

Perforating wounds of the orbit / by W. Marrant Baker.

Contributors

Baker, W. Marrant 1839-1896.
Royal College of Surgeons of England

Publication/Creation

[London] : [publisher not identified], [1888]

Persistent URL

<https://wellcomecollection.org/works/g2brgndq>

Provider

Royal College of Surgeons

License and attribution

This material has been provided by This material has been provided by The Royal College of Surgeons of England. The original may be consulted at The Royal College of Surgeons of England. where the originals may be consulted. This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>





5.

PERFORATING WOUNDS OF THE ORBIT.

BY
W. MORRANT BAKER.

That the orbit forms an easy route by which a weapon may enter the brain has been recognised ever since men fenced and fought; and curious facts in connection with the surgery of perforating wounds of the orbit are well known to those whose attention has been specially drawn to such injuries. To many, however, they may be less familiar; while even those more or less acquainted with the literature of the subject may be glad, I have thought, to have an account of some cases hitherto unrecorded.

The following case was admitted into St. Bartholomew's Hospital under my care near the end of the year 1883. For the notes, from which I have made a brief abstract, I am indebted to Mr. George F. Aldous.

CASE I.—A man, T. J., 26 years old, was admitted into Harley Ward on the night of the 22nd December 1883, in a comatose condition.

When brought to the Surgery at about eight o'clock in the evening, the patient was insensible, and on the supposition that he was drunk, various remedies were employed by the House-Surgeon on duty. The stomach was emptied of about two quarts of a blackish fluid; the galvanic battery was used, and hot coffee was given, but all without avail, so far as rousing him from his insensible condition was concerned. He was, therefore, removed to the ward.

On further investigation, it was found that the patient had lost power of motion in the left arm and leg; the pupils were contracted, and did not act to a strong light.

The only sign of injury was a small wound just beneath the

left lower eyelid. The wound was about half an inch in length, but did not gape. Indeed, on superficial examination, it looked more like a small cut or slit in the skin, such as might have been produced by the point of a gold pencil-case, than the orifice of a deep wound; and it is stated in the notes, taken at the time, to be apparently superficial, although "inclined to track over to the right side." No other indications of injury were observable in the neighbourhood, excepting some slight ecchymosis.

The only history then obtainable was, that the patient had been drinking at a public-house, and had been struck in the eye with a stick by a man with whom he was quarrelling. He was said to have fallen down, and to have struck his head against the bar-counter as he fell.

Looked at in the light of subsequent events, the cause of the symptoms became clear enough; but at the time, and for some days after the man's admission, no clear history was obtainable. It was thought by some that he had a fit, and that the apparently superficial wound under the eye might have been produced by his striking his face as he fell. This notion seemed somewhat confirmed by the opinion expressed by one of my medical colleagues (who kindly saw the patient at my request), that the case was indistinguishable from one of ordinary hemiplegia in connection with apoplexy, and he was disposed to think that the history of the injury, as a cause of the symptoms, arose from a mistaken notion by the bystanders of the sequence of events.

December 23.—The patient has been purged by a dose of calomel gr.ijj., administered soon after his admission. Some urine has been passed involuntarily. This morning the patient is partially conscious, and gave a more or less rambling account of having been struck by a stick. Temperature, 103° . Head was shaved and an ice-bag applied.

December 25.—Temperature, 99.8° .

December 26.—This morning the patient was sufficiently sensible to be able to speak about the quarrel in which he had been struck. There was some diarrhoea, and the incontinence of urine continues. The general condition is not so good. Temperature, 102° .

December 27.—The patient died this morning (fifth day after his admission into the Hospital). The temperature had steadily risen since yesterday morning to over 105° . During the last few days some ecchymosis had been observable in both the upper and lower eyelid.

At the post-mortem examination:—"On removing the skull-cap, no extravasation was found on the surface of the brain, but the posterior veins were very full, especially on the right side. On

removing the brain, extravasated blood was found beneath the middle lobe of the right side; and a small cavity, sufficient to admit the tip of the little finger, was found in this part of the brain, tracking backwards and outwards into the middle corner of the right lateral ventricle.

"The right posterior clinoid process was found fractured, and a probe could be passed from a hole in the floor of the sella Turcica outwards through the lesser wing of the sphenoid bone and orbital plate of the ethmoid bone, until the point emerged through the external wound beneath the left eye. The tip of the posterior clinoid process was loose, and had apparently damaged the middle cerebral artery, or a large branch of it."

From the post-mortem examination, therefore, it was clear that the symptoms had been caused by a perforating wound of the orbit; and that the weapon of offence, to have produced such injury to the base of the skull and brain as was discovered, must have passed in for at least four inches from the external wound.

