplanted, special care being taken that no fat adhered to it. 3. That the portion of skin should be accurately applied to the granulating surface. 4. That the new skin should be kept in position without interruption, and that it should be lightly covered with a layer of lint, and over that a small compress of cotton wool, and a bandage, for the purpose of maintaining its warmth, and thus to assist in retaining its vitality until it had established its new life.

Trichiasis.

Trichiasis, or Inversion of the Cilia, sometimes follows neglected cases of conjunctivitis, or tinea tarsi. Occasionally only a few isolated eyelashes are incurved, the remainder retaining their normal position; at other times the whole of the cilia, or all of those growing from one part of the eyelid, are affected; but under any circumstances the result is the same, the irritation caused by the cilia constantly rubbing against the surface of the eyeball induces chronic conjunctivitis, and, in time, opacity of the cornea and loss of sight. Entropium differs from trichiasis, therefore, in that the ciliary margin of the lid in the former affection is curved inwards, and within the cilia, whereas in trichiasis the lid may be perfectly normal, but the cilia grow inwards against the surface of the eyeball.

Eyelashes grow inwards.

A source of irritation.

The Symptoms to which trichiasis gives rise will depend upon the extent of the disease, and the situation of the inverted hairs; a few of the eyelashes rubbing against the eyeball, at the outer angle of the eye, will not cause nearly so much irritation or inconvenience to the patient as even a single hair, if inverted against the cornea. Cases of trichiasis, if left to themselves, will, in the first instance, give rise to persistent conjunctivitis, followed by haziness, and ultimately vascular opacity, and, it may be, destruction of the cornea.

Conjunctivitis.

Opacity of the cornea.

If only a few of the cilia are incurved, they are very apt to be overlooked, chronic conjunctivitis being the prominent symptom which first attracts our attention. Immediately, however, that the lid is everted, so as to

The cause overlooked.

expose its ciliary margin, the ingrowing eyelashes will be at once detected; it is advisable for this reason, in all cases of even ordinary conjunctivitis, to examine the margin of the lids, and notice if any of the cilia are inverted.

Varieties of trichiasis.

In ordinary muco-purulent conjunctivitis the eye often becomes irritable, and the patient, by constantly rubbing at it, causes one or more of the eyelashes to become inverted, and this greatly contributes to keep up the inflammation. In a case of this kind, all applications will, of course, be useless, unless the offending cilia be removed.

A double row of cilia.

It occasionally happens that people are born with a double row of eyelashes; the inner ones, under these circumstances, are often inverted; this condition is known as *districhiasis*. I mention this variety of trichiasis, not because it presents any special features, but that the meaning of the term may be understood.

Treatment.

The Treatment to be adopted in cases of trichiasis depends very much upon the extent of the disease; if only a few of the cilia are incurved, the offending hairs should be seized one by one with a pair of forceps, and pulled out from their follicles. It is necessary to be careful not to break off the cilia, or the stiff ends left in the eyelid will, by rubbing against the cornea, do more harm than the entire hair would have done. Each cilium must therefore be seized close to the margin of the lid, and slowly and cautiously pulled out, root and all. Unfortunately we cannot extract the hair bulbs in this way, and the consequence is, that another eyelash speedily springs up in place of the one we have removed, and usually takes the direction of its predecessor,—so that if extraction be alone resorted to, it is constantly necessary to watch for the production of new eyelashes in the track of the old ones.

Extraction of cilia.

Care required.

Destroy the hair bulbs,

It is generally advisable, therefore, not only to remove the cilia, but to destroy the bulbs from which they spring. The best way of effecting this is to run a needle, coated with nitrate of silver, through the opening left by the extracted cilia, down to the bulb, which is situated about the sixth of an inch from the ciliary margin of the lid. I usually keep several old cataract needles by me, armed with caustic for this

purpose; they are prepared by fusing the nitrate of silver, and then dipping the needle into the fluid; on withdrawing it, it will be found to be coated with a thin layer of the caustic.

with caustic needle.

