THESIS

Submitted by
John Douglas Hoss Munro.

April 1894.
Analysis of 100 cases of injury to the eye seen in a General Hospital in a Colliery District, with special notes on the treatment of certain cases -

by

J. D. R. Munro.

(M.B. T.C.M. Edin.)
I hereby certify that John
Donald Ross McNaught, M.D., C.M.
Edin., has been House Surgeon to
this Infirmary for the past two
years.

William Laing

Apr 23rd 1894. Signed.
The Dean of the Faculty of Medicine
Edinburgh University
April 1815 - 4

Sir,

I beg to submit my resignation of the above

of M.D. to the earnest request of Dr. Drysdale

I shall fill up the necessary paper to announ

in strength,

Yours sincerely,

W. L. G. M. W.
I hereby certify, that the work of collecting the cases enumerated in this Thesis has been done, and the Thesis entirely composed by myself.

(Signed) John Douglas Ross Munro.

April 18th 1894.
I have divided these cases for convenience into seven classes — namely:

1. Injuries to lids + conjunctiva.
2. Injuries to cornea.
   a) Resulting in sloughing ulcer.
   b) Not resulting in sloughing ulcer.
3. Injuries to cornea + lens.
4. Injuries to cornea, lens, iris.
5. Injuries involving the ciliary region.
6. Injuries to eyeball without external wound.
7. Foreign bodies in eye.

A tabulated list of the cases in each class is given after the notes on their etiology, treatment.

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**Injuries to lids + conjunctiva.**

**Causation.** Of the 15 cases of injury to conjunctiva, 7 were due to burns by lime, 3 by hot chips of iron, 1 by chip of steel; 3 by hot cinders + oil by candle — of these, in 7 there was injury to both cornea + conjunctiva; in the remaining 8, both the ocular + palpebral conjunctiva were affected.

In 7 cases a good result was obtained.
without operation. In the other eight some operation was done or advised.

The three cases of entropion were the result of lacerated wounds of the lower lid, in each of these some plastic operation was done.

In making some remarks about the treatment adopted in these cases it will be necessary to consider the early, late treatment separately. The methods adopted will vary considerably, according to the length of time which has elapsed between the accident and the time when the patient first comes under observation.

Early treatment. In cases which are seen early, we must by some means try to prevent adhesions forming between the injured surfaces of the sclera and palpebral conjunctiva. First, examine the eye carefully to see that the foreign body which has caused the injury does not still remain between the lid and the eyeball, this must never be neglected, as we sometimes see cases which have been treated for days without the irritant having been removed. The eye must be bathed with a warm antiseptic lotion—boracic or chloroform of mercury, or if the patient...
complaints of temple pain, poppy-head or belladonna presentations often give relief.

Besides this, some Vicklub ointment should be applied to the injured parts, either Vaseline or Viscumum Dodojorum (1 part Dodojorum to 2 parts Vaseline).

Next comes the part of the treatment which I especially wish to emphasize, that is, the systematic daily separation of the opposed surfaces by a probe, passed at least once daily down to the bottom of the lower conjunctival cul-de-sac, drawn from one side to the other. This is the part which is usually injured, and by this means we prevent adhesions which would otherwise form as healing goes on, and continue this treatment until the opposed surfaces are healed.

This must seem to everyone the common-sense way of treating this condition, but certainly does not seem like it to have been systematically employed before. In the seven cases here recorded where I have done this, it has been with the best results, for in none of the patients who attended regularly was there any symblepharon resulting from the movements of the eye being free in all directions.

In this way, although we prevent adhesions from forming between the opposed surfaces, we cannot prevent the contraction
which must or necessity take place during the healing process, just as it does after a burn or the surface of the body. This contraction slightly lessens the depth of the wound, but, unless extensive, does not interfere with the movement of the eyeball.

Some authors say that where, as here, we have two opposed surfaces, over which the mucous membrane is destroyed, it is essential that they must be covered again by mucous membrane to prevent their reunion — the weaker says that 'all mere separation of the opposed surfaces will have the inevitable effect, not only of causing fresh union, but also, of further increasing cicatricial contraction.'

Others, Waltho for instance, recommend that we should try to get the part healed as quickly as possible, as then one gets less suppuration, fewer bands of adhesion formed.

If the cases are treated as before stated, our object is to prevent any adhesion from forming, and although healing may be delayed, it seems to me a much better principle to act on.

Essex in Paris journal strongly recommends that cases of lime burn of the conjunctiva should be treated by washing the part well.
with a saturated solution of cane sugar, which forms a deposit of saccharate of lime. He says that no complication results except no trace of injury remains afterwards. Of this however I have no experience.

2. Later Treatment. First Cases of Syphilitic Keratitis

In cases where the Syphilitic Keratitis was extensive and where flaps of conjunctiva could not be got from the adjacent parts, after division of the adhesions, I have tried to prevent reunion by passing the probe once or twice daily between the raw surfaces. I have had fairly good results (cases 9, 11), but of course this method of treatment is not applicable to the same extent in all cases which are seen early. It is impossible to prevent a certain amount of union at the bottom of the cul-de-sac, but the movements of the eye are more free than before, and considerable relief is felt by the patient, as the dragging on the eyeball is relieved.

In cases 8, 10, 13, after dividing the adhesions, a single flap of conjunctiva was dissected from one side attached to the bottom of the lower cul-de-sac, - after which it is not a difficult matter to prevent the raw surfaces above the flap from adhering, if the probe is passed down between them daily, and the results in still cases were satisfactory.
This can only be done where we can get a flap of conjunctiva, the same remark can be made about Tacker's operation where we require more conjunctiva still - one flap from each side - but which gives very good results when it can be done.

Transplanting mucous membrane from the inner side of the patient's lip or from animals, has been much tried lately, sometimes gives good results in cases which do not admit of other modes of treatment.

Certain surgeons have devised operations for extreme cases of symblepharon, based on the principle that mucous membrane can be, as it were, manufactured out of skin by nature.

For instance, Mr. Edgar Browne of Liverpool, in an extreme case, takes a thin flap from the lower lid or cheek, slides it up through a slit in the lower lid, stitches it to the eyeball.

This method is not a good one, in several cases where I have it has been tried the ultimate result was bad. Here the resulting cicatrix being below, strains upon the lower lid & the matter matters worse than before, a little lump forms:

takes months to settle down even into a firm lump, while the flap holds the eyeball nearly as tight as the original cicatrix.

Instead of this operation I would suggest that it would be better if the thin flap
was taken from either the upper lid, temple or forehead, so that the raw surface left does not tend to draw down the lower lid during the healing process. A flap from the upper lid could only be taken when the skin there is loose. The principle of the operation in either of these cases would be the same wherever the flap was taken from, but differ from Mr. Brown's operation, in that the flap is attached to the inner surface of the lower lid, instead of to the eye-ball.

The operation would be done in the following way: first, raise the flap (shaded part), then make a slit in the external canthus & separate the adhesions between the lower lid and eyeball. Now twist the flap on itself & bring it through the slit in the external canthus, so that its raw surface will lie in apposition with the raw surface of the lower lid. Then x cover to xx & y to yy, & the flap is stitched in position by fine sutures.

After adhesion has taken place, say at the end of three or four days, the flap should be cut across near its base, & any part of the base of the flap which is not required there, be restored to help to fill up part of the raw surface from which it was taken.

Skin grafts may be applied to the remainder of the raw surface.
The flaps in these cases have a fairly broad base & good vascular supply - not almost sure to live - None of these operations should be done except in extreme cases, & must be varied according to the case one has to deal with, but they seem to me to have distinct advantages over Mr. Browne's operation, as before mentioned, & I hope they may be tried where suitable cases present themselves.

As to the three cases of cicatricial entropion, they were all the result of lacerated wound of the lower lid. In case 16+17 the portion of the lid was entirely at the outer end, but in case 18 the central part of the lid was drawn down.

In the two first, a V shaped portion of the whole thickness of the lower lid was removed, & the raw surface brought together by several deep sutures. This can only be done where as in these cases there is plenty of tissue to spare - the entropion confined to the outer part of the lid.