In the course of the criminal trial which succeeded the inquest in connection with this case, the stick which caused the injury was produced, and is now in the Museum of St. Bartholomew's Hospital. It is about 30 inches in length, measuring at the end which must have entered the patient's skull a quarter of an inch in diameter and an inch and a quarter in circumference round the first knot.

The facts are unquestionable; otherwise it would seem impossible that a weapon of such a size could enter the orbit and break through the base of the skull, leaving externally such slight indications of injury. That such an injury, too, should have been inflicted without the bystanders' special notice having been attracted by the depth to which the stick penetrated, is sufficiently remarkable.

The prisoner was sentenced to eighteen months' imprisonment with hard labour.

CASE II.—For several years a drover's stick lay in one of the anatomical cases in the Museum of St. Bartholomew's Hospital, and will be remembered by many old students in connection with the history, as related to them by Mr. Luther Holden, of how it gained a place there. No formal account of the stick



Fig. 1.

and its tragic history appears to have found its way into the catalogue; and I am, therefore, very glad to insert the following account, given to me in a letter from Mr. Holden, dated November 8, 1888:—

“I well remember the case of wound in the orbit, concerning which you ask information. I had hoped the preparation (stick and all) was still in the Museum. The facts are as follows:—

“Two drovers were at loggerheads in the market. One of them poked his stick into the other's left eyelid, just below the edge of the orbit. When I saw the case, the wound was plain enough. The eye itself seemed uninjured, and I think he could see with it. Doubtful as to the depth of the wound, we thought it best to take the man into the Hospital. I believe he was quite himself, and walked into the ward. The lid was swollen, and the eye could not be opened (by the patient). For some days there were no serious symptoms, and we expected the man would recover. However, after a week or thereabouts, the man became comatose, manifestly suffering from brain mischief, and so he died.

“I made the post-mortem examination, and found that the stick had penetrated through the sphenoidal fissure into the middle lobe of the cerebrum, and produced suppuration in the brain substance.

“The to me interesting part of the case was the fact that the lesser wing of the sphenoid was broken at its junction with the body of the bone, but not displaced. The end of the stick, in passing through the fissure, had lifted up the little wing and broken it. It required a careful examination to discover this fracture. To make myself very sure of it, I went a second time to the dead-house. My idea was—How could the stick have gone through the fissure unless there had been a fracture? There would not have been room enough. A close examination convinced me of the fracture.

“Well, the prisoner was tried at the Old Bailey, and the defence was that the brain lesion was not caused at the time of the injury, since the stick could not have passed through the fissure of the bone. Counsel was not aware of the fracture until I was put into the box and told the whole truth. I well remember the sensation in court and the paralysis of prisoner's counsel when my evidence was given.”

The prisoner got twenty years' penal servitude.

CASE III.—Mr. Lawson¹ quotes the case of a man who was

¹ *Injuries of the Eye, Orbit, and Eyelids*, by George Lawson, F.R.C.S., Eng. (1867).

admitted into the Middlesex Hospital, October 6, 1866, under the care of Mr. De Morgan, having been prodded in the left eye, two days previously, with the ferrule end of an umbrella.

"On admission, he presented a lacerated wound of the left upper eyelid. He appeared very drowsy, but was aroused by being loudly spoken to, when he answered questions rationally, and narrated clearly the circumstances of the injury, but relapsed immediately into his previous drowsy and semi-conscious state.

"A few days after his admission he was attacked with an erysipelatous inflammation around the wound, which was accompanied with delirium. Under treatment these symptoms gradually subsided. The man rallied from his delirium and became rational, but he continued very drowsy until a few hours before his death, when he sank into a state of profound coma, in which he died, on the twenty-first day after his admission into the Hospital."

At the post-mortem examination:—"A jagged wound, about three-quarters of an inch in length, was seen in the *left* upper eyelid, with considerable swelling of the surrounding parts. After removing the skull-cap and raising the anterior lobe of the brain, a piece of bone rather larger than a sixpenny-piece was found to have been broken out of the orbital plate of the frontal bone, which had pierced the dura mater and been thrust into the substance of the brain.

"On making a section of the brain, the wound of its anterior lobe was found to communicate with the left lateral ventricle, which contained a quantity of pus. The *right* ventricle contained some serous fluid, but no pus. The other organs of the body were healthy."

CASE IV.—Mr. J. McCarthy has kindly given me the following note of a case, hitherto unpublished, which occurred many years ago at the London Hospital:—

"A lot of men were drinking in a public-house. Presently all but one left. This one was apparently drunk, and the landlord let him sleep in an outhouse; but finding him in the same state next day, sent him to the London Hospital, where he was admitted under the care of Mr. Couper. He was insensible and feverish, and died a few days after admission. At the post-mortem examination, perforation of the right orbital plate and meningitis were found; and on examination a small wound was discovered in the right upper eyelid leading to the hole in the bone. It looked as if it had been caused by the stem of a 'churchwarden.'"

