cranial bones are probably heredity, and the toxic action of syphilis and alcohol, doubtless acting through the vascular system and blood supply. It is not at all uncommon to find that there has been a distinct history of alcohol to excess, where marked hyperostosis of the cranium is found after death, though male cases are where drink and heredity have been combined which show no such change. Syphilis very likely discloses itself in general paralysis of the insane, but it must be remembered too that the brain and membranes of victims of that mental disorder have probably been subject to temporary attacks of vascular engorge-ment during seizures; it may be affected by actual inflammation.

What relationship exists between such a condition and erysipelas is more obscure. In a number of recorded instances there has been a distinct history of repeated attacks of facial erysipelas, such as in a case I am about to mention.¹ Does the repeated inflammatory condition of the skin set up changes in the bone beneath; or are the erysipelatous outbursts a result of altered nutrition to the skin, from changes in the deeper structures? Whichever it be, there seems at least some undoubted association between the two.

(To be continued.)

ON THE TREATMENT OF SOME OF THE MORE COMMON EYE AFFECTIONS.

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(Continued from page 177.)

CORNEAL ULCERATION is always primary, that is, it only exists where there has been a focus of inflammation in the cornea itself, never where the focus lies somewhere else in the eye, and the corneal changes are of the nature of an interstitial infiltration. It is useful to remember this from a prognostic point of view. The two directions in which the ulceration spreads are superficially and in depth. These no doubt are the only two directions in which extension is possible, yet there is a decided clinical difference in the proportional degree of extension which may occur in them. Some ulcers invade the more superficial layers of the cornea over its whole extent, without passing so deeply as to lead to perforation. Others, again, more or less rapidly spread in depth, causing perforation, without a great extent of the cornea becoming involved. Ulcers at the corneal margin usually in-

¹ A notable instance of repeated attacks of pseudo-erysipelas on the upper part of the face in acromegaly is recorded by Gauthier (Progrès méd., Paris, 1892). The Lancet, London (30th Sept. 1893, p. 821), refers to a case published by Montgomery, of unilateral hypertrophy of the whole face following abscess of the lower jaw.
crease in size, in very much the same proportion in both directions, spreading superficially in a circular line round the margin, and at the same time eating through the thickness of the membrane.

From the point of view of treatment, there is more call for effort to be made to check the superficial extension than that which leads to an increasing breakdown of the deeper corneal layers. Both extensions have, of course, their natural limitations; the former ends when the whole of the cornea has suffered ulceration; the latter, when perforation has taken place. As a general rule, however, healing is more apt to be delayed when the ulcer spreads comparatively superficially until all or most of the cornea has been destroyed; whereas the destructive process often ends after perforation in the essentially deep ulcers. This fact may sometimes be taken advantage of, especially in deep marginal ulcers, when, by opening into the interior chamber, by puncturing the floor of the ulcer, further extension may be avoided. Such treatment must not, however, be resorted to unless other attempts at arresting the ulcerative process have first been tried without success. It is better, if possible, that there should be no perforation. There is a danger of in this way permitting the entrance into the deeper parts of the eye of microbes, which may be a source of very serious complications. The danger is greater, too, apparently, when the perforation is done as a surgical measure than when it occurs in the process of inflammatory destruction. Nevertheless, the paracentesis is often a useful measure, particularly in the case of deep marginal ulcers, not only as tending to limit the extent of destruction to the cornea, but in preventing prolapse of iris, which is more likely to occur if the perforation takes place spontaneously. Prolapse, too, when it does occur, is more easily dealt with if it follows a paracentesis than if the hernia takes place through the base of an ulcer which has of itself yielded to the pressure from within. In the first case, it is recognised at the time, and can be replaced by a little careful manipulation, preferably with a thin pliable caoutchouc, or tortoise-shell iris-repositor, which should, of course, be aseptic. The iris can afterwards be kept away from the corneal wound by causing a forcible contraction of the pupil with eserine or pilocarpine. The worst that can then happen is an attachment of a point on the surface of the periphery of the iris to the back of the cornea—or an anterior synechia, as it is called—without any subsequent actual incorporation of iris tissue in the cicatrix which eventually comes to occupy the site of the ulcer. But even this may frequently be avoided. The following preparations of eserine and pilocarpine may be used for this purpose:

\[ R \] Eseriae sulphatis . . . . gr. ij
  Acidi boracici . . . . grs. v
  Aquae destillatae . . . . 5 ss

18—ED. MED. 513—NEW SER.—VOL. III.—III.
After a paracentesis, too, the eye should be bandaged for forty-eight hours. The bandage should, however, be removed, and reapplied every eight hours, to admit of the eye being well bathed, and the myotic drops used. Where there is much secretion, the changing may be done more frequently.

