

**On traumatic keratitis : with a report of nineteen cases treated at the London Ophthalmic Hospital, between December, 1862, and May, 1865 / by Spencer Watson.**

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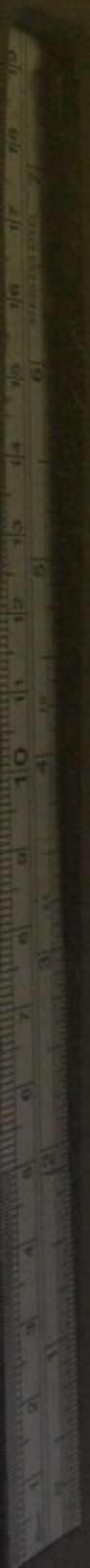
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ON TRAUMATIC KERATITIS.

ON

# TRAUMATIC KERATITIS:

WITH A

REPORT OF NINETEEN CASES

TREATED AT THE LONDON OPHTHALMIC HOSPITAL

BETWEEN DECEMBER, 1862, AND MAY, 1863.

BY

SPENCER WATSON, Esq., F.R.C.S. Eng.

ASSISTANT SURGEON, KING'S COLLEGE HOSPITAL, &c.

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HAYMARKET, W.

MDCCLXV.

*Surgeon*<sup>3</sup>  
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ON TRUANTIC KERATITIS

The following cases have been selected for the purpose of the  
illustrations from among a large number of comparatively trivial  
cases. A few instances of patients present themselves with long-  
standing keratitis, or other keratic changes, in the cornea  
who are not immediately relieved from the removal of the offending  
particle and who have no subsequent marked degree of keratitis  
in some instances a thin membrane. Cases 6 may be taken as a  
sample of these cases, but of this I have several others than the  
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after the removal of the offending particle.

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to be to a great extent proportionate to the advanced condition  
of the patient, the character of the inflammation, taking its  
course from the peculiar condition of the patient's system much  
more than from the nature of the injury. A very slight injury  
is often followed by very severe keratitis with effusion of pus  
or lymph between the layers of the cornea, and now the anterior  
chamber in ill-nourished subjects, and the results are pro-  
portionately disastrous. Cases 1, 12, 13, 17, and 19 are good  
illustrations of this peculiarity.

On the other hand, Cases 10, 11, and 18 are instances of good  
recovery in young healthy people, after injuries as great or  
greater than in the other cases.

Next to keratitis injuries from exposure of the eye to  
the sun in the most severe cases of keratitis (the keratitis)  
keratitis are those caused by the use of powder being blown into  
the eye. Case 12 is a sample of many similar ones, and I have  
at present under treatment many likely to terminate in almost  
perfectly similar results. The early or rather the immediate

## ON TRAUMATIC KERATITIS.

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THE following cases have been selected for the severity of the symptoms from among a large number of comparatively trivial cases. Vast numbers of patients present themselves with fragments of metal, or other foreign bodies embedded in the cornea, who get immediate relief from the removal of the offending particle, and who have no subsequent mischief beyond, perhaps, in some instances, a thin nebula. Case 6 may be taken as a sample of these cases, but of rather more severe nature than the generality. Little more need be done in the way of treatment after the removal of the foreign body, than the avoidance of exposure to light for a few days, and the application of cold in the form of the iced douche, which I think is preferable to warm applications in most cases.

The great bulk of the reported cases are adults past the middle period of life, and the severity of the symptoms seems to be, to a great extent, proportionate to the enfeebled condition of the patient; the character of the inflammation taking its colour from the peculiar condition of the patient's system much more than from the nature of the injury. A very slight injury is often followed by very severe keratitis, with effusion of pus or lymph between the layers of the cornea and into the anterior chamber in ill-nourished subjects, and the results are proportionately disastrous. Cases 1, 12, 16, 17, and 19 are good illustrations of this peculiarity.

On the other hand, Cases 10, 11, and 18 are instances of good recoveries in young, healthy people, after injuries as great or greater than in the other cases.

Next to destructive injuries from explosions of gunpowder or fire, by far the most serious cases of traumatic (or accidental) keratitis are those caused by lime or mortar being thrown into the eye. Case 15 is a sample of many similar ones, and a case at present under treatment seems likely to terminate in almost precisely similar results. The early, or rather the immediate



removal of the lime by means of diluted vinegar injections and oily applications give the only chance of saving useful vision and even of preventing the total destruction of the eyeball.