In the third case, a V shaped flap of thin tissue was dissected up, containing the band of cicatricial tissue (which was not extensive) & slit up, so that when stitched in position the wound assumed the shape of V. The lids were stitched together & not opened for three months - the results were good.
<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Condition before</th>
<th>Time elapsed</th>
<th>Operative Treatment</th>
<th>Remarks / Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male 1</td>
<td>40</td>
<td>Hot cinder</td>
<td>1 day</td>
<td>Belladonna, saline at first,</td>
<td>Burn over bone, spine, palpable portion of conjunctiva, probe passed daily, little injure surface, sore in following 5th cases. In addiction when pain intense felt</td>
</tr>
<tr>
<td>Male 14</td>
<td>14</td>
<td>Lime</td>
<td>14 days</td>
<td>Tannic acid, saline, probe passed daily</td>
<td>-</td>
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<tr>
<td>Male 20</td>
<td>20</td>
<td>Chip of iron</td>
<td>3</td>
<td>Carrot oil, probe passed daily</td>
<td>-</td>
</tr>
<tr>
<td>Male 44</td>
<td>18</td>
<td>Mortar</td>
<td>5</td>
<td>Iodine, acetic acid, saline, probe passed daily</td>
<td>Burn in corner, ulcer of conjunctiva. In addiction when still one month ago</td>
</tr>
<tr>
<td>Male 18</td>
<td>18</td>
<td>Lime</td>
<td>14</td>
<td>Belladonna, saline,</td>
<td>Former slight corner, injure conjunctiva below, daily still 6 months latter, no addiction, 4-5 fingers at 4th</td>
</tr>
<tr>
<td>Male 40</td>
<td>40</td>
<td>piece of lid above</td>
<td>2</td>
<td>Belladonna, saline, probe passed daily</td>
<td>Former ulcer of conjunctiva, ulcer still 6 weeks after accident, there was no addiction, but depth of ulcer slowly decreased.</td>
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<tr>
<td>7</td>
<td>Male</td>
<td>12</td>
<td>Line</td>
<td>7 days</td>
<td>None</td>
</tr>
<tr>
<td>8</td>
<td>Male</td>
<td>20</td>
<td>Chip of cornea, commencing staphylinum</td>
<td>4 months</td>
<td>None</td>
</tr>
<tr>
<td>9</td>
<td>Male</td>
<td>31</td>
<td>Line</td>
<td>3 months</td>
<td>None</td>
</tr>
<tr>
<td>10</td>
<td>Male</td>
<td>18</td>
<td>Line, including lower half of cornea</td>
<td>2 months</td>
<td>Probe passed daily after operation.</td>
</tr>
<tr>
<td>11</td>
<td>Male</td>
<td>80</td>
<td>Line</td>
<td>12 months</td>
<td>Abscession divided</td>
</tr>
<tr>
<td>12</td>
<td>Female</td>
<td>9</td>
<td>Line</td>
<td>5 months</td>
<td>None</td>
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<tr>
<td>No.</td>
<td>Name</td>
<td>Cause</td>
<td>Condition when first seen</td>
<td>Time elapsed</td>
<td>Treatment</td>
</tr>
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</tr>
<tr>
<td>13</td>
<td>male</td>
<td>30</td>
<td>Hot cinder</td>
<td>6 months</td>
<td>Plastic operation</td>
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<td>15</td>
<td>male</td>
<td>26</td>
<td>Laine</td>
<td>1½ years</td>
<td></td>
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<tr>
<td>16</td>
<td>male</td>
<td>26</td>
<td>Lacerated wound</td>
<td>2 years</td>
<td>Tie (as before)</td>
</tr>
<tr>
<td>17</td>
<td>male</td>
<td>21</td>
<td>Wound by local</td>
<td>3 months</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>male</td>
<td>17</td>
<td>Small lacerated wound</td>
<td>2 years</td>
<td></td>
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Injuries to the Cornea:

First, I shall discuss those injuries to the cornea which result in sloughing ulcers, because a large proportion of such cases come under this heading. The reason for the appearance of cases of sloughing ulcer of the cornea amongst a list of cases of injury to the eye is easily understood, when one remembers that a large number of such ulcers are the result of a traumatic cut, although we may, of course, get cases of sloughing ulcers which are not caused thus.

Of the 41 cases of sloughing ulcer which I have tabulated, 25 were the result of injury by chips of coal, 6 by chips of stone, 2 by pieces of wood, and one each by spark from the fire, chip of iron, piece of cement, line of ammunition.

In a colliery district like this, such injuries to the eye are very common, but it by no means follows that sloughing ulcers result in all the cases, it is therefore a question upon what conditions the formation of sloughing ulcers depends.

Redistributing Causes:

Locally. It has been proved that even in a healthy conjunctival sac there exist numerous pathogenic organisms, which are always ready to attack the cornea whenever...
an abrasion of the corneal epithelium gives them a chance, and the conditions upon which their success or failure depends are numerous. In colliers who are much exposed to injuries with foreign bodies, dust, etc., like, there is more likely to be some conjunctivitis present than in those living in districts where they have occupations which expose them less to such irritants, where the atmosphere is clearer, where chronic conjunctivitis is present there is an increase of pyogenic organisms in the conjunctival sac. In such a case, it is clear that a slight wound of the cornea is more likely to become a sloughing ulcer, than it would be in an eye where the conjunctiva was quite healthy.

After examining the eyes of colliers here, I find that conjunctivitis is less frequent than one would suppose considering their occupation, but it does exist to a slight degree in a fair number of cases, in a chronic state, without troubling them, is only noticed on carefully examining the eye. In most of the cases of sloughing ulcer the condition of the eye was far too advanced when first seen to enable one to tell whether there had been any conjunctivitis before it was injured.
The condition of the nasal fossa naso-ethmoidal spaces is also affected by the vitiated atmosphere in which colliers work, even if nothing is complained of by the patient these parts are often in a state of chronic catarrh.

3. Atmospheric conditions. — The atmosphere of the district being always more or less smoky must increase the tendency for an abraded surface to take on an unhealthy action. Dr. Renton says that he considers that atmospheric conditions alone do in many cases account for sloughing ulcers resulting from injury, and we accept this, at least in a great extent explains the frequency of these cases in a colliery district.

4. The temperature down a coal pit is usually about 15° higher than on the surface. I consider that this higher temperature has a material effect in aiding the action of germs, when these already exist, an abrasion of the corneal epithelium. The temperature increases proportionately with the depth of the pit.

5. Season of the year. — In support of what has just been said is the fact that sloughing ulcers are more common in summer than winter. This was especially noticeable last summer when the heat was so intense.

6. General conditions of life. — Both the showing mode of living is bad in a densely
populated district; as to the former, the space is very restricted; ventilation bad, whilst although the food is of fairly good quality, the amount of alcohol taken undermines the constitution of the majority of the men.


Exciting Cause - This in the majority of the cases has been a chip of coal.

On looking over the cases one notices that five of those which went to the bed were seen as early as the average, those were, with one exception, six eyes which were injured by coal. I believe that the coal itself has some special effect on the cornea, as in other cases it has injured the rapidity with which the ulcer spreads is greater than in cases injured by other foreign bodies.


Treatment of Sloughing Ulcers of Cornea.

So many lines of treatment have been advocated for these cases, that it is evident that no special one has been found really satisfactory, or it would have been more generally adopted. It is only after treating a few number of cases that one can form any idea as to the real value of any line of treatment, and therefore in treating about forty cases, fairly
satisfactory results have been obtained from a method of treatment which does not seem to be well known, it may be of some little use if a few notes are given about the methods employed.

1. Early Treatment. Three lines of treatment are to be noted. (a) Eye Drops. (b) Caustics. (c) injection for hypopyon, which may require to be combined in the treatment of the same case.

(a) Eye Drops. Some years ago, Mr. Williams of Liverpool advocated the local application of quinine in the treatment of long-standing ulcers of the cornea. In many cases it seems to have a very good effect when used along with atropine. These cases are not infrequently complicated by hypopyon, and the effect which quinine has in arresting suppuration, and even in causing absorption of the pus in the anterior chamber, seems to me to have been demonstrated in these cases where it has been used.

Atropine is combined with it on account of the irritation which is often present, and the drops are made up as follows:—

\[
\begin{align*}
\text{Quinine Sulphate} & : & \text{gr. iv} \\
\text{Atropine Sulphate} & : & \text{gr. iv} \\
\text{Aqua Distillata} & : & \text{3 fl. oz.}
\end{align*}
\]
At first, until the pupil is well dilated and the condition of the eye improving, the drops should be used frequently, often four hourly, or in some cases every two hours for a short time. As the condition of the eye improves, the frequency is lessened to six hourly, or thrice daily. The tension of the eye must especially be noticed when the drops are being used frequently.

It is very doubtful whether Atropine itself has any effect on the formation of pus which goes on in these cases, but Quinine does seem to arrest this in a marked way in many cases. In about half a dozen of the cases collected here, where Atropine drops were first used when they came under treatment, no improvement was noticed in the condition of the eye had taken place at the end of twenty-four hours. The hypopion which was present was getting larger. Now the Atropine + Quinine drops were substituted, with the result that by the next day the eye was looking much better the hypopion getting less—this improvement continuing until the hypopion had quite disappeared at the end of from two to four days. For such a favourable result the case must be seen before the ulceration of the cornea is far advanced, and while the pus in the anterior
clearly is of fluid consistency, for if not, it
will require to be let out by some operation,
as will be seen later on.

Combined with the local application of quinine
is its internal administration, which has
been advocated for many years in this class
of case. Whether it acts in any other
way than as a toxic one cannot say,
but it is quite possible that it may aid
the local action of the quinine, help to
combat the suppuration going on in the
cornea. Two or three grains is given twice
daily, during the time the patient is under
active treatment.

Before mentioning this,
I should have stated that the eye is bathed
with a warm antiseptic lotion—Boracic or
Perchloride of Mercury—each time before the
drops are used.

(b) Second—Cautery. In addition to the
above treatment it is in some cases advisable
to try to prevent the infiltrating margin of
the ulcer from spreading, quite to this object,
the actual cautery has been used.

The rapidity with which the ulcer spreads
is very marked, if not arrested, may in a
few days lead to destruction of the greater
part of the cornea. The shape of the
cautery used is shown opposite.

This is heated in the flame of a spirit-lamp.
It is best for a sufficient length of time to allow its effective application to the ulcer; but if there is a large surface to be covered, the cautery may require to be heated more than once. In applying the cautery, one must attend to certain points if one wishes for a good result.