Prolapse occurring after spontaneous rupture is seldom discovered until some time after it has arisen—the incarcerated or protruding iris is then more or less covered with lymph. It is caught, too, in a more ragged and more structurally altered corneal perforation, and generally held sufficiently firmly to be with difficulty disentangled. Any prolonged attempts at replacing the iris under these circumstances should not be made. They lead to laceration, and no doubt at the same time favour inoculation by the micro-organisms with which the incarcerated membrane is at least surrounded, and are very apt, therefore, to be followed by more or less serious iritis. As a general rule, it is better not to interfere at this stage at all. Even the use of myotics is probably best avoided. The ulcer may be carefully painted over with freshly prepared chlorine water, to which a little hot water from the kettle has been added, so as to bring the temperature up to blood heat or a little over, then dusted freely with very finely powdered (not sublimated) iodoform, and an occlusion bandage applied. The subsequent treatment suitable for iris prolapses will depend upon the size of the protrusion. Often in the course of the healing process a pretty marked protrusion is found to diminish greatly in size. When this takes place, and the hernia has become flattened down to nearly the niveau of the cornea, and well covered by cicatricial tissue, it is best left alone. More marked permanent protrusions should, however, be excised. They are a source of greater risk, from their liability to injury. Disturbance of their cicatricial covering may, under favourable conditions, favour inoculation by microbes, and lead to iritis and deeper inflammations of the eye. The excision should not be undertaken until all irritation caused by the corneal ulceration has subsided—generally not, therefore, until a fortnight or more after the prolapse has arisen. The object aimed at in removing the prolapse is to flatten the protrusion down so as to bring it as nearly as possible to a level with the surface of the cornea. The proper way to do this is to transfix its base at about its centre with a small narrow cataract knife. The knife is then cut outwards in the direction at right angles to its edge, its surface being all the time kept parallel to and on a level with the cornea. When the one half has thus been separated, it is seized with a pair of fine-toothed forceps, raised so that the blades of a pair of scissors can be got to close below it, and at the same time over the re-
remaining portion of the protrusion. A snip with the scissors, pressed somewhat downwards on to the cornea, can thus be made to sever the remaining half close to the corneal surface. Attempts at removing these prolapses with forceps and scissors alone do not lead to sufficient flattening, owing to the manner in which the blades slip. After removal of an old prolapse, in the manner described, the eye may be tied up for four or five days.

In addition to the flattening down of a prolapse, cases in which this accident has happened sometimes call for further treatment. It happens not unfrequently that the pupil is visibly drawn in the direction of the corneal cicatrix. It loses its circular form, and becomes pear-shaped. Less pronounced degrees of this distortion and displacement of the pupil are of no consequence to vision, and rarely are the cause of any irritation. In the case of the larger hernias, however, the pupil may be rendered so eccentric that vision is thereby impaired; and besides, the dragging on the iris fibres, which is the cause of the displacement, may sometimes give rise to repeated attacks of congestion. In such cases, two iridectomies should be done opposite to each other, at right angles to and on either side of the central point of the prolapse, or the synechiae remaining after the prolapse has been levelled down. The iridectomies need not be large, and may both be done at the same time, though it is easier to allow some time—a week or more—to elapse before the second is done.

Iridectomy is also called for, where the scar of a perforating ulcer, whether there be, as is most frequently the case, iris tissue incorporated with it or not, is weak, and begins to yield to the intra-ocular tension. This condition, technically called staphyloma, may indeed often be arrested by iridectomy, especially when it is partial. Moreover, it is only then that any effort to prevent further loss of vision by serious changes in the corneal curvature can be of any avail. Other operations for more pronounced degrees of corneal staphyloma are not particularly satisfactory.

The treatment suitable for corneal inflammations, which do not present themselves as ulcerations, showing a marked tendency to perforation, must vary considerably according to their nature. The treatment of some forms has already been referred to in connection with conjunctivitis, but, before discussing that which may be recommended in others, there are a few more general practical points to which attention may be directed. It is necessary to bear in mind, for instance, in connection with keratitis, that the origin of the local inflammation is perhaps most often to be found in that of some neighbouring part of the eye. One's attention should therefore always be directed to the state of the lid margin, conjunctiva, and tear sac. And this, even where the history points more or less clearly to some preceding trauma. In many cases, too, the state of the general health will have to be inquired into, and demand appropriate treatment. This is par-
particularly the case in struma, syphilis, diabetes, rheumatism, and gout, but also, though less commonly, where other digestive or circulatory or nerve disturbances exist, or where functional or organic disorders of the reproductive system are present. In short, though local treatment may be indicated, it is comparatively seldom that nothing further is called for.