In Cases 2, 4, 5, and 18 it is to be observed that the character of the inflammation was that of vascular injection without any effusion of pus or lymph, and associated with great intolerance of light. It would seem that the diathesis in these patients was more prone to the *adhesive* inflammatory form of disease than in the case of the more debilitated patients, who form the great bulk of the severe cases. Possibly, the taint of syphilis may have been present in these patients, and the injury received may have called forth the latent energies of the hereditary disease. It is remarkable that, in Case 18, mercury had been administered for some time previous to the patient's application to the hospital, and that the symptoms persisted for some weeks, until the iodide of potassium was given, when a rapid improvement took place.

The occurrence of intolerance of light appears to be infrequent as a marked symptom in cases of great severity, and in some of the worst cases is altogether absent. Pain around the orbit and in the eyeball, however, is a very prominent symptom in the same cases, and seems to be severe in proportion to the amount of intraocular pressure. Certainly, in those cases in which there has been tension of the globe appreciable to the touch (which, however, I have not observed in many), the patients have complained of pain and disturbed rest, and in such cases great relief has followed the evacuation of the aqueous humour, or an operation of iridectomy. Tension of the globe seems more common in traumatic ophthalmia than in other kinds of keratitis, and this is probably owing to the more frequent implication of the iris and the disturbance of the intraocular circulation.

In the treatment of traumatic ophthalmia the ordinary rules of surgery must be followed; but it will be of some interest to inquire under what circumstances the operation of tapping the anterior chamber is likely to be useful. There can be little doubt that the operation affords relief in cases of onyx and hypopyon, when these conditions are associated with much pain, whether there be increased intraocular pressure or not; but more especially under the former circumstances. When, in addition to suppuration or effusion into the anterior chamber, there is a sloughing ulcer of the cornea, or an ulcer threatening to slough, or when the pupil is kept closed by synechiæ, it is better to perform an iridectomy. Cases 16, 17, and 19 illustrate these points of practice. The repeated operation of paracentesis is available in many cases, and is preferable when the patient will submit to it; and it must be observed that paracen-

tesis may avail in the acute stage of the disease, but that iridectomy will be necessary at a later period, when the existence of synechiæ has been ascertained, and when the keratitis having subsided, a better opportunity is afforded for choosing the most favourable situation for an artificial pupil. The results, however, must not be judged of by the amount of vision remaining, the question of operation being one of relief of present pain, with the possibility of leaving a clear pupil and the restoration of some amount of vision; the alternative being an inevitable slough of the cornea, prolapse of the iris, staphyloma, or collapse and shrinking of the globe. Thus, Case 12 terminated in this way, and many similar cases are constantly occurring, in which the result would probably have been different had a timely iridectomy been resorted to. So much has been said and written on the advantage of this operation over that of paracentesis, that it is superfluous to repeat the arguments in a paper of this kind; but it would not be out of place to observe that in cases of ulceration of the cornea, in which there is reason to believe that extension of the ulcerative process is kept up by the tension of the eyeball, and consequent compression of the vessels supplying the cornea, it is necessary to afford a means of relief which will be lasting, in order to allow of a healthy action taking place in the ulcer; and as it is well known that a mere puncture of the cornea very rapidly heals over (often in the course of twenty-four hours), it is obvious that an iridectomy which permanently relieves the tension has considerable advantages over the mere temporary relief of paracentesis. The lymph found in the anterior chamber in these cases is more often semi-solid or gelatinous than in a fluid condition, it must not therefore be expected that the effusion can be removed; but we must be satisfied with having allowed the aqueous humour to escape and so relieved the intraocular pressure. Further illustrations of the advantage of this plan of treatment in cases of catarrho-rheumatic ophthalmia will, I believe, shortly appear in the Ophthalmic Hospital Reports; and I may here remark that the latter class of cases (viz., the catarrho-rheumatic) bears a very strong resemblance in many respects to the reported cases of traumatic keratitis, in which there is effusion between the layers of the cornea, and so much so, that it has been supposed by some surgeons that the two are identical, and that the train of symptoms usually described as catarrho-rheumatic are in reality always due to irritation from some foreign body on the cornea, the patient's system being at the time very much debilitated and unable to carry on the reparative process and to prevent destructive processes continuing. In support of this theory, there are some very curious facts adduced, but at present not sufficient to satisfy all the requirements, and therefore I

have thought it advisable for the present, at least, to treat of the two classes of cases as separate and distinct from one other.