In looking at a sloughing ulcer we see that it has a yellow infiltrating edge & external to this, an outer grey margin. In the latter, I believe that there are leucocytes & phagocytes which destroy the limit of the organisms in the yellow part, so that if applying the cautery, our object should be to destroy the yellow sloughing margin, leaving the greyish part outside it.

Fluorescein, if applied to the eye, stains the ulcerated part deep yellow & the rest of the cornea slightly green, the line of demarcation between the two being well seen, so that, this may be used with benefit to show us exactly the limit of the ulcer before applying the cautery.

The cautery should also be passed lightly over the floor of the ulcer, some say that this should be perforated, but I prefer not to do so, although sometimes when the floor is very thin this may happen accidentally. If active mischief is
going on, the spreading of the ulcer by
the ulcer has not been arrested by other
treatment, the sooner the cautery is applied
the better. It may require to be applied
more than once, and we are guided as to this
by whether the spreading process has been
arrested or not — in cases where the pus
is let out from the anterior chamber, it
is better not to cauterize the ulcer till the
next day, when the anterior chamber has
been restored.

In deep ulcers, where the floor is thin, being
bulged forward, instead of perforating by
the cautery, an opening may be made
through it by a paracentesis needle or a
small dissecting knife, which should be
passed obliquely through the cornea, keeping
as far away from the lens as possible, and
in this way the aqueous humour is let out.

Reverting to the use of the cautery,
onious differ much as to the amount of
lens which should be destroyed unless it
is applied. Mr. Renton says that only
a superficial destruction of tissue is necessary
to arrest the spreading, but it certainly
seems to me more likely that we shall arrest
this if we destroy the whole of the yellow
margin where we believe the infective
organisms are most active.
We settle upon advice that for safety the part should be burned a little beyond the opaque edge, whilst Holby in the other hand objected to the use of the cautery, as he says it only reaches the germ in the tissue destroyed, and to be more learned than good by destroying sound tissue.

Instead of the cautery, some prefer scraping the ulcer, but it has not been tried in these cases. Mr. Berry of Edinburgh in 1884 strongly recommended it when combined with the subsequent application of nitrate of silver (2.5%), the margins of the ulcer being thoroughly scraped before this is applied.

Dr. Mosso of London (May 91) recommended scraping as being of especial value in obstinate cases of serpiginous ulcers, and says that where other methods of treatment have failed it sometimes causes the ulcer to heal up rapidly.

(c) Thirsty. Operative treatment for Hypopropic

Although we see the disappearance of the hypopropic ulcer Atropine 100 grain drops are used, we cannot expect this to take place in all, more especially when the case is not seen until late, when the pus has formed a gelatinous like mass. Then we must leave recourse to some operative measure. Various methods are employed.

The method employed in these cases
has been to let out the pus from the anterior chamber of the eye, by means of a vertical radial incision in the cornea, as was first recommended by Dr. Williams of Liverpool. Of this method I can speak very highly. This is done by a gracile knife while it is passed into the anterior chamber at the lower margin of the cornea, carried upwards to oppose the lower margin of the pupil, but not beyond it. Thus, the incision is opposite the place where the pus has collected. You withdraw the knife it usually escapes with the rule of aqueous humour which takes place. If the pus has formed a gelatinous-like mass, it often sticks between the edges of the wound, it can be lifted out by a pair of forceps.

The advantages of this incision seem to be:

1. That all the pus escapes from anterior chamber.
2. That the wound does not require to be reopened.
3. That the incision heals by first intention if in healthy tissue. (If the ulcer is low down, the incision must be through part of its floor, & it does not then heal so quickly.)
4. That no prolapse of the iris takes place, because the radial incision allows
the edges to fall together better. This also causes less distortion.

3. Anterior squamous are not so likely to form, as when the healing of the wound is delayed by repeatedly reopening it.

4. The section being radical, interferes less with the structure of the cornea, than a transverse section which is not radical.

2. The second method of letting out pus from the anterior chamber which must be mentioned is by Ziemlich's Section.

Here, the floor of the ulcer is divided through the tnafis's knife being inserted in healthy tissue on one side made to emerge in healthy tissue on the opposite side of the ulcer. As much pus as possible is then evacuated, & the wound reopened daily to let out any reaccumulation which may have taken place, until the ulcer begins to heal.

This operation is frequently done often gives good results, but has the disadvantage that it delays the healing of the ulcer.

5. To reopen the wound in the Cornea, & that it is often difficult to evacuate the pus, especially when the ulcer is in the upper part of the cornea.

3. A third method of letting out the pus is by a horizontal incision across
the lowest part of the cornea - opposite the collection of pus behind it.

If the pus is thick, it does not escape well, so a probe has afterwards to be passed at intervals to help it escape by keeping the opening patent. (The incision is made with an iridectomy knife.) If a capsule of the iris is kept to take place, this the great disadvantage of this operation.

Looking at these three operations for opening the anterior chamber to let out hypopyon, I am convinced of the great advantages of the vertical radial incision, by which these cases have been treated, when necessary.

It may be supposed that the scar left after it will interfere with vision, but it never does so; since the incision is not prolonged beyond the edge of the iris, & the linear opacity left after it is scarcely visible. If after the pus has been evacuated by this incision, the case goes wrong with hypopyon, which results - it is due to the continued spreading of the ulcer & not because the anterior chamber requires to be reopened, which has never been done in any of these cases.
been employed in the sloughing ulcers of
the cornea which I have collected; and
considering that many of the cases were
far advanced before they were seen, the
results seem satisfactory. In many
of them where the ulcer is extensive
we cannot expect the patient to get
mucous vision, but must be satisfied if we
can save the eye from total destruction.

So many other methods of treatment are
recommended, that I cannot go over them all,
but one or two may be mentioned.

Eserine lately has been much used by
some and is said to have a direct effect on
sloughing ulcers — being used by them
in cases which were always
treated by Atropine — but since Atropine
is a frequent complication in these cases,
it seems to me advisable to keep the
pupil dilated. Eserine seems to be
of special value in the marginal ulcers
which are so frequently seen in unhealthy
children.

The so-called antiseptic treatment has
been said to be alone sufficient to arrest
the sloughing process — Holts, for instance,
treats his cases by simply bathe the
eye with a solution of Ferrochloride of Mercury.

(1526)
Every hour, for the first twenty-four hours after the case comes under treatment, I says, that by that time, a marked improvement is noticed in the condition of the ulcer.

The frequency of the applications is then lessened, but continued at intervals until the ulcer is healed. By this means, Holty says, the germs are effectively destroyed and other treatment is required.

Iodine is often used in an ointment: 1 part with 2 parts of Vaseline. W. Berry of Edinburgh recommends it, after scraping the ulcer with nitrate of silver.

Valade recommends a line of treatment which does not seem to have been much tried. He cleanses the eye first with an antiseptic lotion, then applies a pad of Salol gauge, which is bandaged on and left undisturbed for three or four days.

By that time, he says, that sloughing ulcers have begun to look more healthy, heal up rapidly when this treatment is continued. One special advantage claimed for this is that the subsequent corneal opacity is very slight.

This certainly seems rather a peculiar line of treatment, and it is obviously unsuited for cases with chronic conjunctivitis or dacronitis.
Later treatment - this means the treatment of the corneal opacity resulting from the ulcer, and the means adopted for improving the vision of the patient. The interference with vision caused by a corneal opacity, will vary in amount, according to its situation, density, and extent.

The treatment adopted has been, first to try and help the clearing of the opacity by some mild local stimulant, which by slightly increasing the blood supply to the part, will help the time change. The drop, hydroxyflav, or flav, is used twice daily, and the lid rubbed over the eyeball for a few minutes after each application, but there is great difficulty in getting patients to persevere with this treatment, when they find how slow is the improvement of vision.

The corneal opacity clears much more in children than in adults.

Other applications, as drops of solution of Pot. iodide, or calomel dusted on the cornea, do not seem to be as good as yellow ointment.

In what cases is it advisable to try and improve vision by making an artificial pupil?

The situation & density of the opacity must guide us in giving our opinions as to whether an artificial pupil will improve vision.
If almost the whole cornea is opaque, vision does not amount to more than shadows, it is useless to interfere; but if, on the other hand, the patient can count fingers, and there is a clear portion of the cornea at its inner or lower part, we would expect some improvement in vision, I would therefore operate.

Where a uveitis is present, which although extensive is only slightly opaque, it is not advisable to make an artificial pupil; as some rays of light can still pass through the uveitis. By making a larger pupil, we would probably cause more confusion of vision than before.

These are merely a few examples of types of cases I will write, but such a variety of cases is seen that each must be treated on its own merits, no hard and fast rules can be laid down.

As to the time when we should operate, so long as improvement of vision is going on, the tumea clearing it is better to wait, as the situation in which the tumea should be done will vary according to the extent of the opacity; ultimately, so that often as long as six months or more should be allowed to elapse before we interfere. Each case must be carefully examined, to the transparency and curvature of the cornea noted.
So that we may form an opinion as to where an iridectomy will give the greatest improvement of vision. It is a good plan to take the patient's vision before and after the pupil has been widely dilated; as if we find it is not improved in the latter case, we cannot expect much improvement after a small iridectomy. Having the pupil dilated before we decide this, also helps us in the fact that one finds that a nebula is seen much better against the black of the pupil after it is dilated, & still cornea often looks quite clear before this is done.

The iridectomy must be done where the lensome interferes least with vision, but if possible, it should be below the level of the centre of the cornea.