The lid having been everted, the offending cilia are to be extracted; and the surgeon, keeping his eye on the small hole left in the margin of the lid, thrusts the needle coated with a layer of caustic through it, and down to the hair bulb; the instrument may then be withdrawn. The caustic will excite sufficient irritation of the part to destroy the bulb, and with it the growth of the eyelash. In place of nitrate of silver the needle may be armed with liquor potassæ, or liquefied potassa fusa.

Excision of the bulbs.

Even a dozen cilia may be treated in this way with success; but in old-standing cases, in which perhaps the whole of the eyelashes are incurved, or those of the outer or inner half of the lid are affected, it will be necessary to resort to other means. The whole of the cilia may have to be removed, together with their bulbs, as described in cases of Entropium, page 107, or a portion or the whole of the tarsal cartilage may have to be grooved above the position of the inverted cilia, in order that they may be restored to their normal position. This operation I have found to be particularly useful when the outer half of the cilia are diseased. Occasionally the excision of a portion of the skin of the lid, will evert the palpebral margin sufficiently to prevent the incurved eyelashes from rubbing against the eye; but there can be no doubt, in severe cases, that any proceeding which actually destroys the eyelash and its bulb is to be preferred to an operation which merely everts the palpebral margin of the lid,—trichiasis, as before remarked, not being a disease simply of the eyelid but of the eyelashes.

Grooving the cartilage.

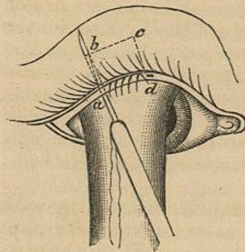
Destroying cilia by ligature. Operation.

Of the operative proceedings intended to accomplish this object, the following is the best* (Fig. 17*):— "A needle is to be threaded with fine silk, and entered between the inner and outer margins of the border of the lid, *a*, and made to pierce the skin a little above the ciliary margin, *b*. The thread is drawn through, and the needle caused to re-enter at the last orifice, *b*,

* "Illustrations of some of the Principal Diseases of the Eye," by H. Power, M.B., p. 157. Lond. 1867.

and made to run parallel with the border of the lid, for the space in which the cilia maintain the wrong direction (to *c*). The thread is again to be pulled through, and the needle again entered at the last point of emergence, and directed vertically till the point reappears between the edges of the border of the lid, *d*. The two ends are then to be tied, and the thread allowed to cut its way out. The suppuration excited thoroughly destroys the bulbs of the offending cilia, and no further trouble is experienced."

FIG. 17*.



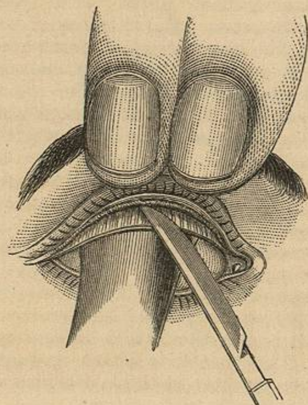
Transplanting the ciliary margin.

In the more inveterate cases of trichiasis, a kind of transplantation of the outer lip of the lid, and the hair follicles beneath, is of great value.

Operation.

It is better to do this operation while the patient is under the influence of an anæsthetic, on account of the great pain it causes, and because of its tediousness. An assistant, who at the same time holds the head, places a horn-spatula under the lid, raises it up from the globe, and causes the edge of the lid to be somewhat everted from the spatula. Then the edge of the lid is divided into layers, for the depth of two lines, with a delicate scalpel (*see* Fig. 17†), the incision not being continued inwards as far as the lachrymal punctum. The posterior layer contains the

FIG. 17†.



conjunctiva, with the cartilage and canals of the tarsal glands, and the anterior includes the remaining structures, with all the hair follicles.

The incision should, therefore, be made close to the surface of the cartilage. Then a second incision is made, one and a half to two lines above, and parallel to the outer lip, completely through the anterior layer, down to the cartilage, and in such a manner that the two ends of the wound extend beyond the ends of the first incision. This layer is thus changed into a kind of bridge, to whose posterior surface the hair follicles are attached, and which is only connected to the lids by the two extremities. When this bridge has been formed, a crescentic incision is made, beginning at the ends of the last incision, through the integument. This is seized with the forceps, and carefully dissected up, without injury to the orbicularis muscle. The size of this flap, should be the larger, and have a greater vertical diameter, in proportion as the hairs are turned inward, and the more the skin is relaxed and wrinkled. The edge of the crescentic incision, and the bridge of skin containing the cilia are now to be brought together by means of sutures; under the traction of these sutures the direction of the hairs becomes horizontal, or is even turned toward the orbital border. The sutures should be removed on the third day.* I have found this operation most useful in many bad cases of trichiasis.