Local treatment is least essential in the case of mere infiltration, both superficial and deep, and most in the more virulent, rapidly spreading, ulcerations which have a septic origin. It used to be a common practice to content oneself with the occasional or frequent use of atropine dropped into the eye. This has no further effect on the local inflammation than to act to some extent as an anodyne. Cocaine is much more useful in this respect, and therefore should be substituted for atropine in all cases in which there is no complication with iritis. In all cases, however, the state of the iris should be looked to, and, where any marked congestion or any inflammation of that membrane exists, atropine should be used. The necessity for doing so will be more fully discussed under iritis.

All the different alkaloid solutions, used as “drops” for the eye, should be freshly prepared, and be made up with some antiseptic. They are otherwise apt to contain mycotic or other germs, and then likely to do more harm than good, by causing conjunctivitis and thus indirectly tending to keep up or even aggravate many corneal inflammations. The pipettes or glass rods used for introducing the drops, should also be rendered aseptic before use, and should never be brought into direct contact with the conjunctiva.

In using cocaine, it must be remembered, too, that the anaesthesia which it produces is liable, by causing an arrest of the tear flow and of the other secretions by which the eye is normally lubricated, to give rise to a desiccation, or even, in extreme cases, a shedding of the corneal epithelium. It is therefore well to tie up the eye for some time after its application. On this account, it should not be too constantly applied. It is useful often, and especially where the corneal condition is associated with much photophobia, to precede the examination of an inflamed cornea by an instillation of cocaine. The cocaine drops, suitable for this and other purposes, may be prepared according to the following prescription:

\[
\begin{align*}
R & \text{Cocainae hydrochloratis} & . & . & \text{grs. iv–x} \\
& \text{Acidi boracici} & . & . & \text{grs. iv} \\
& \text{Aquæ destillatæ} & . & . & \text{3ij}
\end{align*}
\]

Eserine is now more frequently used in most corneal inflammations than atropine. I have never found it to have any effect on the course of the inflammation, and consider that its use should be confined to cases where, from urgency of peripheral
prolapse of iris, it is advisable to obtain a powerful contraction of the pupil.

In many corneal conditions, one sees exemplified in a way, which in other parts of the body is not so readily followed, the struggle which takes place between the vitality of the tissues and the external forces, micro-organisms, toxins, and other irritants which tend to destruction. The basis of one’s treatment should therefore be, in the first place, either altogether to avoid measures calculated to diminish or inhibit the former, or make use of measures by which the vitality is temporarily increased without a swing subsequently taking place in the opposite direction. Again, our efforts must be directed towards neutralising and keeping in check the activity of the external irritants, in a manner, too, which does not impair vitality.

Both heat and cold have important influences in these respects. The application of ice, which was formerly much in vogue, has been found practically to be worse than useless. Possibly, if the temperature of the cornea could be constantly kept at the freezing-point of water, the use of ice might occasionally be of some value. The usual way of applying cold by iced compresses does not maintain the desired low temperature, and no doubt the explanation of the harm done by this treatment is the disproportion which it establishes between tissue vitality and activity of external irritants. By the ordinary applications, the lowering of the former is not compensated for by the degree of inhibition caused in the latter. This disproportion is indeed much less in the case of the different antiseptic preparations, which may be used both more efficiently and more conveniently. But inasmuch as these no doubt to some extent lower the vitality of the cornea, it is often advantageous to combine with their use that of heat directly applied. Practically, it is found, however, that although heat is more efficacious than cold, its application can be overdone. It is certainly, too, not suitable in all cases.

The effect of heat must be got as far as possible without that of poulticing. The simplest way to do this is as hot fomentations, lasting a quarter of an hour or so, every two or three hours. Dry heat may also be used, but is more troublesome to apply, and has no particular advantages. Poulticing in any form is always more or less hurtful.