In the following cases the immediate damage to the brain was less severe, but in the end proved fatal from the secondary results of the injury.

CASE V. (For the notes of this case I am indebted to Mr. Sydney Beauchamp.)—"J. R., aged 3 years, was admitted to Lawrence Ward, under the care of Mr. Marrant Baker, on the 13th of June 1884.

"About three o'clock in the afternoon of June 11 he fell on the pavement and bruised the right orbital region. On the 12th and 13th he complained of headache and sickness. Early in the evening of the 13th the child felt dull and sleepy; about eleven o'clock on the same evening he was seized with 'convulsions,' and at midnight was brought to the Surgery in a semi-comatose condition.

"On admission, the patient had a swelling over the right orbital region, with some ecchymosis of the right eyelid. He had paresis of the left limbs, with twitchings of the muscles over the whole of the left side, face included; he was in a semi-comatose condition, and exhibited Cheyne-Stokes breathing; the pupils were equal, and were insensitive to light; there was no strabismus, and no conjugate deviation. Pulse, 120, small and regular. Temperature, 101.2° . No lesion of cranium discoverable.

"An ice-bag was applied to his head and hot-water tins to the extremities, and three grains of calomel administered. With this he fell asleep quietly; his breathing became natural; the twitchings in the limbs and the paralysis disappeared.

"On the 14th he vomited once, and on the morning of the 15th there was much vomiting. His temperature, which was high and fluctuating, rose from 101.6° at 2 A.M. on the 15th to 105.2° at 9 A.M. on the same day, but sank a little during the day.

"On the 16th the child became less sensible; breathing quick and shallow. Pulse, 120, very small and thready.

"On the 17th a protrusion of the right conjunctival membrane was punctured, and some serous fluid escaped.

"At 9.15 A.M. on the 19th the patient had a well-marked rigor; hot brandy was given, and hot tins applied to the body. The right eyelid was still swollen and erythematous, pus(?) and serum escaping between the lids. The eyeball was protruded outwards and downwards. The breathing presented the characters of Cheyne-Stokes respiration. Temperature still high and fluctuating.

"June 20.—The abscess which had formed in the orbit was incised by the House-Surgeon, Mr. Toller, and some foetid pus escaped; the probe reached bare-bone.

"June 23.—The child had a slight cough, and became queru-

lous and fretful. He lay with his limbs flexed and head strongly retracted.

"On the 24th he had an attack of diarrhœa, and became very weak; continued fretful and restless; screamed occasionally, and complained of headache. No delirium. Temperature high and variable. The breathing, at one time quiet and deep, became at another rapid and shallow. He was sometimes sensible, sometimes not; occasionally convulsed.

"From this time the patient became gradually worse until the 7th July, when he died at 1.15 P.M. On the 8th of July a post-mortem examination was made, which revealed a scar, quite healed, at the reflexion of the conjunctiva from the upper eyelid to the globe of the eye. Corresponding to this there was a punctured fracture through the roof of the orbit; and there was an abscess invading the tissues of the orbit. On examining the

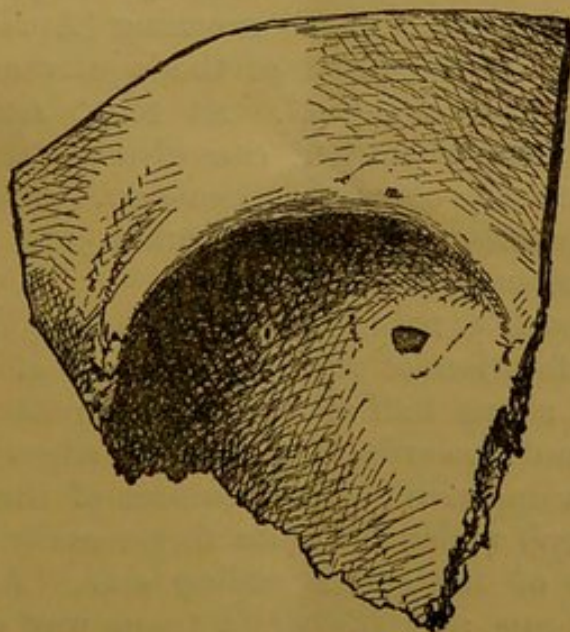


Fig. 2.

brain, a large cerebral abscess was seen to occupy nearly the whole of the right frontal convolutions; no foreign body could be discovered in it. The lungs showed signs of broncho-pneumonia, but the other viscera were healthy."

The orbital plate and adjoining portion of the frontal bone are now in the Museum of St. Bartholomew's Hospital (fig. 2), and show well the small punctured fracture, which must have been produced by the entrance of some sharp instrument beneath the upper eyelid at the site of the scar found in this region at the post-mortem examination.