Case 10 is interesting from the fact of the injury having been a penetrating wound, and also from Calabar bean having been employed with partial success to restore the circular form of the pupil by reducing the prolapsed iris. The success was not complete, though sufficiently so to encourage us in its use in similar cases.

Several cases have come under my notice of penetrating wounds from chips of iron, the foreign body remaining embedded in the cornea, and being partly in the anterior chamber. Such cases have required for their removal, that a broad needle should be passed into the anterior chamber through the margin of the cornea, and pressed against that part of the foreign body which is within the chamber, whilst with another needle or a very fine pair of forceps it is dislodged from its position by working under it anteriorly. Unless the precaution is taken of passing a needle behind the cornea, there is a great risk of thrusting the offending particle into the anterior chamber, when severe iritis would almost certainly ensue.

It may happen that the body which has caused the penetrating wound of the cornea has already reached the anterior chamber and has lodged on the iris. Several cases have occurred recently at Moorfields, and in all such it is necessary to remove a portion of iris with the foreign body. It has been proposed to remove the foreign particle by the aid of a magnetical needle, but I am not aware that this plan has ever been successful.

TABLE OF CASES.

Name and No.	Age and Sex.	Date of Admission.	Diathesis.	Nature of Injury and Date.	Chief Symptoms and Complications.	Treatment.	Result and Date.
R. M. 1.	64 M.	Dec. 31, 1862.	General health good, but somewhat debilitated.	Struck by a piece of putty eleven days before admission.	Left eye. Large ragged ulcer over central region, and abscess of cornea. Great pain. Pupil contracted. Punctum everted.	Gutt. atrop. Liq. cinchon. Lin. belladonnæ. Empl. lyttæ. April 1. Canaliculus divided.	Jan. 31. Pus absorbed. Pain relieved. Feb. 7. Hypopyon and contracted pupil. March 11. Leucoma of central region and anterior synechiæ and fixed pupil. April 1. Lessephora and conjunctivitis. Vision as before. Sept. 2. Tension of the globe increased. Some pain occasionally in the brow and eyeball.
J. W. 2.	16 M.	Nov. 18, 1862.	Healthy.	Struck by a piece of sheet zinc eight days before admission.	Right eye. Pain immediately after accident. Photophobia and lachrymation. Vessels passing corneal margin. Iritis and contracted pupil.	Gutt. atrop. Bark and benbane. Bichloride of mercury in alterative doses. Blisters repeated.	Much relieved after each application of atropine. Jan. 7. Inflammation subsided. Pupil remains contracted. Iris discolored and cornea hazy. Photophobia. " 21. The same. Photophobia.

TABLE (continued).

Name and No.	Age and Sex.	Date of Admission.	Diathesis.	Nature of Injury and Date.	Chief Symptoms and Complications.	Treatment.	Result and Date.
D. M. 3.	34 M.	Jan. 1, 1863.	Healthy.	Struck by chip of iron. Jan. 1. of 1863.	Ulcer at outer side. Vascular pink zone round cornea. Pupil small and sluggish. Pain in the eyeball and orbit.	Gutt. atrop. Artificial leech to temple. Cold applications. Aperients.	Probably relieved, as he did not apply after Jan. 3.
E. T. 4.	63 F.	Nov. 22, 1862.	Suffering from psori- asis chronica.	Not known. About four- teen days before admission.	Superficial vascularity of upper and outer part of cornea, near margin. Great photophobia.	Gutt. atrop. Application of iced water.	Nov. 29. Much improved. Dec. 3. Improvement con- tinues.
H. T. 5.	22 F.	Oct. 8, 1862.	Good general health, but somewhat debilitated.	Eye struck by a piece of slate which flew from the fire. August, 1862.	Parenchymatous inflam- mation of upper half and central regions, which are nebulous and somewhat vascular. Great photophobia.	Insufflation of ca- lomet. Bichloride of mercury and bark. Gutt. atrop.	Jan. 7. Much improved. " 21. No photophobia. No pain. Cornea be- coming clearer. Feb. 18. No inflamma- tion. Cornea clearer. No photophobia.