The condition of lens, vitreous humour, retina should be investigated as far as possible, before we decide to interfere.

The best situation for iridectomy is downward, downwards, or downwards, or downwards, one cannot expect any marked improvement in vision, if it is done in the upper part of the Iris. The reason for the above situation being best, is because most objects seen by a person are viewed forwards & downwards; the line of vision being through the lower part of the cornea, so that after the
The eye is less removed from its natural axis, requiring is less common, than when vision is required in any other direction. It is doubtful whether an eye fix eccentrically while the other eye (healthy one) is in action; but of course the better the vision obtained, the less chance is there of squint.

When iridectomy is performed in a downward direction, both eyes are operated upon; the axes of vision are nearly parallel.

Some authors assert that when the vision in the healthy eye is good, it is better not to make an artificial pupil in the damaged one, because the pupils will not correspond; probably confusion of sight, double vision, or squint will result; but this is not always so.

It is important that the coloboma made should be narrow, if a very small pupil is desired, the inner pupillary part of the Iris is only removed, the outer ciliary part being left. If a large artificial pupil is made, the strong light dazzles, vision instead of being improved is made worse.

When however the lenseoma is extensive, only a small clear space is left between its margin and the margin of the cornea; a piece of the whole breadth of the Iris must be removed, as if the outer ciliary part...
was left, it would prevent the entrance of rays of light through the very limited clear portion of the cornea.

For the Indirectomy, the incision should be made at the corneoscleral junction, not in the cornea; as, if it is made in the latter, the opacity resulting may obscure vision, as also may the slight leucines which sometimes spreads from it.

So far, we have been considering the cases in which it is advisable to perform an Indirectomy with the object of improving the patient’s vision; but it is also often advisable to do this in cases of lenses adherent, with another object in view.

In these cases, the eye often remains irritabile due to the continual dragging on the Iris which takes place, with the object of relieving this, we should either divide the string, or if this cannot well be done, perform an Indirectomy. After doing so, the irritability of the eye gradually settles down, & this adds greatly to the safety of the eye & comfort of the patient – so that even if no improvement of vision can be expected, we should, in these irritabile eyes, have recourse to one of these operations.
Before giving a tabulated list of the cases treated by the methods I have described, it may be well to state briefly the number of cases treated by each different method, and to state what results were obtained.

Of the 41 cases of blushing ulcer of the cornea, 6 were in a hopeless condition when seen; 4 of the remaining 35 cases, 16 were treated by Atropine + Quinine drops alone; in addition to the drops, 6 lead calomel; 3 were siccated, 7/10 were both calomelized and siccated. Antiseptic lotion locally, Quinine intrally in all cases.

Of the 35 cases, 21 recovered with useful vision, i.e. the ultimate vision could not be ascertained, but in those judging from the condition of the eye when last seen, the patient in all probability got useful vision. In 5 cases the vision amounted only to perception of light, but in no case was there total destruction of the eye, except the eyes which were in quite a hopeless condition when first seen.


directomy was performed in 10 of the cases, in 3 of these to relieve the irritability of the eye in cases of phlemon adherens, and in the remaining 7, there was improvement of vision, where the directomy was done with that object.
<table>
<thead>
<tr>
<th>No</th>
<th>Sex</th>
<th>Cause</th>
<th>Condition when first seen</th>
<th>Time elapsed since noticed</th>
<th>Time operative treatment</th>
<th>Operative treatment</th>
<th>Remarks &amp; Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>male 3</td>
<td>chip of stone</td>
<td>Sloughing ulcer, small hypopion</td>
<td>3 days</td>
<td>Rupt. strip &amp; Cairn.</td>
<td>Lt. &amp; R.</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>male 63</td>
<td>piece of timber</td>
<td></td>
<td>9 -</td>
<td>-</td>
<td>Suture - 7 days</td>
<td>Sutured nice.</td>
</tr>
<tr>
<td>3</td>
<td>male 14</td>
<td>piece of coal</td>
<td>Sloughing ulcer</td>
<td>7 -</td>
<td>Rupt. strip &amp; Cairn.</td>
<td>Lt. &amp; R.</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>male 57</td>
<td>piece of stone</td>
<td>Sloughing Corneal Hypopion</td>
<td>14 -</td>
<td>Suture - 7 days</td>
<td>Lt. &amp; R.</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>male 31</td>
<td>chip of coal</td>
<td>Sloughing ulcer, hypopion</td>
<td>5 -</td>
<td>Suture - 7 days</td>
<td>Lt. &amp; R.</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>male 41</td>
<td></td>
<td>Large sloughing ulcer, gum on t.</td>
<td>5 weeks</td>
<td>Caustic</td>
<td>Lt. &amp; R.</td>
<td>-</td>
</tr>
</tbody>
</table>

Remarks & Result:
- ulcer - central - Result: Good.
- Small vessel for which yellow scum of secretion, advanced.
- Ulcer: fair - but too young to treat.
- V: now = fingers. Lesion clears.
- Large central ulcer when first seen.
- Two months after V = 6/74.
- Whole of cornea sloughed - no scotoma, vision.
- Four months later, large corneal abscess. V: perception of light.
- Sutured - sutured.
- Six months after V: fingers at T.
- Sutured - Sutured.
- After which V: fingers intact.

Note: Ulcer had perforated prior to seen - Eye boxed up in the Slough - Remaining fluorescintically.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Location</th>
<th>Time Seen</th>
<th>Time elapsed since injury</th>
<th>Non-operative treatment</th>
<th>Operative treatment</th>
<th>Result &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Male 22</td>
<td>Chip of coal</td>
<td>Loughing ulcer - Panophthalmitis</td>
<td>6 days</td>
<td>Operations of the incision</td>
<td>Incision, through globe, 5 months later</td>
<td>Result: successful</td>
</tr>
<tr>
<td>8</td>
<td>Male 60</td>
<td>Do</td>
<td>Large Loughing Ulcer - Panophthalmitis</td>
<td>5 days</td>
<td>Incision, Lenting, 6 months later</td>
<td>Incision, Lenting, 6 months later</td>
<td>Result: satisfactory</td>
</tr>
<tr>
<td>9</td>
<td>Male 57</td>
<td>Do</td>
<td>Large Loughing Ulcer - Panophthalmitis</td>
<td>3 weeks</td>
<td>Incision, Lenting</td>
<td>Incision, Lenting</td>
<td>Result: satisfactory</td>
</tr>
<tr>
<td>10</td>
<td>Male 60</td>
<td>Do</td>
<td>Large Loughing Ulcer - Panophthalmitis</td>
<td>3 days</td>
<td>Treating, 6 months later</td>
<td>Treating, 6 months later</td>
<td>Result: satisfactory</td>
</tr>
<tr>
<td>11</td>
<td>Male 23</td>
<td>Do</td>
<td>Loughing Ulcer</td>
<td>3 days</td>
<td>Treating</td>
<td>Treating</td>
<td>Result: satisfactory</td>
</tr>
<tr>
<td>12</td>
<td>Male 45</td>
<td>Do</td>
<td>Do</td>
<td>2 months later</td>
<td>Treating</td>
<td>Treating</td>
<td>Result: satisfactory</td>
</tr>
<tr>
<td>13</td>
<td>Male 20</td>
<td>Chip of stone</td>
<td>Loughing Ulcer</td>
<td>60</td>
<td>No treatment</td>
<td>No treatment</td>
<td>Result: satisfactory</td>
</tr>
</tbody>
</table>

Note: All cases were treated with appropriate medical interventions, and results were satisfactory.
<table>
<thead>
<tr>
<th>No</th>
<th>Age (yr)</th>
<th>Cause</th>
<th>Condition when seen</th>
<th>Time since accident</th>
<th>Non-operative treatment</th>
<th>Operative Treatment</th>
<th>Result</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>37</td>
<td>Chip of Coal</td>
<td>Sloughing Ulcer</td>
<td>7 days</td>
<td>Incision</td>
<td>Incision</td>
<td>Two months after accident - there was large abscess adherent below. ( V ) fingers at 2 feet. After incision, inward ( V ) fingers at 6 feet.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>50</td>
<td>Chip of Coal</td>
<td>Large Sloughing Ulcer</td>
<td>3 -</td>
<td>Incision plus Traction</td>
<td>Incision plus Traction</td>
<td>Repair treatment at first. Use of lace and copper followed. No ulnar.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>20</td>
<td>Chip of Stone</td>
<td>Sloughing Ulcer</td>
<td>4 -</td>
<td>Curettage, twice</td>
<td>Curettage, twice</td>
<td>Ultimate ( V ) could not be found mit-</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>60</td>
<td>Chip of Coal</td>
<td>Sloughing Ulcer</td>
<td>6 -</td>
<td>Curettage, Incision</td>
<td>Curettage, Incision</td>
<td>Ulceroma left over lower inner part of cornea. ( V ) fingers at 2 feet. Incision (in year). Incision later. After which, ( V ) fingers at 5 feet.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>40</td>
<td>Chip of Coal</td>
<td>Sloughing Ulcer</td>
<td>6 -</td>
<td>Curettage, Incision</td>
<td>Curettage, Incision</td>
<td>Ulcer performed. Ulceroma adherent ( V ). Double trisectomy plus third incision later. But no vision ( V ) remained irritable. So incised.</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>42</td>
<td>Chip of Coal</td>
<td>Sloughing Ulcer</td>
<td>7 -</td>
<td>Incision, Curettage</td>
<td>Incision, Curettage</td>
<td>Ulceroma small - but ultimate ( V ) not obtained.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>45</td>
<td>Chip of Coal</td>
<td>Sloughing Ulcer</td>
<td>14 -</td>
<td>Incision, Curettage</td>
<td>Incision, Curettage</td>
<td>Three months after accident - there was complete cataract. Complete + Change to +1. Post-trisectomy - ( V ) visual.</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>45</td>
<td>Chip of Coal</td>
<td>Ulcer</td>
<td>3 -</td>
<td>Incision</td>
<td>Incision</td>
<td>Ultimate vision doubtful.</td>
<td></td>
</tr>
</tbody>
</table>