CASE VI.—The following case is recorded in the *Lancet* (1884, vol. i. p. 205) by Dr. J. H. Jackson:—"W. N., aged 7, a strong and apparently healthy boy, came to the Infirmary [Royal Albert Edward Infirmary, Wigan] on March 31. His

mother, who accompanied him, stated that about an hour previously the child had been playing with a piece of wood about 2 feet long and half an inch in diameter, when he suddenly fell with his face on one end of it while the other was on the ground, and on rising up the stick was 'fast in his eye,' and had to be pulled out. On examination, there was marked ecchymosis of the inner side of the left eyeball, but no apparent wound. There had been no vomiting or fainting; the pupils were equal, and the boy presented no abnormal appearance. The mother was requested to leave him in the Infirmary, but she refused. On the following day the boy walked to the Infirmary and home again, about two miles, and again presented no abnormal symptoms. On April 2 the lad walked to the Infirmary in the afternoon, and as he appeared a little dull and sleepy, his mother consented to his remaining. In the evening his temperature was 99.2° , and he took his food well, and slept soundly during the night. At nine o'clock next morning (April 3) he still appeared well, although the pupil of the injured side was dilated, and the temperature was 100.4° . At 10.30 A.M. he was found to be suffering from a marked convulsion. He had vomited immediately before the convulsion came on. After this he never regained consciousness, and died about 1.30 P.M., three hours after the first serious symptom set in.

"*Necropsy* (April 5, 10 A.M.).—On removing the brain, a perfectly round perforation of the orbital plate of the left frontal bone was found, about half an inch in diameter, and evidently made from without inwards, as the inside edges were raised up. At the corresponding point of the surface of the brain a wound was found, through which the little finger easily passed into the lateral ventricle of the corresponding side. Along this tract there was some pus, and the brain-tissue was evidently disorganised. All the other organs were healthy.

"The only remedies employed were purgatives, rest, and applications of ice to the head."

This case is of much interest, as Dr. Jackson remarks, "(1) because of the small external mark of violence, the stick having passed between the inner side of the eyeball and the inner canthus, without wounding either the eyeball or the canthus, and therefore apparently leaving no wound at all; and (2) because of the almost entire absence of symptoms until three hours before death."

CASE VII.—This case is related by Mr. J. W. Hulke in the "System of Surgery," 3rd edit., vol. i. p. 586:—"A little girl, æt. 6 years, falling with a piece of slate-pencil in her hand, it

pierced her right eyebrow near its inner end, and broke short off. Admitted soon after into the Middlesex Hospital at 6 P.M. in May 1870, the House-Surgeon took out of the wound several splinters, composing, as he thought, the whole piece, covered the wound with a pad of lint, and had the child placed in bed. Her general condition did not betray the serious nature of the injury. She slept quietly through the night, and next morning did not appear much worse for the accident. In the afternoon, when I then first saw the child, I detected with the probe another splinter of the pencil, and enlarging the little puncture, exposed a piece of pencil tightly plugging a hole in the bone. Enough of this was cut away cautiously with a gouge to allow the pencil to be grasped with a forceps. It proved to be shattered, and splinters representing a cylinder three-quarters of an inch long were removed. Intra-cranial inflammation (indicated by convulsions, delirium, a high temperature [103° F.], and rapid pulse) supervened. On the ninth day after the injury the temperature fell to 97.5° (the child had passed a quiet night and took her food better), and from this date it continued sub-normal, or only slightly exceeded the normal average until the sixteenth day, when it rose suddenly to 104° . With this elevation of temperature there were associated restlessness, delirium, a flushed face, screaming, vomiting, convulsions, and coma. Death occurred about twenty-four hours later. At the necropsy a large abscess was found in the frontal lobe of the right cerebral hemisphere. It enclosed a piece of pencil about one inch long, and it had evidently quite recently burst into the anterior horn of the lateral ventricle. It is a matter of regret that the trephine was not employed instead of cutting away the bone around the pencil, which had the effect of loosening the splinters, and contributed to the fatal mistake that the whole piece of pencil had been removed."

