

CHAPTER III.

DISEASES OF THE ORBIT.

Injuries of the orbit—Diseases of the bones—Inflammation of the cellular tissue—Orbital growths and tumours—Dislocation of the globe of the eye—Extirpation of the eyeball—Diseases of the lachrymal gland.

INJURIES OF THE ORBIT.

FRACTURES
AND CON-
TUSIONS.

CONTUSIONS AND FRACTURES.—A blow or fall on the outer ridge of the orbit is, as a general rule, followed by no worse results than a "black eye," but in some instances it has been succeeded by effusion of blood within the cranium, inflammation, and death.* Some few cases have been recorded in which the bones forming the outer edge of the orbit have been fractured by direct violence. If the fracture extend into the frontal or maxillary sinus, emphysema of the eyelids will most probably follow.

Fracture
extending
from other
parts.

Fracture of the walls of the orbit not unfrequently occurs as an extension of a fracture from some other part of the skull. For instance, the frontal bone may have been fractured and symptoms of compression exist; the depressed bone may have been removed with the trephine but the symptoms remain unrelieved. In several instances of this kind it has been discovered after death, that the fracture of the skull has extended to the orbital plate of the frontal bone, and laceration and protrusion of the brain have occurred in this locality.

* Mackenzie on "Diseases of the Eye," 3rd edit., p. 2.

The walls of the orbit are occasionally fractured, the primary injury having been received upon the vertex or other part of the skull. Should the orbital plate of the frontal bone be fractured in this way, marks of injury on some portions of the skull will be observed, and as a general rule in cases of this kind there is considerable ecchymosis of the lower eyelid; but traumatic extravasation of blood in this locality may also occur under the following circumstances:—

1. From an effusion of blood beneath the integuments of the skull, if it does not gravitate backwards, often produces an ecchymosis in the cutaneous surface of the eyelids, but never of the conjunctiva of the lids or globe.
2. That a blow directly upon the eyeball may give rise to an ecchymosis of the conjunctiva, both of the globe and lids.
3. That when fracture of the base of the skull is indicated by ecchymosis, this ecchymosis appears first beneath the conjunctiva of the globe, then beneath the palpebral conjunctiva, and only subsequently in the integument of the eyelids, if at all.
4. That when the injury has been such as to make a fracture probable, external ecchymosis of the lower lid, and less frequently of the upper lid, is a significant symptom only, when it accompanies ecchymosis of the globe, or follows it after an interval.*

Fracture
from
contre-
coup.

Situation
of the ec-
chymosis.

PENETRATING WOUNDS OF THE ORBIT are of a trivial or dangerous character, according to the nature of the instrument inflicting the injury, and the depth and direction which it has taken; if this has been deep and directly backwards, or upwards and inwards, it is not at all improbable that the brain may have been reached, and the results may be most serious.

PENE-
TRATING
WOUNDS.

The first point to be ascertained in the case of a punctured or gunshot wound of the orbit is, as to the presence of a foreign body in the wound: our finger or probe will be our best guide in arriving at a conclusion on this point, and should we discover such a foreign body lodged in the orbit, we must, if necessary, enlarge the external opening to such an extent as to enable us to remove it. Instances are recorded in which a bullet has remained embedded in the orbit and remove it.

Search for a
foreign
body;

and remove
it.

* Clinical Lecture, by Dr. R. M. Hodges, *Boston Medical and Surgical Journal*, April, 1873.

for years, apparently without inducing any ill effects; but these cases are by no means to be taken as precedents for allowing a foreign body to be left in this situation; for in ninety-nine cases out of a hundred, unless the foreign body be removed, inflammation, and suppuration of the tissues of the orbit will ensue, and very possibly irreparable damage be done to the eye.

Direction of injury affects prognosis.