Union of Eyelids.

ADHESIONS OF THE EYELIDS.—The ciliary margins of the eyelids sometimes become united either wholly or in part; this may arise from a congenital defect, or from any cause which gives rise to abrasion of the skin of the free margin of the lids, their raw surfaces growing together, and of course rendering the eye useless for all practical purposes. This is, however, a very rare consequence of disease; it far more commonly follows chemical or mechanical injuries of the parts.

Case.

I have at present a case of the kind under treatment in the Ophthalmic Hospital. Some three months since, the patient was seized by a leopard, the animal inflicting a nasty wound with his claws from the fore-

* Drs. Hackley and Roosa's translation of Stellwag von Carion on "The Eye," p. 386.

head downwards over the left side of the face. The skin of the lids being considerably torn, their inner halves have since grown together, so that the patient cannot now open his eye, and is not only terribly disfigured, but the eye is perfectly useless. In this case, as in most others of adhesion of the margins of the lids arising from mechanical injury, the orbital and palpebral conjunctivæ have also become united.

Treatment.

Treatment.—When the margins of the lids grow together, whether from congenital defect or from injury, a director should be passed behind the adhesions, and they should be slit through with a knife or pair of scissors. It will be necessary to keep the lids separated from one another until the edges of the wound have cicatrized. Unfortunately, the majority of these cases are complicated with adhesions between the palpebral and orbital portions of the conjunctiva, which it is most difficult to cure. Adhesions of this kind are called *symblepharon*, and are described under the head of diseases of the conjunctiva.

Complicacations.

Œdema.

Incidental to various diseases.

Œdema of the Lids is incidental to the progress of various diseases—as, for instance, abscesses, and inflammatory affections of the skin of the face; or more remote ones—such as diseases of the kidneys or heart. But among the poorer class, we often meet with cases of œdema under the following circumstances:—The patient probably states that he had been perfectly well prior to going to sleep, and lay down to rest in some exposed spot. In the morning, to his surprise, he found that he was unable to open his eye, on account of the lids being stiff and swollen; there may have been some pain in the part, but this is not always the case. The eyelids are œdematous, shining, and swollen, but not discoloured; and on forcing them open, the orbital conjunctiva will also be found very œdematous, but not inflamed. This state of things usually arises from one of two causes: either from the sting of an insect, or from the effect of the damp night air blowing over the patient's face. As a general rule, if occurring from the poison of an insect, the point of the sting or bite will be marked by a spot, which is more painful and inflamed than the rest of the swelling; moreover, both eyes are rarely affected in this way. Whereas, when the œdema arises from cold, there is

From stings of insects.

From cold.

seldom any pain at all in the part, except that caused by the tension and swelling of the cellular tissue of the lid, and both eyes are generally equally affected; nor are the eyelids red and inflamed.

In these cases no special treatment is required; the part may be bathed with a solution of acetate of lead. The œdema generally disappears of itself very rapidly.

Emphysema.

Emphysema, like œdema of the eyelids, often depends upon the influence of some remote lesion, as, for instance, general emphysema caused by injury of the lungs, or the admission of air from the nares or frontal sinuses into the cellular tissue beneath the skin of the lids. The part becomes swollen and tense, but not discoloured; and on pressure, the characteristic feeling of crepitation is perceived, depending upon the presence of air in the cellular tissue of the skin.

Treatment.

The Treatment to be adopted in a case of this kind will depend upon the causes which give rise to the abnormal condition of the parts; local treatment will be comparatively useless, but a compress and bandage should be applied over the lids, and retained there till the swelling of the tissues has subsided.

Hordeolum, or "Stye."

Hordeolum, or, as it is commonly called, *a stye*, consists of a swelling of a tarsal gland, which inflames and becomes filled with pus. The little abscess is seated therefore in the thickness of the lid, and the integument may be made to glide over it. The swelling varies in size from that of a millet seed to that of a bean; and is hard to the touch. Abscesses of this description generally occur among sickly and debilitated people, and they are far more common among children than adults.