CASE VIII.—The following paragraph went the round of the daily and other papers a few months since:—

"Extraordinary Cause of Death.—On the 13th inst. Mr. Baxter, the Coroner for Eastern Middlesex, held an inquiry touching the death of a commercial traveller who died recently in the London Hospital. About seven weeks ago the deceased, who had previously been in good health, complained of pains of the head and shivering. A local surgeon was sent for, who diagnosed bronchitis. After a time, finding he became worse, his friends took him to the London Hospital, where he was received by Mr. Doyle, the House-Surgeon. According to this gentleman's evidence, the deceased then appeared

drowsy, and complained of a pain in his head. He continued in that state till the 10th inst., but at times appeared quite clear-headed and rational. On the 10th symptoms of apoplexy appeared, and deceased expired at twelve o'clock the same night. Since death he had made a most searching examination of the head and brain. On opening the former, he discovered an abscess in the brain. It was about the size of a turkey's egg, and had evidently been there some time. On removing the abscess from the base of the brain, a penholder and nib were found protruding from the top of the right orbital plate. The pen was exceedingly sharp, and together with the holder measured nearly 3 inches. This had produced the abscess, and the abscess had caused death. The holder and nib were of the ordinary kind generally used in schools, and they must have entered the brain by way of the right eye or through the right part of the nose. There was no evidence to show how long they had been in the brain, but it was probable that they had been there for a considerable time, as the bone had grown over them, and it was with difficulty they were separated. He had examined the eye, but had failed to detect any injury. It was, however, quite possible for such a thing to enter beneath the lid of the open eye, and the wound to heal up showing no signs of the entry. The widow of the deceased states that her husband never mentioned to her anything about having been injured by a pen."

On inquiry, I am informed that the facts, as given in the paragraph, are fairly accurate; and that Dr. Stephen Mackenzie (under whose care the patient was admitted into the Hospital) intends to publish the case with full details.

Perforating wounds of the orbit, although involving serious injury to the brain, are of course not necessarily fatal. As an illustration of this fact, I may quote the following remarkable case, which was recorded by Dr. Steavenson in the 15th volume of St. Bartholomew's Hospital Reports. Although reported so recently, I shall be forgiven for inserting it here at some length in connection with the other cases which are so nearly allied to it:—

CASE IX.—"J. D., æt. 21, a gentleman's groom, was admitted into St. Bartholomew's Hospital [under the care of Dr. Southey], April 23, 1879, recovering from right hemiplegia.

"About sixteen months before, at his master's residence in the country, when larking in the servants-hall, he attempted to kiss the kitchen-maid. This young person had been engaged in knitting, and had one of the knitting-needles placed behind her left ear. As the face of the groom approached that of the young

woman, the knitting-needle entered his left orbit, passing between the bone and the eyeball, to the depth, it is said, of four inches, no doubt entering the brain. It must be supposed that the ardour of the young man was extreme, and that most likely the needle obtained a *point d'appui* in the lady's back hair; but such was the confusion following the occurrence, that the history on these points is not very clear; but this much is certain, that J. D. retired from the encounter with the knitting-needle protruding from his orbit. He says he removed it with his own hand; it was followed by some bleeding, and he then fainted. We therefore have no accurate knowledge of the exact direction of the implement, but, from the symptoms which followed, it is very probable that it passed through the sphenoidal fissure, and must ultimately have injured the brain somewhere in the region of the left frontal convolution, or what is called Broca's convolution.

"The injury at the time caused the patient intense pain, but did not injure his sight. Up to the fifth day after the accident he could talk and use his right arm and leg. Then he lost all power over his right upper extremity, sight, and leg. The lower part of the right side of his face was paralysed and he could not whistle. The right side of the tongue was also paralysed. The paralysis came on at night. At first the paralysed parts felt cold and dead, but he did not lose sensation. He lost the power of speech for two months. On his admission to the Salop Infirmary at Shrewsbury, a short time after the accident, he could only say the words 'Yes, yes,' which he answered to every question."

The almost total paralysis remained as long as the aphasia, viz., for two months.

At the date of Dr. Steavenson's note, the patient was gradually recovering power over all the paralysed parts.

Since the accident the patient had had three epileptiform fits.

The patient remained under Dr. Steavenson's observation about five weeks. Galvanism was applied, but very little improvement was observed in his condition from the time of his entering the Hospital, the contraction and rigidity of the flexors of the forearm being of too old standing to expect much improvement. He had no fits while under treatment.

In view of the route taken by the foreign bodies, in several of the cases related in this paper, Dr. Steavenson's experiments on this subject are of much interest.

"In the post-mortem room," adds Dr. Steavenson, "I have passed a knitting-needle through the left orbit of several bodies, the brains of which were afterwards examined, and have ascer-

tained that this part of the brain [Broca's convolution] could be injured in the way described.

"The needle would pass through the outer angle of the sphenoidal fissure into the fissure of Sylvius, injuring the outer part of Broca's convolution. If pushed in four inches (as stated by the patient in this case), it would enter the corpus striatum. In several of the experiments I have made the needle took this course.

"It was only by placing the needle in this position that I was enabled to injure Broca's convolution. It was not the direction taken by the needle when placed between the eyeball and the bone, and, being pushed, left to take its own course. Under these circumstances it always preferred the wider end of the sphenoidal fissure, and passed parallel with the third nerve, keeping clear beneath the base of the brain, and ultimately entering the medulla oblongata. . . . I do not think the needle pierced the orbital plate of the frontal bone, for in all the experiments I have referred to, the needle always seemed to pass towards the sphenoidal fissure, the orbital parietes having a tendency to direct its course whenever it impinged upon them, and it required the assistance of a hammer to force the needle through the orbital plate."