R. F. 6.	43 M.	Aug. 16, 1862.	Good health.	Wound of cornea by a chip of brass in August, 1862.	Small central ulcer. Photophobia and pain.	Fotus belladonnae. Purgatives. Removal of foreign body.	Aug. 30. Inflammation disappeared. Jan. 14. Small central nebula remains. Reads No. 2. Colours distinct.
A. D. 7.	12 F.	Feb. 23, 1863. Oct 8.	Good health.	Onyx. Central and great Photophobia and pain.	Gutt. atrop. Cold applications. Purgatives.	March 4. Improved.	Feb 18. No improvement.
C. A. 8.	10 M.	Mar. 14, 1863.	Good health.	Probably from a wound.	Hypopyon. Photophobia slight. Pain severe.	March 28. Pus disappeared. No photophobia. Reads No. 2.	Mar 30. No improvement.
J. B. 9.	48 M.	July 4, 1863.	Spare.	Wound with shell of cocoa-nut.	Transparent wound of cornea. Streak across anterior capsule of lens.	July 8. Reads No. 16. Pupil dilated. No pain or inflammatory redness.	Nov. 4. With + 3½ reads No. 2. Examined by oblique illumination; no shrinking of lens discovered.
D. H.	71 F.	1863 Jan 1.	Healthy.	Wound of cornea.	Combustions.	Without a lens reads No. 19; no opacity of crystalline.	
	26 F.	Jan 1.	Disturbed.	Wound of cornea.	Combustions.		

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TABLE (continued).

Name and No.	Age and Sex.	Date of Admission.	Diathesis.	Nature of Injury and Date.	Chief Symptoms and Complications.	Treatment.	Result and Date.
W. A. 10.	35 M.	July 21, 1863.	Good health.	July 18, 1862. Margin of cornea incised by sharp fragment of the edge of a chisel. Piece of red-hot iron struck the cornea.	Wound of margin of cornea. 1". Blood in anterior chamber. Prolapse of iris. Great pain.	Calabar bean. Iced-water douche.	Aug. 26. Reads No. 1 held at a few inches. Pupil eccentric, but iris not protruding from corneal wound. No blood. No inflammation.
S. I. 11.	18 M.	Aug. 26, 1863.	Good.	Piece of red-hot iron struck the cornea.	White eschar nearly covering the surface, and several small pieces lodged in substance of cornea and conjunctiva.	Fot. bellad. Pil. opi., gr. ss., h. s. s. Pil. coloc. c., gr. x. Removal of foreign bodies.	Sept. 2. Cornea clear and smooth to external observation; by oblique illumination slight superficial haze. Reads No. 1 with difficulty.
J. C. 12.	62 M.	March 4, 1863.	Pallid; broken by age and labour.	Breaking flints, a piece flew up and struck cornea.	March 4. Keratitis and chemosis. Onyx and hypopyon.	Lin. bell. c. glyc. Liq. hyd. bichlor., $\mathfrak{z}$ i. Liq. cinch., $\mathfrak{M}$ . xv. Aq., $\mathfrak{z}$ i., t. d. s. Gutt. morph. sulph. Sept. 5. Removal of staphyloma.	Aug. 22. Large staphyloma of whole corneal surface. Quantitative perception of light. Sept. 5. Amputation. " 9. Discharged. Surface glazed.