Ultimate vision fair (not ascertained)
<table>
<thead>
<tr>
<th>No</th>
<th>Degree</th>
<th>Cause</th>
<th>Condition when seen</th>
<th>Time elapsed</th>
<th>Non-operative Treatment</th>
<th>Operative Treatment</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Male</td>
<td>Chip of Coal</td>
<td>Blurred Vision, Hypopnoea</td>
<td>14 Days</td>
<td>Burn, Atrop &amp; Opium</td>
<td>N/A</td>
<td>N/A</td>
<td>Ultimately 2 fingers at 4 feet.</td>
</tr>
<tr>
<td>23</td>
<td>Male</td>
<td></td>
<td>Blurred Vision</td>
<td>5 -</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>First examined - but small nebula only, when last seen -</td>
</tr>
<tr>
<td>24</td>
<td>Male</td>
<td></td>
<td>Blurred Vision</td>
<td>12 -</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Small central leucoma left, &amp; T. = 2 fingers at 4 feet -</td>
</tr>
<tr>
<td>25</td>
<td>Male</td>
<td></td>
<td>Blurred Vision, Hypopnoea</td>
<td>3 -</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Hypopnoea soon disappeared, &amp; T. when last seen = 5/60</td>
</tr>
<tr>
<td>26</td>
<td>Female</td>
<td></td>
<td>Blurred Vision</td>
<td>4 -</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Ultimate vision about 5/60</td>
</tr>
<tr>
<td>27</td>
<td>Male</td>
<td></td>
<td>Blurred Vision, Hypopnoea</td>
<td>7 -</td>
<td>Incision, Antisyphilis</td>
<td>N/A</td>
<td>N/A</td>
<td>Cornea had been where first seen - T. = perception of sight.</td>
</tr>
<tr>
<td>28</td>
<td>Male</td>
<td>Chip of Stone</td>
<td>Blurred Vision</td>
<td>7 -</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Slight vision - exact amount could not be ascertained.</td>
</tr>
<tr>
<td>29</td>
<td>Male</td>
<td>Chip of Coal</td>
<td>Blurred Vision, Hypopnoea</td>
<td>5 -</td>
<td>Incision</td>
<td>N/A</td>
<td>N/A</td>
<td>Cornea had been where seen - T. = perception of sight.</td>
</tr>
<tr>
<td>30</td>
<td>Male</td>
<td></td>
<td>Blurred Vision</td>
<td>7 -</td>
<td>Antisyphilis, Throat</td>
<td>N/A</td>
<td>N/A</td>
<td>Central leucoma - directive amount, 5 fingers to left &amp; 2 to right slightly</td>
</tr>
</tbody>
</table>

5. Fixation - later.
<table>
<thead>
<tr>
<th>No.</th>
<th>Age</th>
<th>Sex</th>
<th>Case</th>
<th>Condition when seen</th>
<th>Time elapsed since admission</th>
<th>Non-operative Treatment</th>
<th>Operative Treatment</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>male</td>
<td>53</td>
<td>Chip of coal</td>
<td>Two small Sloughing Ulcers</td>
<td>4 days</td>
<td>Cast, Acet. 6 Funic.</td>
<td>None</td>
<td>Ret</td>
<td>Eye did well - but ultimate vision not ascertained.</td>
</tr>
<tr>
<td>32</td>
<td>male</td>
<td>16</td>
<td>Gunpowder explosion</td>
<td>Sloughing Ulcer</td>
<td>1</td>
<td>Cast, Indigent later</td>
<td>None</td>
<td>Cure</td>
<td>Abcess of cornea numerous foreign bodies embedded in it - removed as possible removed.</td>
</tr>
<tr>
<td>33</td>
<td>male</td>
<td>49</td>
<td>Chip of coal</td>
<td>&quot;</td>
<td>4</td>
<td>Cast, Indigent later</td>
<td>None</td>
<td>Cure</td>
<td>During convalescence lacerated.</td>
</tr>
<tr>
<td>34</td>
<td>female</td>
<td>65</td>
<td>Spark from file</td>
<td>Sloughing Ulcer, Hypothen</td>
<td>14</td>
<td>Cast, Indigent later</td>
<td>None</td>
<td>Cure</td>
<td>Large abscess of cornea.</td>
</tr>
<tr>
<td>35</td>
<td>male</td>
<td>50</td>
<td>Chip of coal</td>
<td>&quot;</td>
<td>5</td>
<td>Cast, Indigent later</td>
<td>None</td>
<td>Cure</td>
<td>Eye pain loss of vision.</td>
</tr>
<tr>
<td>36</td>
<td>male</td>
<td>25</td>
<td>Chip of iron</td>
<td>Sloughing Ulcer</td>
<td>6</td>
<td>Cast, Indigent later</td>
<td>None</td>
<td>Cure</td>
<td>Small central abscess.</td>
</tr>
<tr>
<td>37</td>
<td>female</td>
<td>42</td>
<td>Piece of cement</td>
<td>Sloughing Ulcer, Exophthalmia</td>
<td>14</td>
<td>None</td>
<td>Cast, Indigent later</td>
<td>Cure</td>
<td>Too far advanced when seen.</td>
</tr>
</tbody>
</table>
### Table: Data Analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>y</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>z</td>
<td></td>
</tr>
</tbody>
</table>

- Sample: This is a sample data set for analysis.
- Treatment: The treatment group was observed to perform better than the control.
- Control: The control group showed consistent performance throughout the experiment.

### Additional Notes
- The results are preliminary and require further validation.
- Further analysis is recommended for a more accurate conclusion.
- All data was collected under controlled laboratory conditions.
In first we come to injuries to the cornea which have not resulted in sloughing ulcers.

I do not intend to give a detailed list of the cases in which a foreign body has lodged in the cornea itself removed from it, I where the case has progressed favourably without any complication. About 25 such cases have been seen during the time the other cases have been collected.

The treatment adopted has been. After removing the foreign body, the eye is bathed with warm Boracic acid lotion every three or four hours, or if there is much pain & iritation, poppy-head fomentations are ordered. Under one of these, the irritation as a rule soon subsides.

If, however, the foreign body has destroyed much of the corneal tissue, or been of septic material, we may yet complications resulting as ulcers, iritis &. which must be treated according to the condition present.

As to other wounds of the cornea not resulting in sloughing ulcers, such as abrasions or small nicked wounds. Some simple treatment is usually sufficient, but we must watch carefully for unfavourable symptoms. Treat them if they arise.

For abrasions, a few drops of Castor oil
often think the irritation, or if the eye is very painful, fomentations of poppy heads or Belladonna should be tried. Atropine should usually be used, on account of the tendency toritis.

Such a variety of cases are met with, that one cannot enter fully into all the different series of treatment which may be required.

I may state here that Perchloride of mercury lotion has been used in some of the cases in this class, in many of the long-standing ulcers, & as some surgeons have stated that it causes the cornea to become opaque at times, it is well to mention, that this has not been noticed in any of these cases.
<table>
<thead>
<tr>
<th>No.</th>
<th>Date/Time</th>
<th>Injury Location</th>
<th>Injury Description</th>
<th>First Aid</th>
<th>Non-Operative Treatment</th>
<th>Operative Treatment</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19</td>
<td>Wall</td>
<td>Splinter of wood</td>
<td>4 days</td>
<td>Cast, Antibiotics</td>
<td>Tink</td>
<td>Poor sight of thumb, poor vision, no details.</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>Wall</td>
<td>Piece of iron</td>
<td>14 -</td>
<td>Cast, Antibiotics + Ice</td>
<td>Tink</td>
<td>Poor sight of thumb, poor vision.</td>
</tr>
<tr>
<td>3</td>
<td>HH</td>
<td>Wall</td>
<td>Piece of Steel</td>
<td>2 -</td>
<td>Yellow ointment + Tink</td>
<td>Tink</td>
<td>Superficial abrasion in centre of cornea. Ultimately V = 6/12.</td>
</tr>
<tr>
<td>Course</td>
<td>1st Week</td>
<td>2nd Week</td>
<td>3rd Week</td>
<td>4th Week</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
<td>---------</td>
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<td>History</td>
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<td>English</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td></td>
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</tr>
</tbody>
</table>
Injuries to Cornea and Lens.

Injuries to the cornea then, with the resulting traumatic cataract, may be caused by a great variety of objects, as is seen by looking at the few cases here collected.

Of these, 2 were injured by a stone, 2 by a piece of coal, 2 by each by a piece of steel, piece of glass, fork, stone &berite cep.

Of these nine cases, 6 recovered with useful vision, one did not improve as regards vision on account of leaving a detached retina, & the other two are still under treatment.

Injuries to the cornea alone are not so frequent as one might expect, owing to the liability of the adjacent parts to be implicated, but if alone injured, a very fair ultimate result may be expected.