CASE X.—In the *Lancet*, 1838, vol. ii. p. 16, Dr. Selwyn records the case of a man (20 years old at the time of the note), who, when 4 years old, "was eating his dinner, his plate being on a kitchen-chair; near him was another chair; he placed a foot on a bar of each chair; the chairs receded from each other in consequence of the motion given to them while his limbs were extended. He fell, and the knife entered in the following manner:—

"The father of the boy, at the time of the accident, told me that it required all his force to dislodge the knife from its situation. It was a common cheese-knife, about $4\frac{1}{4}$ inches long in the blade, and averaging three-quarters of an inch broad. It entered in a direction nearly horizontal to the depth of $3\frac{1}{4}$ inches, entering the right orbit immediately beneath the superciliary ridge, and penetrating (through the posterior part of the orbital plate of the frontal bone) the substance of the brain, injuring in its course the optic nerve and the levator palpebræ muscle, or the motor filament supplying it. The hæmorrhage was very slight. After removal of the knife, some portion of brain protruded; more was also discharged on the eighth day after the injury. He did not sleep for a fortnight after the accident, and was delirious during nights. The treatment

consisted in low diet, little or no *medical* treatment, and the application of strips of adhesive plaster to the wound, which was entirely healed in six weeks. There was never any exfoliation of bone.

"The present state of the eye shows the globe to be sound and healthy in structure, though less prominent than the other. Its muscular actions are all correctly performed, excepting that of the levator palpebræ superioris. (There is now ptosis, probably from paralysis of this muscle.) The vision is *entirely lost* in that eye. The pupil is dilated and wholly insensible to the stimulus of light.

"As regards the present state of mind, all the senses are perfect, excepting the vision of the injured eye. The memory is very defective. He is incapable of applying to any pursuit requiring mental activity. His disposition is irritable, especially after indulging in liquor, or after any unusual stimulus. He has occasional pain on the injured side of the forehead, and has since had typhus fever. His bodily health is now good, and he has the free use of the superior and inferior extremities."

Among cases of partial recovery from cerebral injuries inflicted by way of the orbit, I may refer also to those mentioned by Morgagni.¹

Death as the immediate result of a perforating wound of the orbit, and arising from injury of the large blood-vessels at the base of the skull, would seem to be a comparatively rare occurrence; but the following case of Nélaton's shows well how these blood-vessels may be injured, and a fatal result ultimately ensue.

I quote the case from Mr. T. Holmes's "Lectures on the Surgical Treatment of Aneurism in its Various Forms."² His description is taken from a work of Dr. Delens.³

CASE XI.—"A young man, aged 21, received, January 2, 1855, a poke from the ferrule of an umbrella in the left lower eyelid, followed by abundant bleeding from the nose, and ptosis of the right upper eyelid. He was seen by two eminent oculists (Messrs. Sichel and Desmarres), but no pulsation, and, as it seems, no exophthalmus was noticed till M. Nélaton saw him two months after the accident. There was then protrusion of the eyeball, external squint, with immobility of the globe,

¹ The Seats and Causes of Disease. Translated by Benj. Alexander (1769), vol. iii. p. 123.

² Lancet (1873), vol. iii. p. 143.

³ De la Communication de la Carotide interne et du Sinus caverneux. Paris, 1870.

dilated immoveable pupil, diplopia, presbyopia in that eye (which before the accident was myopic), dilated conjunctival veins, pulsation of the eyeball, and a blowing murmur, which was almost continuous, but exaggerated during the arterial pulse. By pressure the eyeball could be made to resume its natural place, and then the patient became sensible of a bellows murmur coinciding with the pulse. Blood soon came when the patient blew his nose, and he sometimes suffered from epistaxis. Pressure on the carotid reduced the exophthalmus, and stopped the bruit altogether. M. Nélaton diagnosed a wound of the internal carotid in the right cavernous sinus, and he succeeded in producing this lesion on the dead subject by driving in a spike of wood obliquely through an incision made in the left lower eyelid. The treatment adopted consisted in mechanical compression of the carotid artery on the left side; but the epistaxis soon became more abundant and more frequent, though the compression did not cause any apparent congestion of the face, and he died of the bleeding a little more than three months after the accident.