J. H. 13.	59 M.	Sept. 19, 1863.	Bronchitic and rheu- matic.	Chopping wood, a piece flew up and struck his eye four weeks before admission.	Kerato-iritis. Ulcer and hypopyon. Great pain in globe of the eye and head.	Lin. bellad. Pot. sod. c. cinchon. Hyd. c. cret. and p. ipeac. co. Gutt. atropiæ. Haust. cinch.	Oct. 21. Pupil irregular after belladonna. Reads No. 20 (Snellen's). Slight nebula of cornea. Nov. 4. Cornea clear, with exception of central nebula. Reads No. 12. Pupil dilatible. Anterior chambers clear. Vision improving. No pain or inflammatory redness.
T. M. 14.	9 M.	Oct. 21, 1863.	Good health.	Mortar thrown by playfellow three or four days before admission.	Opaque bluish-white cor- nea. Puriform discharge from lids and chemosis. Great pain.	Mortar removed by scoop. Ol. olivæ. Liq. ammon. acet. Iced water. Ext. hyoscyami. Adhesions broken through. Emp. lyttæ. Ung. hyd. c. bellad.	Nov. 14. Cornea clearer at circumference; opaque patches in centre. Strings of cicatrix from lid to globe at lower part. Pain still remains. Jan. 1. Globe shrunk. Shreds of cicatrix pass- ing from lids to globe, and fleshy mass on the cornea. Pain.
J. T. 15.	31 M.	Nov. 25, 1863.	Abrasion and pene- trating wound from a chip of iron. Iron removed immediately.	Scar across cornea. Local heat and irritation.	Fotus belladonnæ. P. ipecac. co., gr. x. h. s. s. 28. Lin. bell. c. glyc. P. jal. co., gr. xx. h. s. s. Emp. lyttæ aur. sinistr.	Dec. 2. No inflammatory redness or pain. Cornea clearer.	



TABLE (continued).

Name and No.	Age and Sex.	Date of Admission.	Diathesis.	Nature of Injury and Date.	Chief Symptoms and Complications.	Treatment.	Result and Date.
G. M. 16.	70 M.	Oct. 7, 1863.	Feeble and anæmic.	Injury by a piece of wood fourteen days before admission.	Great pain, and tension of eyeball. Kerato-iritis. Closed pupil.	Leech to temple. Atropine. Bark and morphia. Oct. 10. Puncture of anterior chamber. Oct. 14. Iridectomy inwards, performed by Mr. Hulke.	Oct. 14. Was relieved by the puncture, but tension and pain returned. Nov. 14, 1863. Tension normal. June, 1864. Iris of good colour. No inflammatory redness. Good anterior chamber. Has only occasional pain in brow and temple. The new pupil being partially obstructed by the opacity of the cornea remaining after the cicatrization of the ulcer, he has only quantitative perception of light.
P. E. 17.	64 M.	June 11, 1864.	Health good.	Injury fourteen days before admission.	Intense pain. Sloughing ulcer and hypopyon. Long-continued sleeplessness.	Belladonna fomentations. Opium. Calomel and colodyne. Blisters to temple.	July 25. Great relief followed the operation, and he was able to sleep the same night. July 20. The ulcer has been quite healed for

<p>some days. Reads No. 18 with the affected eye. The tension is normal. Aug. 6. The improvement continues. A nebula still occupies the centre of the cornea.</p>	<p>Jan. 18. Iridectomy upwards, performed by Mr. Wordsworth.</p>	<p>Vasculature of the parenchyma of the cornea and patches of opacity. Lacrymation. Photophobia. Eczema of lids.</p>	<p>Struck by a piece of iron two months before admission.</p>	<p>Oct. 19, 1864.</p>	<p>E. E. 18.</p>
<p>Rapid improvement after commencing the iodide of potassium. Jan. 7, 1865. Vision No. 6 at 4", and No. 12 at 6".</p>	<p>At first, Atropine drops. Lin. belladonnæ and tonics. Subsequently (on hearing that previous to admission he had been taking mercury), Iodid. potass. gr. ii., t. d.</p>	<p>Ectropion of lower lid. Onyx, hypopyon, and chemosis. Great pain round the orbit. Tension increased.</p>	<p>Struck by a piece of stone ten days before admission, while breaking stones on the road.</p>	<p>May 17, 1865.</p>	<p>J. G. 19.</p>
<p>Still under treatment. No. 14' 1863' Vision 10 and being attended the blindness put to rest Oct. 14' 1863' 10' 1863' 10'</p>	<p>Paracentesis. Ammonia and bark. Opium at bed-time.</p>	<p>Complications.</p>	<p>Feeble and ill-nourished.</p>	<p>Oct. 4, 1863.</p>	<p>E. E. 19.</p>

Employed, the size of the types increasing from No. 1, which is small (*Brilliant*), up to No. 20, which is larger than any ordinary type for reading, the letters being an inch long. "With + 3½" (Case 9) means, that with a bi-convex lens of 3½ in. focal length, the patient was able to read the test-type specified.