The second point to be noticed is the direction which the instrument has taken, for as I have before stated, if this be towards the brain, the case may be a most serious one, and our prognosis must be correspondingly guarded. The extent of the external injury cannot be relied on as an indication of the severity of the wound; in fact, on a casual examination no contusion may be detected in the skin, the eyelids having been open, when the instrument inflicting the wound passed through the orbit and entered the brain. This point is forcibly illustrated by the following case, related by Mr. Guthrie.* A boy was struck while at play with an iron wire in the right eye; there was no external wound to be seen, but there was considerable chemosis of the conjunctiva of the upper and inner part of the eyeball. Four days after the accident the patient complained of sickness and pain in the head; this was followed by restless delirium and coma, and on the sixth day after the accident the patient died. On examination, it was found that a piece of the iron wire had passed under the upper lid, and through the posterior part of the orbital plate of the frontal bone into the anterior lobe of the brain, which was softened and bedewed with matter. This case shows the extreme caution necessary in forming a prognosis under such circumstances.

Fatal head symptoms.

If for twelve or fourteen days after the accident has occurred, no head symptoms have supervened, we may be hopeful as to the result, but the patient is not positively safe from ulterior bad consequences for some time afterwards.

GUNSHOT WOUNDS.

GUNSHOT WOUNDS OF THE ORBIT, in a practical point of view, differ in no respect from punctured wounds, always taking into consideration the occasional unaccountable wanderings which a ball pursues in this, as in other parts of the body. As already directed in

* "Commentaries on Surgery," p. 374, 6th edit., 1865.

the case of other foreign bodies, the presence or not of the bullet in the orbit must first be determined, and then the direction it has taken ascertained; lastly, it is as necessary to remove a ball from this situation as any other substance. We occasionally meet with instances in which a number of small shot have penetrated the conjunctiva, and perhaps, glancing off from the sclerotic, have become imbedded in the cellular tissue of the orbit. In a case of this kind, all the shot that can be extracted without making a deep incision into the cellular tissue, should be removed; the remainder will become encysted, or in time make their way to the surface, and may then be extracted; it is not advisable to search for them in the deeper structures contained within the orbit.*

Small shot in orbit.

May be encysted.

DISEASE OF THE BONES.

INFLAMMATION OF THE PERIOSTEUM of the bones of the orbit may be either acute, or chronic, and the symptoms to which it gives rise will accordingly vary in their intensity, and in the rate at which they advance.

PERIOSTITIS OF ORBIT.

Periostitis in this situation most commonly arises from direct injuries. It may apparently be induced in some cases by exposure to cold, or from disease of neighbouring parts; in many instances, however, syphilis, either acquired or hereditary, is the primary cause of the disease. If the periosteum of the external margin of the orbit be affected, a swollen, and on pressure, exquisitely painful spot will be detected; but if the membrane towards the back of the orbital fossa is involved, it is a more difficult matter to ascertain the nature of the disease. The patient usually complains of violent, deep-seated pain in the orbit, which increases towards bedtime; as the disease advances, the inflammatory action is likely to extend to the cellular tissue of the orbit, terminating in suppuration; the conjunctiva of the eyeball becomes deeply congested and swollen, and the globe protrudes more or less from its socket. In the earlier stages of

Causes.

Symptoms.
Pain increased on pressure.

Eye protrudes.

* Poland on Protrusion of the Eyeball: *Ophthalmic Hospital Reports*, vol. ii. p. 218. Also a case by Dr. Playne, vol. i. p. 215.

Distin-
guished
from
neuralgia,

and from
cellular
inflamma-
tion.

In perios-
titis, pain
localized;

Exophthal-
mos one-
sided.