The progress of each case depends to a great extent on the amount of damage done to the lens capsule.

If considerable lacerration of the capsule has taken place, there is rapid swelling of the lens, & the formation of a cataract when the aqueous humour comes in contact with the lens fibres, followed by absorption of the soft matter.

If, on the other hand, the aqueous humour cannot gain free access to the lens fibres, the opacity takes place less rapidly, &
The swelling of the lens is much less.

An example of this latter is seen sometimes after a blow on the eye, when the lens capsule is ruptured at the periphery, where the thicker anterior joins the thinner posterior capsule, or in the latter, for in neither of these cases can the aqueous humour gain access to the lens fibres, as it can when the anterior capsule is ruptured.

The absorption of the lens goes on very slowly in such cases, so that it is evident, that the progress of a case depends greatly on the amount and duration of the injury to the lens capsule.

It is important to remember, that the pressure of a swollen lens causes more irritation in an adult than a child, that the rapid swelling of the lens in a child is better borne, than a slower more limited expansion in an adult, which latter may excite dangerous inflammation if it occurs in an old person.

The reason is expressed by von Graefe when he says: "On the one hand the lens is softer, causes less mechanical irritation when the patient is young, for the other, the iris becomes progressively more irritable as age advances."
The treatment which has been adopted in these cases may be conveniently divided into early and late.

1. Early Treatment. From the time when the case is first seen, atropine drops are used to keep the pupil dilated. By doing this, we make room for the swelling lens, prevent it overwhelming the iris, as the swelling, if rapid, is apt to cause iritis, or secondary blanched iris pushing the iris forwards and blocking the angle of the anterior chamber.

If the soft matter of the lens is coming out of the capsule, it also irritates the iris, so we are apt to get abscesses formed; if these do take place it is better for them to lie peripheral.

The frequency of the atropine drops is lowered from twice to once daily, after the pupil is dilated and all irritation has subsided, and this is continued during the time that the lens substance is being absorbed.

When the irritation, caused by the soft lens matter in the anterior chamber, does not subside, it must be let out.

Pains of variety that we have much irritation we should first try cupping; cold locally, and not operate unless distinct symptoms of glaucoma develop. Then we advise repeated puncture along with sympotms before leaving.
because to dissection, with extraction of the lens.

He writes says that no advantage can be gained
from the use of Atropine, except where the iris
shows signs of irritation. Consequently leave
formed, but it seems to me advisable to
use Atropine from the first; if only to lessen
the tendency to irritate, prevent the irritable
response of the iris.

If we have a case where the lens is
opaque, but the lens matter is not being
absorbed, we may hasten this by needle
holes to a limited extraction.

In some cases, as after a blow, when the lens
capsule has been ruptured at the equator, or
when a wound in the capsule lets blood
flow, little or no aqueous humour gets into the
lens substance, and no absorption goes on;
sbut later, secondary changes may take place
as in Senile Cataract.

Later Treatment - If the case goes on
favorably, we find at the end of some
months that the lens capsule alone remains,
the true nucleus the absorption of the soft-matter
takes varying awhile in different cases.

The capsule displacement causes impairment of
vision, but nothing should be done to it
until all irritation has subsided. Then we
must keep some means either make a hole in
the capsule or remove it.
For the first of these we usually have recourse to cutting—two needles being used, through a small hole is made in the capsule which is all that is required. (Case 175)

Sometimes the capsule is so dense that this operation is of no avail, for the rent made in the capsule closes again. In such cases, the operation of Capsulectomy should be done.

To do this, an incision is made with a sterlum a little inside the margin of the cornea, a pair of Capsule or Iris forceps are introduced, and a piece of the capsule seized near its centre. This is drawn gently to the edge of the wound where a piece is cut off.

The remainder goes back with a hole in it which, if near the centre, makes a very good artificial pupil considerably improves the patient's vision.

The great advantage of this operation is that it causes much less irritation than the removal of the entire capsule. So far as I am aware, this is not seen to be well known.

Mr. Lawson says that removal of the capsule entirely is a very dangerous operation and not usually justifiable.

Abolition of the capsule to the corneal wound may cause irritation there glaucoma in rare cases. When such exists, it must be divided, after which, an eye which has remained irritable for a long time usually settles down completely. (as seen in Case 1).
<table>
<thead>
<tr>
<th>Male</th>
<th>Age</th>
<th>Cause</th>
<th>Condition when seen</th>
<th>Time before operation</th>
<th>Post operative treatment</th>
<th>Operative treatment</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>Explosion of nitroglycerin cap</td>
<td>Cornea blow out</td>
<td>14 days</td>
<td>Kept Atropine 1% daily</td>
<td>None</td>
<td>Enuk</td>
<td>To be operated.</td>
</tr>
<tr>
<td>2</td>
<td>27</td>
<td>Piece of coal</td>
<td>Vertical wound of cornea, blow out</td>
<td>6 weeks</td>
<td>Kept Atropine 1% daily</td>
<td>None</td>
<td>Enuk</td>
<td>To be operated.</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>Etienne</td>
<td>Vertical wound of cornea, blow out</td>
<td>4 days</td>
<td>Kept Atropine 1% daily</td>
<td>None</td>
<td>Enuk</td>
<td>To be operated.</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>Etienne</td>
<td>Vertical wound of cornea, blow out</td>
<td>1 week</td>
<td>None</td>
<td>None</td>
<td>Enuk</td>
<td>To be operated.</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
<td>Piece of steel</td>
<td>&quot;</td>
<td>7 weeks</td>
<td>&quot;</td>
<td>None</td>
<td>Enuk</td>
<td>To be operated.</td>
</tr>
<tr>
<td>#</td>
<td>Name</td>
<td>Condition/Event Date</td>
<td>Case History</td>
<td>Reason for Operation</td>
<td>Operation</td>
<td>Result</td>
<td>Remarks</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>Jane</td>
<td>point of scalp</td>
<td>injured by piece of glass</td>
<td>Eclipted after 1 year</td>
<td>Eclipted</td>
<td>Eclipted</td>
<td>Recovery first time capsule bleeding and residual pupil. Eclipted area near brow, margin of cornea. After ecliptation (done as described in letter) T = fingers at 3 feet (instantly)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Mark</td>
<td>wound of skull</td>
<td>injury to head</td>
<td>Eclipted after 2 years</td>
<td>Eclipted</td>
<td>Eclipted</td>
<td>Recovery first time capsule bleeding and residual pupil. Eclipted area near brow, margin of cornea. After ecliptation (done as described in letter) T = fingers at 3 feet (instantly)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>John</td>
<td>stone (aglet)</td>
<td>Eclipted after 1 year</td>
<td>Eclipted</td>
<td>Eclipted</td>
<td>Recovery first time capsule bleeding and residual pupil. Eclipted area near brow, margin of cornea. After ecliptation (done as described in letter) T = fingers at 3 feet (instantly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Mike</td>
<td>piece of wood</td>
<td>Eclipted after 1 year</td>
<td>Eclipted</td>
<td>Eclipted</td>
<td>Recovery first time capsule bleeding and residual pupil. Eclipted area near brow, margin of cornea. After ecliptation (done as described in letter) T = fingers at 3 feet (instantly)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Injuries to the Lens.

In this class, I have not included three cases in which the ciliary region was involved, but shall speak of these separately.

Of the 9 cases here noted, 6 recovered useful vision (cases 1, 2, 3, 5, 6, 8); of the other three, one went wrong because the patient refused treatment (9), in one a sloughing ulcer was present which went on to panophthalmitis (7), in the remaining one, the eye was enucleated on account of symptoms of sympathetic irritation in the opposite eye (4).

The nature of extent of injuries to these regions of the eye, varies much in different cases, when a case is first seen, one must decide whether an attempt shall be made to save the eye or not. On the one hand, we wish to save an eye if there is a chance of useful vision in it; whilst on the other, we must carefully consider what risk the opposite eye is running, during the unreliable treatment of the case, where we have decided to try and save the injured eye.

As Mr. Mitchell says, 'Judge each case from two points of view, the damage to the injured eye, the risk to the sound one; the question, whether to sacrifice or to attempt to save the former, is often very difficult to decide.'
Walters in his book on the eye says: 'To what extent of injury, short of actual collapse would destroy our hope of being able to restore an eye to some degree of usefulness, so that we should never condemn an eye if there is a possible chance of it being of use to the patient.'

Having decided to attempt to save the eye, the following are the lines of treatment which have been adopted in the cases here; varying of course, according to the time which has elapsed between the injury and when the patient is first seen by the surgeon.

1. Early treatment - First, examine the eye to find whether the foreign body which has caused the injury has lodged in the eye, if not, proceed as follows. Atropine drops are used from the first, to keep the pupil as well dilated as possible, the eye bathed with a solution of Boric Acid or Perchloride of Mercury.

Prolapse of the Iris often occurs (as in cases 2, 3, 4, 7).

If seen within an hour or so of the injury, some have tried to return the prolapsed part, either by manipulation or by the help of Atropine or Tellurine drops, but this was not possible in any of these cases.

If seen within the first two days or so (as in 2, 3) the prolapsed iris having been drawn further out of the wound with a pair of iris forceps,
a large piece of it is cut off with scissors, and the cut ends replaced by a curette, to prevent them from becoming entangled in the wound during the healing process. The object of doing this is to prevent the subsequent dragging on the iris which takes place when it gets incarcerated in the wound. Suddenly it keeps up irritation and increases the danger of sympathetic inflammation. This is so, whether the germ theory of sympathetic disease is true or not.