The advisability of tying up the eye or not is a question which often presents some difficulty. In itself, it would seem to afford a natural means of keeping the eye at rest. In point of fact, it is, with certain exceptions, a useful treatment when properly done. But it must be remembered that there is some danger, and, in certain forms of corneal inflammation, great danger, of the tying up causing a poulticing action and a retention of the secretions, both of which may entail much more risk than is run by leaving the eye uncovered. Bandaging should therefore not be continuous,
but the bandage should be removed two or three times or oftener during the day, and need not be applied at all at night. At each removal, the eye should be properly bathed with boracic lotion or hot water, which has sufficiently cooled after boiling, and any other local application which may be considered necessary, made. On account of the frequent necessity for removing the bandage, it should be in a form which can readily be replaced by the patient himself. A good form of occlusion bandage for this purpose is a piece of flannel 6 in. long and 2½ in. wide, to each corner of which a piece of tape is sewed. The two tapes at each end converge into one. The bandage is applied over a pad of Gamgee tissue or absorbent cotton-wool. It is carried diagonally over the eye—the two long tapes being crossed at the back of the head and tied over the forehead. It should be tied comfortably tight. Knitted bandages similar in shape are also good.

The different local applications which may be used in cases of corneal inflammation (in addition to yellow oxide of mercury, to which reference has already been made, and which it must be remembered is only suitable in strumous superficial keratitis), are—iodoform, chlorine water, and boracic lotion, tincture of iodine, nitrate of silver, and the actual cautery.

Iodoform is an extremely useful application, which may be used either finely powdered (not sublimated), or as an ointment in the proportion of 1 to 8. Gelatin discs, containing iodoform, have also been used. They, however, melt rapidly, and leave very little iodoform. On this account, it is much more satisfactory to dust the pure iodoform on to the cornea, which may be done freely. The ointment, too, is not so good, but is more readily applied by the patient himself, and is, moreover, more suitable when the eye is not bandaged after the application.

Chlorine water need only be used in severe ulcerations which are rapidly spreading, either superficially or in depth. It may be used both in the form of a wash or injected subconjunctivally. The subconjunctival injection should be made with a hypodermic syringe, introduced at two or three different points. Five or six drops may be injected at each point. The chlorine water is more diffusible, and does not cause any more pain at the time, or any more reaction afterwards, than solutions of corrosive sublimate which are more generally used. Chlorine water must be freshly prepared. If it has stood for some time it causes much more irritation, and is besides less efficacious. As a subconjunctival injection, it should be used fully saturated. In the same full strength, it may be freely dabbed on to the surface of a corneal ulcer with a camel's-hair brush. As a wash, it is better to use the fresh saturated solution, mixed with about twice its volume of warm water.

Boracic lotion is suitable for all cases, even where the inflammation is confined to localised infiltrations. It is the most con-
venient way of keeping the eye clean by removing the conjunctival secretions. It may be used saturated and mixed with some hot water, so as to bring its temperature up to that of the body. The best plan is to trickle it into the eye, squeezed out of a pledget of absorbent cotton-wool, which is thrown away after it has been used. The patient may do this fairly well himself, by throwing back his head, and holding down the lower lid with the one hand.

Tincture of iodine is only called for in the severer cases of ulceration. It is applied directly to the ulcer with a camel’s-hair brush. It is a fairly good substitute for the actual cautery, when that is not at hand. In some cases its application may be preceded by scraping the ulcer, which, under cocaine, can be done painlessly. In less severe, more superficial, and especially vascularised ulcers, which are not of strumous origin, the iodine may be used as an ointment. A convenient form is as a 1 per cent. solution of pure iodine, in purified white vaseline. This should be rubbed on to the everted conjunctival surfaces with the point of the finger, and the lids then allowed to close over it. It produces only slight irritation as a general rule. For strumous superficial vascularised ulcers, the yellow oxide of mercury has already been referred to as the most efficacious application.

Nitrate of silver in solution is a very useful agent in all cases of superficial non-vascularised ulcerations. It is particularly to be recommended in ulcers of this kind, in which the base of the ulcer is more or less markedly infiltrated, but which the absence of pus in the anterior chamber (hypopyon), and more especially of any deep purulent infiltration of the margins, show to be not of the most dangerous septic order. Catarrhal ulcers in old people, to which reference has already been made, are especially benefited by one or two applications directly to their surface of a 2 per cent. solution. It is well to remember that it is inadvisable to repeat the application too frequently. The practical guide is afforded mainly by the extent to which the use of the caustic solution has relieved the pain. If, the next day after its application, the pain is found to be much less, it should not be used again. A careful examination of the ulcer will then reveal indications of healing. The rough, ragged margins have become more or less rounded, owing to epithelial growth. One’s object is merely to induce healing, and further applications only destroy the newly formed epithelium, and thus interfere with the natural process of reparation.