The reverse
in cellu-
litis.

periostitis so situated, if pressure be made with the point of the finger deeply into the orbit, we may probably detect a particularly painful spot corresponding to the diseased periosteum, and if nocturnal exacerbations of pain are well marked (the patient having had syphilis) we may be tolerably certain as to the nature of the malady. In neuralgia, for which, it is said, by so high an authority as M. Trousseau, that this affection might be mistaken, there is tenderness on pressure over the spinous processes of the first two cervical vertebrae, and such pressure very constantly awakens pain in the branches of the nerves given off from this portion of the spinal cord; this would not be the case in periostitis of the orbit.*

It is often, however, difficult, to form a diagnosis between acute periostitis of the deeper parts of the orbit, and inflammation of its cellular tissue,† nevertheless, it is important if possible to arrive at an accurate opinion on the subject, because, in the former class of cases, unless we assist the matter to escape speedily from the orbit, necrosis of the neighbouring bone is very likely to result; there is less fear of this in inflammation of the cellular tissue. In cases of periostitis, as above remarked, by pressure against the walls of the orbit, we may sometimes reach one particular spot that is exquisitely painful; or by forcing the eyeball back into the socket, this tender spot may be indicated. Moreover, as the swelling of the periosteum and cellular tissue around it will at first be limited, the eyeball will be protruded in the opposite direction, to that in which the inflammation is situated; for instance, if the periosteum in the upper part of the orbit is inflamed, the globe of the eye will be thrust downwards. In diffuse inflammation of the cellular tissue of the orbit, no one spot will be more painful than another, and the protrusion of the eyeball will be uniform; the skin of the lids becomes more deeply involved, and the course of the disease is more rapid than in acute periostitis; nevertheless the diagnosis is often very perplexing, and we may find

* M. Trousseau on Neuralgia: *Medico-Chirurgical Review*, vol. xxxiv. p. 255, 1864.

† A Gräfe on Exophthalmos: *Ophthalmic Review*, vol. i. p. 137.

ourselves at fault after carefully weighing all the points in the case.

Treatment.—If, from the intensity of the symptoms, we have reason to suppose that suppuration beneath the periosteum has taken place, we are justified in exploring the part with a grooved needle; and should we discover the presence of pus, we must at once cut down along the needle upon the collection of matter, and allow it free exit. If this is not done, destruction of the bone will surely occur, or, it may be, the inflammatory action will extend to the lining membrane of the skull.* I need hardly remark that great caution should be exercised in making an incision into the orbit, on account of the complicated anatomy of the parts, but we are bound, nevertheless, to operate without hesitation. I have in several cases of the kind, after exploring the part with a grooved needle, run a strong iron probe along the groove of the instrument, and so torn open the cellular tissue, simply incising the skin, so as to give exit to the pus.

In the subacute and more chronic forms of periostitis, iodide of potassium and cod-liver oil may control, if not cure the disease, and these remedies should, at any rate, be allowed a fair trial.

NECROSIS OF ORBIT.—Necrosis of one or more of the bones forming the orbit, as has just been remarked, may occur as a sequence of periostitis, or it may take place in consequence of direct violence, or from inflammation of the cellular tissue of the orbit. I have had a case of this kind lately under my care. A man of the name of Tait, a guard on the E. I. Railway, was exposed to severe cold on the 5th of December, 1866; the following day violent inflammation of the cellular tissue of the right orbit set in, and at the end of fourteen days a considerable quantity of pus escaped through an opening at the inner and upper part of the superior eyelid. Ultimately a fistula formed in this situation, and small portions of necrosed bone have since been constantly coming away. I saw this man in June for the first time; dead bone was then to be felt in the roof of the orbit, and he was perfectly blind with the right eye.

* Poland on Protrusion of the Eyeball. Case of severe cerebral symptoms, coma and death, following an internal node of the orbit: *Ophthalmic Hospital Reports*, vol. ii. p. 225.

Treatment.

Explore
the part.

Give exit
to matter.

Iodide of
potassium.

NECROSIS
OF ORBIT.

Case.

Following
inflamma-
tion of cel-
lular tissue.