Styes commence with an itching sensation in the part, which soon becomes red and swollen, the lid often being œdematous and very painful.

Treatment.

Arg. nit.

In the early stages of the disease the eyelash passing through the inflamed spot, should be extracted, and a very fine point of the diluted nitrate of silver should be immediately applied to the mouth of the open follicle; the inflammatory action may frequently be arrested by these means. But if suppuration has occurred, it is better to apply warm poultices to the eye, changing them every second hour; and as soon as the abscess points, the matter may be let out with the prick of a lancet. Tonics are frequently called

Poultices.

Tonics.

for, and, unless prescribed, successive styes are apt to appear one after the other, to the great annoyance and discomfort of the patient.

BLEPHA-RITIS.

BLEPHARITIS, OR TINEA TARSI, essentially consists of an ulcerative inflammation, affecting the lining of the hair follicles of the eyelashes, and is often the result of neglected conjunctivitis; it by no means uncommonly follows an attack of measles, but is most frequently met with among the children of the poor, living in the crowded and dirty parts of our large towns. Under any circumstances it too frequently runs a long and subacute course, unless the greatest attention is paid to the case in the first instance.

Dyscrasial.

Two stages.

Tinea tarsi may be conveniently divided into two stages; in the first, active changes are still going on at the roots of the eyelashes; and in the second, the cilia have been destroyed, and the free margins of the lids are thickened and indurated, presenting the condition known as *lippitudo* or *blear-eye*.

1st stage, "weak eyes."

Symptoms.—The patient complains of what he usually terms weak eyes; they itch a good deal, particularly after work, and on rising in the morning they are often glued together. Symptoms of this kind may have been going on for a long time, inconveniencing the patient a good deal, but not being sufficiently severe to prevent his performing his usual work. Young children are hardly likely to complain at all of their eyes in the early stages of the disease, as there is no actual pain in the part.

Ciliary pimples.

On examining the eyelids of a person suffering from tinea in its early stages, we shall notice a slight crust, or scab attached to a part or the whole of the free margin of the patient's eyelids; beneath these crusts are a number of little pustules also situated on the free margin of the lids at the roots of the cilia: the skin itself is slightly red and inflamed. A constant succession of these pimples form and burst, leaving a scab clinging to the skin with considerable tenacity. The conjunctiva is always somewhat injected.

Scabs.

Lids stick together.

This state of things having lasted for a longer or shorter period, the sebaceous and Meibomian glands become irritable, and their secretion is augmented in quantity and altered in quality, so that the lids stick together during sleep, the patient awaking and finding

his eyes glued up in the morning. The skin beneath the scabs at length becomes ulcerated and swollen; the crusts are no longer furfuraceous, but hard and thick, and the eye is very irritable; the patient cannot read or work for even a short time, without the eyes becoming red and painful. In consequence of the swollen condition of the margins of the lids, the puncta are thrust away from the eyeball, and the tears accumulating in the lacus lachrymalis, not only flow over the side of the cheek, but by remaining in contact with the eye induce chronic conjunctivitis; this, in its turn, by presenting a rough surface to the cornea, induces changes in its epithelial layers, not amounting to any perceptible opacity, but sufficient to interfere slightly with the perfection of vision.

Margins ulcerate.

Conjunctivitis.

2nd stage.

If the disease should advance to its second stage, destruction of the eyelashes and hypertrophy of the free margins of the lids take place, in consequence of the long-continued irritation that has been going on there. It by no means follows, however, that the cilia are completely destroyed; it might be fortunate for the patient if they were; but they frequently drop out, the bulbs of the hairs remaining, and from them distorted, misdirected cilia spring, some of which, turning inwards, produce trichiasis. The surface of the skin beneath the scabs being ulcerated, and discharging a quantity of matter, thick crusts form on the edges of the red and hypertrophied eyelids: at the same time the Meibomian glands become inflamed, and in too many cases the ducts leading from them are ultimately closed, and the disease is then incurable. The margins of the lids are thickened, and the puncta being thus everted, and often closed, the tears stream over the inner corner of the eye: the cornea becomes hazy, and the patient's state is miserable in the extreme, and is made worse by the terrible disfigurement which eyelids such as I have described present.