The actual cautery is undoubtedly the best means we possess of checking the spread of a serpiginous septic hypopyon ulcer of the cornea. Cases of this kind are very frequent, and are the principal cause of unilateral blindness. They almost invariably originate in some more or less trifling injury to the cornea, by which some portion of its epithelium is denuded, and its deeper
layers inoculated with septic matter, which may be introduced, either by the body with which the injury is caused, or by microorganisms which exist at the time in the conjunctival and tear sacs. The importance of this latter connection has already been considered. In the treatment of these severe destructive corneal inflammations, much depends often upon the efficiency with which the actual cautery is applied. In some cases, however, the virulence of the process is so great that it may be impossible to check it. In such cases, the specific microbe at work is generally either the pneumococcus or the gonococcus. The two best means of applying the actual cautery are by means of the galvano- and the thermo-cautery. Provided the thermo-cautery point used is a fine one, so that its action can be properly limited, it is in every way equal to the other, and is more likely to be at hand. The cautery should be made to burn sufficiently through all the deeply infiltrated margins of the ulcer. It is by these abscess margins that the ulcer spreads, and they must be properly destroyed. The other portions of the ulcer, and there are usually some such, which do not present infiltration at the margin, may be left. By using cocaine, the little operation may be done without causing pain. It is best to use a speculum to keep the eye open, and to fix the eye with fixation forceps. When there is much congestion, the fixation may be painful, but it enables one to limit the burning to the area of the ulcer. The indication that the process has been arrested by this proceeding is afforded by the diminution subsequently of pain, by the diminution in the amount of the hypopyon and the more satisfactory appearance of the ulcer margins. These septic ulcers are often very painful, and may for nights interfere with sleep. After efficient cauterisation, the patient is able to sleep, the hypopyon diminishes in amount, and the edges of the ulcer appear clearer, or merely, it may be, slightly charred. The subsequent treatment should consist in the use of chlorine water as a lotion, and iodoform in the manner just described. It is sometimes necessary to repeat the cauterisation. This should be done on any return of pain, if, at the same time, a little yellow point of infiltration shows itself at any point of the ulcer margin.

Should a really efficient application of these measures, repeated, it may be, once or twice, fail to arrest the process of destruction, the best plan to adopt is to open freely into the anterior chamber through the base of the ulcer. This treatment, by what is called Saemisch’s section, at one time constituted one of the great advances in ocular surgery. Now that the actual cautery is used, it is comparatively seldom called for. A narrow Graefe cataract knife is entered at one side of the ulcer, passed across the anterior chamber, and brought out again at a point beyond the opposite margin, and then made to sever the whole base. In doing this operation, the part selected should, as
far as possible, be made to include the margins which are most infiltrated. The moment the section is made, and the hypopyon escapes, there is a sudden hyperaemia of the iris, the vessels of which may even give way, and great, often agonising, pain experienced. This pain passes off in a few minutes, but it is as well to know that it is sure to occur.

(To be continued.)

THE OPERATIVE TREATMENT OF CALCULI WHICH HAVE BEEN LODGED FOR LONG PERIODS IN THE LOWER THIRD OF THE URETER.¹

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The best route for attacking stones which have become lodged for long periods in the pelvic part (lower third) of the ureter, is not yet definitely settled. Several cases have lately been recorded in which the abdominal incision for tying the common iliac artery has been followed, and, the peritoneum having been raised, the lower end of the ureter has been reached extraperitoneally (Robinson, Jordan Lloyd). There is no doubt but that this incision is of value when one has to remove the ureter in its entire length, or to extract stones which have become impacted in that canal, at the pelvic brim or about that level; but I question if it is not unnecessarily severe when the stone has become lodged below the pelvic brim.

If the stone can be detected by vaginal or rectal examination, it can be easily and safely extracted through a transverse perineal incision in the male, or by incising the roof of the vagina in the female.

The catheterising cystoscope will demonstrate any male ureter to be clear, or to be blocked with calculus, and in what section of the tube the calculus is situated; and any method of catheterising the female ureter (Simon, Pawlik, Newman, Hirst, Hamill, Kelly, Goldschmidt, Wertheim) will locate a stone impacted in a female ureter. It should therefore, I submit, be a general rule, that if the stone be found in the upper third, the ordinary lumbar incision is indicated; if at the pelvic brim, the common iliac artery incision suffices; if below the pelvic brim, the incision should be perineal or vaginal. Several instances are recorded of the vaginal route being followed in women (Emmet, Cabot, Rigney, Cotterell), but I am not aware that the value of the perineal route has as yet been advocated. One writer insists on the difficulty of treating a fistula caused by vaginal uretero-lithotomy as a reason

¹ Part of a clinical lecture delivered at the London Hospital, Dec. 1, 1897.