Some authorities object to cutting off the prolapsed part of the iris, as for instance, Mr. Lawson rules says that there is a danger in doing so, because the wound in the cornea not being clean cut, does not heal up well, there is apt to be additional protrusion of the iris and displacement of the pupil. This however has not occurred in any of the cases where the operation has been done here neither in this class of cases, nor in those where the wound involved the ciliary region.

After this has been done, the Atropine drops are continued, the frequency with which they are used being lessened as the irritation subsides.

Later Treatment - If the patient is not seen by the Surgeon for days
or weeks after the iris has become prolapsed, or in which the iris without being prolapsed gets drawn into the wound during the healing process (case 538), we find that as it gets mixed up with the iris tissue there is a continual tear on it, and some means must be adopted to relieve this.

This may be done by various operations:

a. By doing an iridectomy opposite the original wound, as done in cases 175. The objection to this is that it does not completely relieve the dragging on the iris.

b. Remove a piece of iris at the seal of the original wound, which is the favourite operation with many authorities.

c. The operation which I wish to speak highly of, is that of double iridectomy - in which an iridectomy is performed on each side of the place where the iris is adherent to the tear. A Graefe’s cataract knife is introduced near the margin of the cornea on one side of the wound, passed behind it, brought out at a corresponding point on its opposite side, now cut-outwards for a short distance, as in doing sclerotomy, stopping short of the scar to which the iris is adherent. After withdrawing the knife, two openings are left through which a piece of iris is excised on each side.
The operation completed as for an ordinary iridectomy.

This operation was done in Case 6, as will be seen further on, in several cases of wounds involving the ciliary region. Although not generally well known or employed, it seems to me preferable to either of the two former operations, as it has the advantages that it effectively relieves the dragging on the iris, that the original wound is not interfered with. The result is practically the same as when in a case which is seen early, the prolapsed iris is drawn out and off, although after the double iridectomy, there is a small portion of iris left adherent to the scar.

After absorption of the soft lens matter, the capsule will be left, may either be left alone, or treated by needles or capsulectomy, according to what has been said when speaking of these before.

Abscesses of the capsule to the iris or tear may require treatment.

Briefly stated, of the 8 cases where the eye was saved, in two the prolapsed iris was tied (2.3), in three cases subsequent iridectomy done (3.6). In two, abscesses of the capsule to tear were divided (2.6). In one case, capsulectomy was performed. In one partial extraction of the lens when the tension of the eye went up (5).
<table>
<thead>
<tr>
<th>No.</th>
<th>age</th>
<th>cause</th>
<th>condition taken post-trauma</th>
<th>time elapsed since injury</th>
<th>operative treatment</th>
<th>operative treatment</th>
<th>comments</th>
</tr>
</thead>
</table>
| 1   | Male | point of neck | wound near lower margin of cornea, involving lens & iris also. | 6 months | Indentation (opposite surgical incision)  
Cystectomy  
(Cornea later) | Indentation (opposite surgical incision)  
Cystectomy  
(Cornea later) | When seen 6 weeks after accident, the cornea was reattached in the x-rays. Indeectomy was not possible due to relapse of the vitreous. After Cystectomy, 1 V/2 fingers at 1 foot (without lens). |
| 2   | Male | piece of iron  | wound of cornea, iris & lens.  
Proptosis of iris | 24 hours | Excision of proptosed iris.  
Atropine was applied in the doses of 1/5000 of 1/50 of the weight of the patient.  
Capsule of lens removed in the course of days.  
Capsule to tear | Excision of proptosed iris.  
Atropine was applied in the doses of 1/5000 of 1/50 of the weight of the patient.  
Capsule of lens removed in the course of days.  
Capsule to tear | Wound cuttled from margin to centre of cornea.  
Atropine was applied in the doses of 1/5000 of 1/50 of the weight of the patient.  
Capsule of lens removed in the course of days.  
Capsule to tear |
| 3   | Male | scale of iron  | wound of cornea, iris & lens.  
Proptosis of iris | 2 days | Excision of proptosed iris.  
Three months later, localised scar of cornea.  
Anterior synechiae. | Excision of proptosed iris.  
Three months later, localised scar of cornea.  
Anterior synechiae. | Wound cuttled from margin to centre of cornea.  
Excision of cornea.  
Anterior synechiae  
Localisation of scar of cornea.  
Anterior synechiae.  
No iriditis  
Complete comfort. |
<table>
<thead>
<tr>
<th>No</th>
<th>soldier</th>
<th>Cause</th>
<th>Condition when Seen</th>
<th>Time elapsed since injury</th>
<th>Non-operative treatment</th>
<th>Operative treatment</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Wall 13</td>
<td>Point of bullet.</td>
<td>Large wound of</td>
<td>2 days</td>
<td>20/07 - Stitch. Atrop. 1/2 IV.</td>
<td>Curettage.</td>
<td>Excellent. 2 months after injury.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Wall 18</td>
<td>Gunshot explosion</td>
<td>Wound of thorax,</td>
<td>14 hours</td>
<td>20/07 - 1/2 Atrop. 6/10 gr. Ace. C. &amp; C.</td>
<td>Takedown. 13/07 - Takedown. 21/07 - Indirectomy. (1 week later)</td>
<td>Excellent. After indirectomy in sural nerve, some disability. No recurrence.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Wall 20</td>
<td>Point lead.</td>
<td>Wound from</td>
<td>24 hours</td>
<td>16/07 - Indirectomy. 16/07 - 1/2 Atrop. 6/10 gr.</td>
<td>No sign.</td>
<td>Excellent.</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- Indirectomy was performed on the sural nerve. No recurrence observed after indirectomy in the sural nerve.
- Excellent recovery observed in both cases.
<table>
<thead>
<tr>
<th>No.</th>
<th>Age</th>
<th>Cause</th>
<th>Condition when seen</th>
<th>Time elapsed</th>
<th>Non-operative Treatment</th>
<th>Operative Treatment</th>
<th>Result Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>30</td>
<td>piece of coal</td>
<td>wound of Cornea, Iris, Pupil, Pterygium of Iris, Hanging ridge of Cornea, going on spontaneous healing</td>
<td>3 days</td>
<td>Sect. Atrop. &amp; Tonic.</td>
<td>Incision through the globe - completion of Stump - Cushion 251st.</td>
<td>when first seen pupil was occluded - wrote down pupil, which also fills the wound - Hanging ridge went on to spontaneous healing, &amp; globe healed.</td>
</tr>
<tr>
<td>8</td>
<td>25</td>
<td>piece of steel</td>
<td>wound of Cornea, Iris, Pupil</td>
<td>4 days</td>
<td></td>
<td></td>
<td>when last seen the iris was adherent to the scar, eye been very irritable, but scar was healing - Ulterior result could not be found - but eye was saved.</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>glass cap explosion</td>
<td>wound of Cornea, Iris, Pupil, Hanging ridge of Cornea &amp; Suppuration</td>
<td>7 days</td>
<td>Sect. Atrop. &amp; Tonic.</td>
<td></td>
<td>After first three days, parents refused to allow child to be treated. So eye went to the bed. When seen one year after - there was no vision or fundus reflex. Pupil adherent to old scar. Eye shrunk down but not floating. No indication of opposite eye -</td>
</tr>
</tbody>
</table>
Wounds of Eye involving the Ciliary Region.

In speaking of injuries involving this region, we are especially brought face to face with the important subject of sympathetic irritation and inflammation, but it is impossible for me here to attempt to discuss so large a subject, about which so much has been written, so many different views expressed.

Here I shall only refer to it in passing, as I have only one case of sympathetic irritation on any list, perhaps that is all that is necessary.

As in the last class of cases, so here, we may have difficulty in deciding whether it is advisable to attempt to save the eye or not. A must keep before the fact, that injuries to this region are especially liable to cause sympathetic inflammation.

By some it is believed, that this is more likely to result in children than in adults, but observations made by McBurney, from some years ago, convinced him that the tendency to sympathetic inflammation is greater in aged people, however there still seems to be considerable difference of opinion on this point.

Speaking in Boston Journal (1892) says, In the case of a child under ten, with perforating injury of conjunctiv, in any region of
the eye, one should enucleate at once, on account of the greater tendency to sympathetic inflammation in a child. This seems rather a sweeping statement, although, probably, a perforating injury of the eye is the most dangerous thing.

As regards age, looking at the cases I have here, I find that four of them were under ten years of age (No. 2, 3, 4, 7). No. 1 was hopeless from the first. In No. 6 there was much vitreous loss; there was little hope of saving the eye; but in each of the other two cases (No. 2, 3), the patient recovered with useful vision. One would not think of sacrificing useful eyes as either of these without giving them a trial first.

Of the whole six cases, I may say that two were hopeless from the first. One was enucleated (4-5), and the remaining four cases, in three useful vision was got (1, 2, 3), but in the other there was no vision, the eye softened & was enucleated (6).

In case 1, 2, 3 there was prolapse of the iris. In case 1, 2, 3, 4, 5 there was no injury to the lens.

As the injuries involving the ciliary region are often similar to injuries where the cornea, iris, & lens are alone affected, the treatment is on much the same lines.
Early treatment: Atropine drops are used from the first. The iris, when prolapsed, 
seen within the first few days after the accident, was snipped off (243). When 
there was no chance of saving a useful eye, enucleation was done.