Cilia distorted or shed.

Trichiasis.

"Bleared eyes."

Treatment.

Treatment.—The treatment of tinea tarsi is complicated by two unfavourable circumstances: the first is, that it most often occurs among children, who are naturally impatient of treatment; and secondly, they are generally the offspring of unhealthy parents. I would here remark that, as a general rule, to cure tinea, we must attack the constitutional infirmity, whatever it may be—whether a syphilitic, or scrofu-

Correct the dyscrasia.

lous dyscrasia, or general debility—upon principles generally applicable to such affections. Among these, probably, pure air, good food, and cleanliness, will take a prominent place. Of drugs, cod-liver oil and iron will prove invaluable.

In conjunction with constitutional treatment, local remedies are most useful: but with children we shall have difficulty in applying them. This difficulty is increased among the poorer classes, while their dirty habits tend directly to induce or foster the complaint.

Remove the scabs.

In the first instance, the scabs on the margins of the lids must be removed with a small spatula, or a cataract needle. In some cases, a poultice or hot compresses should be applied over the lids for a few hours; they will soften the scabs, which may then be detached with a rag and hot water. Having removed all the scabs from the eyelids, an ointment composed of half a drachm of hyd. oxid. flav., to an ounce of unguentum simplex, should be carefully applied along their margins, or the ung. hyd. nitrico-oxidi dil. one drachm, cacao butter three drachms, may be employed in the same way. The chief point, however, to attend to is, that the ointment be brought in contact with the diseased surface: if simply smeared over the scabs, the medications will be almost useless.

Apply mercurial ointment.

After the first application, which the surgeon must effect with his own hands, this ointment should be used twice a day. The patient should bathe the eyes in warm water morning and evening, so as to detach any fresh scabs, before applying it. In a short time we may hope to cure the disease.

In confirmed cases cut off cilia.

In more confirmed cases, where the margins of the lids have ulcerated, the lashes should, in the first instance, be cut off close to their roots, and the scabs removed with a pair of forceps; after which, a pencil of nitrate of silver should be drawn along the outer edge of the ulcerated surface, or we may paint the part over with the tincture of iodine. The surgeon must of course make these applications himself, and subsequently the dilute oxide of mercury ointment may be used by the patient; but the lids will probably have to be painted over with the tincture of iodine twice a week for some time—in fact, till the fungus or parasite, whichever it is upon which tinea depends, is destroyed.

Apply arg. nit. or tinct. iodinii.

Carbolic acid.

Dr. Tilbury Fox recommends carbolic acid dissolved in glycerine to be used in place of the tincture of iodine. I have found this acid most useful in cases of tinea tarsi, employed as above directed, of the strength of one part to five; and subsequently as a lotion, one part of the acid to twenty of glycerine, to be painted along the margin of the lid with a camel's hair brush night and morning.

Lippitudo incurable.

In most forms of chronic tinea (lippitudo) little can be done to alleviate the disease; the mischief it has effected being, in fact, irreparable. We may, however, remove the bulbs of the cilia, and thus cure the trichiasis, and to some extent the consequent opacity of the cornea. The carbolic-acid lotion will be useful to relieve the ulcerative process; but the thickened, hairless state of the margins of the lids will continue in spite of our best efforts.

Pediculi.

Pediculi.—Lice occasionally take up their abode among the cilia, their ova covering the eyelashes, and the cilia looking as if they had been dusted over with a black powder. These parasites give rise to the most intolerable itching of the part, the patient almost tearing the cilia out by their roots; excepting the irritation thus excited, the eye appears to be healthy. On looking carefully at the eyelashes, they seem, as above noticed, to be covered with powder or dust, and with a lens the lice may be distinctly seen. The treatment to be adopted is to wash the parts well with warm water, and then smear the palpebral margin and cilia with staphisagria, and if this fails with the blue mercurial ointment, three times a day. If these remedies do not destroy the lice, a lotion, composed of two grains of hydrarg. bichlor. to an ounce of water, may be employed to bathe the lids.

Mercurial applications.