A diagram in Dr. Delens's book "shows an arterio-venous communication in the right cavernous sinus, between that venous channel and the internal carotid artery, the result of a puncture with the ferrule of an umbrella, which had been thrust through the left lower eyelid, across the bones of the nose, through the right sphenoidal sinus into the cavernous sinus. The diagram shows the opening in the bony wall of the sphenoidal sinus, the internal carotid artery torn nearly across in the cavernous sinus, its two ends only hanging together by a little strip of the arterial tissue, the dilatation of the cavernous sinus, and to a much greater extent of the ophthalmic vein, which pushes the eyeball forwards. During life the arterial pulsation was communicated to the eyeball by means of this venous tumour. A fragment of the bony wall of the cavernous sinus is seen to have adhered to its membranous wall when it has been dissected back. In this instance the third nerve was destroyed by the blow. The patient bled to death through the orifice of communication between the cavernous and sphenoidal sinus."

Perforating wounds of the orbit do not, of course, involve of necessity injury of the brain.

My attention was drawn to the following remarkable case by Mr. George Lawson, who quotes it in his book on "Injuries of the Eye, Orbit, and Eyelids," and has kindly lent me the accompanying woodcut. The case was originally recorded by Mr.

Brudenell Carter,¹ who informs me that the foreign body is now in the Museum of St. George's Hospital.

CASE XII.—“For my knowledge of the following case,” Mr. Brudenell Carter writes, “I am indebted to the kindness of Alfred Clarke, Esq., of Gloucester.

“E. W., a hale, vigorous old man, turned 73 years of age, fell down-stairs in the dark, being drunk, sometime in the last few days of May. He did not lose consciousness from the fall. He injured the nasal side of the right eye, and bled very freely from the wound; but he did not seek medical aid till June 1st, when he went to Mr. Clarke, who found a ragged conjunctival wound and much swelling of the lids, and ordered a simple dressing.

“The patient presented himself at intervals until the 6th of June, when Mr. Clarke discovered the presence of a foreign body in the wound, but deferred its removal until the following day, when he visited the man at his home. He then felt the extremity of a piece of iron, which he seized with forceps and attempted to withdraw. By using considerable force, and after much time, he removed the entire shaft of a cast-iron hat-peg, measuring $3\frac{3}{16}$ inches in length, and weighing twenty-five scruples. On further inquiry, Mr. Clarke found that this hat-peg had been one of a row screwed to the wall at the bottom of the staircase; so that the man must have fallen upon the end of the peg, and must have broken it by his momentum after it had become completely buried in his orbit. The base of the hat-peg was still in its place in the row, and presented a recently fractured surface, fitting accurately to that of the portion removed from the patient. The annexed woodcut (fig. 3) represents the hat-peg and its base precisely of their natural size.

“When the question arose with regard to the exact period of impaction, no one could answer it. There were the seven days during which the patient had been under medical observation; but he could not remember on what day of the week he fell down, and could only say that it was four or five days before he went to the doctor. Four or five, with an illiterate old man, means simply x ; but it may be presumed that the actual period of impaction was between ten and twenty days. The patient recovered without a single unfavourable symptom.

“To-day, November 12th, I have made a careful examination of the injured part.

“The hat-peg appears to have lacerated the conjunctiva of the globe a little to the inner side of the cornea, and to have passed between the ocular muscles and the lacrymal apparatus without

¹ *Ophthalmic Review* (1865), vol. i. p. 337.

injury to either. About a line from the corneal margin, and below the horizontal meridian of the eye, there is an excrescence

as large as a small hemp-seed, and resembling the little growths that sometimes follow operations for strabismus. From this excrescence as an apex, a conical patch of vascularity, like a pterygium, extends to the caruncle, and the patient says that a few exceedingly small fragments of bone have worked out. The excrescence probably conceals the opening of a fistula; but I sought vainly for such an opening with a probe. The vision and movements of the eye are unimpaired, and the lacrymal apparatus is perfect. But the excrescence, by resting on the margin of the lower lid, diverts a portion of the tears from their proper course, and occasions a slight epiphora. This is, indeed, the only inconvenience that the patient has sustained from the injury.

"Mr. Clarke was compelled to use very considerable force to remove the hat-peg, and had to loosen it by lateral movements as well as by direct pulling. Partly from this reason, and partly from his natural astonishment at its bulk and length, he can scarcely be certain of its direction; but from the relation of its original position to the probable direction of the fall, as well as from anatomical considerations, and from his impressions at the time, he thinks that its point must have been received in the antrum of the opposite side. The entire absence of head symptoms, however, must not be taken as conclusive upon this part