Later treatment: When the iris is 
mixed up in the lens in the cornea, the 
ragging on it must be relieved by one of 
the methods before described. In case a 
Single iridectomy was done, in cases 2, 3, 4, 6 
Double iridectomy. The latter operation 
here also seems to be much the most 
preferable.
<table>
<thead>
<tr>
<th>No</th>
<th>Age</th>
<th>Sex</th>
<th>Cause</th>
<th>Condition when entered</th>
<th>Postoperative Treatment</th>
<th>Operative Treatment</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>Female</td>
<td>Shuttle (measuring instrument)</td>
<td>Wound of Cornea, existing through ciliary region. Enlargement of Iris. Iris not injured.</td>
<td>7 days</td>
<td>Glue: Atropine 1/1000</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Head of Vitreous liumours round prolapsed Iris. Patient refused to allow prolapsed part of Iris to be removed. Eye carefully watched for unfavorable symptoms. May 5th. Head of Vitreous quite disappeared. Eye looks fairly well. V 1 1/2.</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>Male</td>
<td>Sharp stone</td>
<td>Wound involving ciliary region &amp; extending to the centre of iris. Iris prolapsed. No injury to Lens.</td>
<td>3 days</td>
<td>Glue: Atropine 1/1000</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Accident on 1st. T 1/2 when last one 1/2 there was head of syphylite round prolapsed Iris. After double Indentation, close to original wound, Iris settled down fairly well. June 15th. T: fingers cut &amp; felt - Vision normal. Drops now used daily.</td>
</tr>
<tr>
<td>No</td>
<td>Cause</td>
<td>Condition when seen</td>
<td>Non-operative Treatment</td>
<td>Operative Treatment</td>
<td>Result</td>
<td>Remarks</td>
<td></td>
</tr>
<tr>
<td>----</td>
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<td>---------</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Female 3</td>
<td>Sharp cut of a stick.</td>
<td>24 hours</td>
<td>Double Suturing</td>
<td></td>
<td>Envelope didn't cut off. Double suture was closed. Postoperatively, there was no symptom.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Male 4</td>
<td>Point of scissors.</td>
<td>6 hours</td>
<td>Double Suturing</td>
<td></td>
<td>Postoperatively, there was no symptom.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Male 5</td>
<td>Blow with stone.</td>
<td>6 hours</td>
<td>Closure</td>
<td></td>
<td>Eye was completely closed at once.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Female 6</td>
<td>Piece of broken glass.</td>
<td>3 hours</td>
<td>Double Suturing</td>
<td></td>
<td>Superficial cut, while peeling glass. No injury to lens.</td>
<td></td>
</tr>
</tbody>
</table>

- Postoperatively, there was no symptom.
- Envelope didn't cut off. Double suture was closed. Postoperatively, there was no symptom.
- Double suture was closed. Postoperatively, there was no symptom.
- Eye was completely closed at once.
- Superficial cut, while peeling glass. No injury to lens.
Injuries to the Eye without External Trauma.

The cases seen under this heading have been those of Traumatic Uveitis, Detached Retina, Haemorrhage into Vitreous Humour, Congenital opacity of the Eyed, and Physiological Amblyopia.

Some cases of treatment have been tried in these different conditions, that I shall not attempt to discuss them all, but merely to mention what has been done in these cases.

The reason for recording them, is simply to complete the list of cases which have resulted from an injury.

As to the detached retina cases, there was no marked improvement in any of them. Surgery of the sclerotic, behind the detachment, was tried twice—the patient being kept quiet in bed for three weeks after, but this did not appear to have any beneficial effect.

The more heroic methods of treatment, by injecting saline in front of the detached portion of the retina, or by continuous drainage by a gold thread, as recommended by De Wecker, or by draining off the subretinal fluid with a trephine, were not tried.

Anopia was present in three out of the six cases; the treatment adopted is mentioned with the cases.

For the cases of Traumatic Uveitis, the treatment—
was usually the same as for other forms of dritis. Atropine drops locally, with mercury + sublimate of potassium internally. When pain is severe, leeches or blisters to the temple.

For other treatment see notes of cases.
<table>
<thead>
<tr>
<th>No</th>
<th>Age</th>
<th>Sex</th>
<th>Duration of Injury</th>
<th>Initial Treatment</th>
<th>Operative Treatment</th>
<th>Result</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 3  | Male 50 | Blow on eye | Detached retina | 2 weeks + antibiotic drops | Pars plana vitrectomy, retinal detachment peeled at the end of one month | Detachment of lower temporal part of retina. After pars plana vitrectomy, patient kept under observation for several weeks with good improvement over time. Myopia = 5.0. Temporary slight improvement in vision, Fig. 2.
| 4  | Male 24 | Blow on head | --- | 3 months | nil | Large detachment of lower temporal part of retina. Myopia = 3.0. \( V = \frac{3}{5} \) 3. As detachment occurred 3 months, adjustment gone worse since no active treatment possible.
| 5  | Male 50 | Blow on eye | --- | 6 months | nil | Fig. 2. Condition of the eye has remained the same for several months. Myopia = 5.0. Retinal detachment below.
<p>| 6  | Male 51 | Blow on eye | --- | 2 weeks | nil | Fig. 2. Small detachment of lower part of retina also disappeared. Patient kept at rest in bed. Condition of eye remained the same. |</p>
<table>
<thead>
<tr>
<th>No</th>
<th>Age/sex</th>
<th>Cause</th>
<th>Condition when seen</th>
<th>Time elapsed before operation</th>
<th>Non-operative treatment</th>
<th>Operative treatment</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>male</td>
<td>piece of bomb</td>
<td>Communion of zygomatic - Temporoparietal of Confrontation</td>
<td>4 days</td>
<td>Cold, deep fibrotic</td>
<td>-</td>
<td>incision</td>
<td>Light pain times increased when first seen. ( V = \frac{5}{8} \text{ (L) } \quad V = \frac{5}{6} \text{ (R) } ) with splinter microscope noting abnormal films. ( V = \frac{5}{8} \text{ (L) } \quad V = \frac{5}{6} \text{ (R) } ). Anterior corneal nucleus noted, further improvement took place.</td>
</tr>
<tr>
<td>10</td>
<td>male</td>
<td>Blow with a cane</td>
<td>Dislocation of Lens - Hyphema</td>
<td>2 days</td>
<td>Sect. Pt. Ant. Post.</td>
<td>-</td>
<td>-</td>
<td>Cut of canthi, slight rise on inner side - Amount of conjunctiva half an inch from the edge of cornea on inner side - Discharging into corneal wound made and - Subsequent Iris - Pupillary anterior chamber. Pupil dilated to atropine. - Lens dislocated laterally - Edge of iridectomy at inner margin of pupil when dilated ( V = \frac{3}{6} \text{ (L) } \quad V = \frac{5}{6} \text{ (R) } ). Examination of light in eye - with splinter microscope - Disappearance of retinal detachment. Path of elimination on outer side of optic disc, none seen the cornea. - Posterior vitreous body disappeared - Pre-treatment disappeared with atropine.租子 the removed if it does chronic - but at present not advisable to interfere.</td>
</tr>
</tbody>
</table>
Foreign bodies in the Eye-ball.
In each of the two cases recorded here, the foreign body was a piece of steel.
In one case, it had been lodged in the eye for five years, during which time the patient's vision had gone, but there had not been any pain or irritation in the eye until one week before the patient was seen. This case shows well that a foreign body may remain in an eye for a long period without causing much discomfort to the person. In any eye containing a foreign body, a slight injury may cause sympathetic inflammation to be set up in the other eye.

There is nothing special to be said about the two cases here; some notes are given in the table, but I shall just mention how the foreign bodies were removed.

This was done by a magnet: they, a pair of magnetised S's forceps. In each case the magnet itself was first tried by this the position of the foreign body slightly changed; but to remove it the magnetised S's forceps were found to be most useful. When the foreign body is very difficult to remove (as in Case 1), the magnetised S's forceps may be tried alternately, as the one may succeed where the other has failed.
So far as I am aware, the use of Dr. Jones's in this way has not been advocated; but, from the small experience of these two cases, I think they will be found very useful if tried in others.
<table>
<thead>
<tr>
<th>No.</th>
<th>Age (yr)</th>
<th>Sex</th>
<th>Duration (yr)</th>
<th>First Seen</th>
<th>Cause of Injury</th>
<th>Site</th>
<th>Operative Treatment</th>
<th>Operative Treatment Notes</th>
<th>Results</th>
<th>Remarks</th>
</tr>
</thead>
</table>
In conclusion I may briefly state that the points which I wish to emphasize in this paper are:

1. The method of dealing with cases of injury to the conjunctiva when seen early, by passing a probe daily between the opposed injured surfaces.

2. The frequency of sloughing ulcers of Cornea in a colliery district - their conservation.

3. The treatment of sloughing ulcers by the local application of Choline.

4. The value of the actual cautery in arresting the spreading of a sloughing ulcer.

5. The advantages of letting out impurities by a vertical radial incision in the Cornea.

6. The operation of Capsulectomy, where after injury to the lens, the capsule remaining is very dense.

7. The value of double iridectomy after wounds of eyeball involving the Cornea - iris, or Ciliary region.

8. The use of magnetized Iris forceps for removing pieces of steel from the interior of the eyeball.