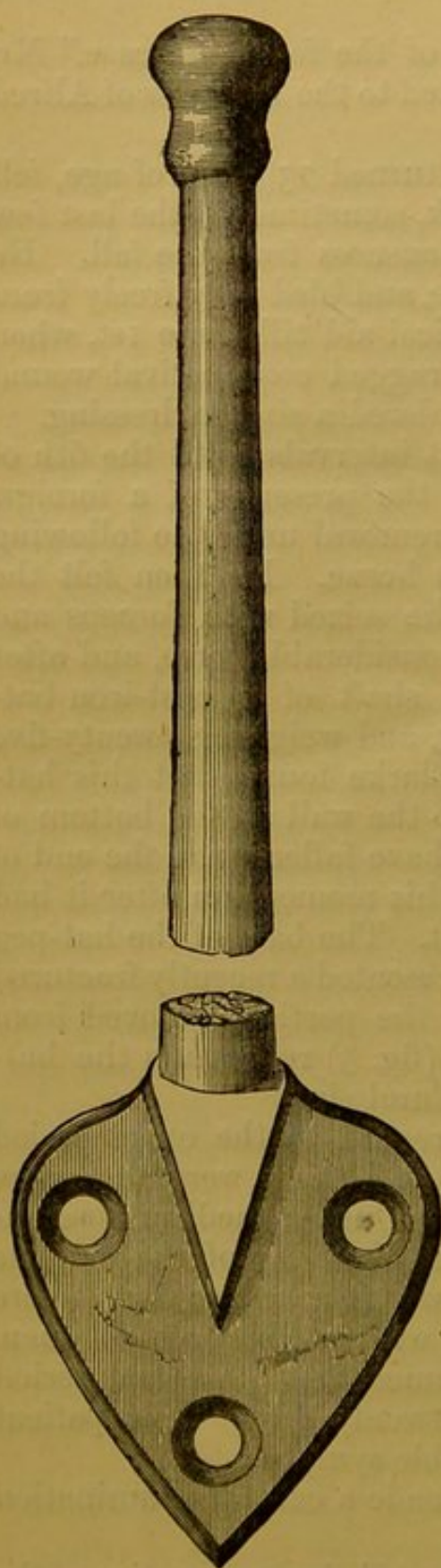


Fig. 3.

of the question; since there are cases on record, perfectly authenticated, in which undoubted injuries to the brain have been

recovered from without any symptoms that could have revealed their existence."

Mr. Carter then quotes the following case, which occurred in the practice of Nélaton, and is thus described by Drs. Zander and Geissler¹:—

CASE XIII.—"A man, 26 years old, applied at Nélaton's hospital on account of a lacrymal fistula, and stated that three years previously he had received a blow in the inner angle of his left eye from the ivory handle of an umbrella, and that it had rendered him unconscious for several hours. At that time he was taken to Desmarres' hospital with a bleeding wound, a centimetre and a half in length at the place of injury. The wound was examined with a probe, and it was believed that a splinter from the superior maxillary bone had been driven between the eye and the inner wall of the orbit. Various fruitless endeavours were made to remove this supposed splinter, and some small white particles were brought away by the forceps. The globe was unhurt, but its movements towards the nose were impeded and mydriasis was produced. The suppuration gradually diminished, and the skin contracted and healed, leaving only a fistulous opening to a channel leading to the supposed splinter. Further treatment was then abandoned, and the patient was discharged. On presenting himself to Nélaton, he exhibited slight exophthalmus on the left side, with strabismus divergens; the sclerotic yellowish or slightly coloured, as if from ecchymosis; the refracting media normal. Below the inner angle of the eye was a sinus, one centimetre in depth, having an external opening precisely like that of a lacrymal fistula, but the lacrymal sac was healthy, and the tears passed into the nose without impediment. A probe, introduced with some difficulty, struck upon a very hard, smooth, and immovable substance. Lying down at night produced severe pain in the left side of the head, which pain almost entirely subsided in the daytime. Notwithstanding the certainty of the patient that there was no foreign body, and his assertion that the umbrella had not been broken by the blow, Nélaton did not feel satisfied upon the point, and he determined to remove the hard substance, whatever it might be. He made an incision two centimetres in length over the inferior margin of the orbit, and through the incision a slight mobility of the substance could be felt. The substance was then seized with strong forceps, and, to the astonishment of everybody, an ivory handle was withdrawn, cylindrical in shape, four centimetres

¹ Verletzungen des Auges, Bd. i. S. 225.

($1\frac{5}{8}$ inches) in length, and a centimetre and a half in thickness. The end that had been turned outwards showed where it had been broken from the wood of the umbrella handle, and presented indentations, produced by the attempts at extraction made by Desmarres three years before. Then followed some bleeding from the right nostril, the pains disappeared, and the eye regained its movements inwards. After a few days the patient left the Hospital with his vision improved, and with the fistula nearly healed."

From some of the symptoms presented by this patient—the insensibility which immediately followed the injury, and which lasted for several hours, and from the occasional severe pain in the head—it may be doubted whether this case does not belong to the category of those in which a direct injury of the brain was produced by a penetration, or at least a fracture, of the roof of the orbit.