Notwithstanding this blindness, which had been complete since the third day from the first appearance of the disease, the muscular apparatus of the eyeball was normal, and in fact the eye, on a superficial examination seemed healthy; but on making an ophthalmoscopic examination, I found the optic disc atrophied, being circular and of a dead white colour, and the vessels of the retina were contracted. The inflammatory action had attacked the cellular tissue of the orbit, and extending to the optic nerve, had induced atrophy of the papilla.

Ending in atrophy of the papilla.

Treatment.

Treatment.—In instances of necrosis, unless exfoliation has taken place, it is better to wait patiently, allowing nature to take her course, till the dead bone has separated, when it may be cut down upon and removed. The structures contained in the orbit are closely packed and of an important character; except, therefore, in instances unequivocally demanding the use of the knife, it is advisable to be as sparing as possible of its employment.

Sparing interference.

CARIES.

CARIES OF THE BONES OF THE ORBIT.—The following case affords an instance of the terrible mischief which sometimes results from this disease, especially under injudicious treatment:—

Case.

Grish Chunder Sing, aged eighteen, admitted into the Calcutta Ophthalmic Hospital on August 20th, 1865. Up to within the last twelve months he has enjoyed good health, and been employed as a compositor; there is no history of either hereditary or acquired syphilis in this case. A year ago he began to suffer from pain in the head, and shortly afterwards from a discharge of blood and matter from the nose; for this he was salivated by his friends, the ptyalism lasting two months; he also had leeches applied to his temples. Some time afterwards, on rising one morning, he discovered that he could no longer see with the left eye, and within the last month the sight of his right eye has gone also, so that he is now completely blind. His digestive system is in good order, and his mental faculties are perfect, he has, however, lost the sense of smell. The right eyeball protrudes considerably, and the cornea is hazy. There is a fistulous opening at the inner part of the left upper eyelid, and through this a probe may be passed far back into the orbit; no dead bone can be felt. The left eye is less prominent than the right one,

Prolonged salivation.

Loss of sight and smell.

Fistulous opening.

and the dioptric media are transparent: the margin of the optic disc is ill-defined, and like the retina looks cloudy; the retinal vessels are of normal size. The patient gradually became weaker, he was troubled with severe pain in the head and often had attacks of obstinate vomiting, but his speech and mental faculties remained perfect. Soon after his admission both eyeballs were observed to throb or pulsate in a most remarkable manner after the slightest exertion, for instance on rising in bed, the pulsations being synchronous with those of the heart.

Cerebral symptoms.

Pulsation of eyeballs.

The boy died on the 18th February, and on making a post-mortem examination, I found that the whole of the orbital plate of the frontal bone, and the greater part of the body of the sphenoid, had been destroyed by caries, so that nothing but the thickened dura mater intervened between the brain and the tissues contained in the orbital fossa; the pulsation of the globes was thus easily accounted for. The optic nerves were softened and destroyed, but the vessels and nerves entering the orbit were so intimately associated with the diseased structures, that it was impossible to dissect them out, or determine their individual condition. The inferior portions of the anterior lobes of the brain were softened, but presented no other morbid appearances.

Extensive caries.

Nerves and brain implicated.

FISTULÆ.—Caries of the walls of the orbit is, fortunately, by no means always so destructive as in the case of this lad; the disease is often confined to a small portion of the bones, and a fistulous opening forms between this spot and the skin, through which a thin watery fluid constantly oozes away, and the soft disintegrated bone may be felt with a probe.

FISTULÆ, following caries.

The fistulæ thus formed in cases of necrosis and caries are frequently more troublesome to cure than the disease itself; the external opening is maintained by adhesions to the periosteum, and thus a puckered cicatrix forms, which often leads to eversion of the eyelid.

Fistulous openings of this kind are probably best treated by injecting the *liqueur villate* of the French surgeons, or a similar preparation, into the fistula every third or fourth day.* At first, the injection may

Treated by injections.

* The following is the composition of the *Liqueur Villate*, after M. Notta:—Liquid subacetate of lead 30 parts, sulphate of copper

cause considerable pain and inflammation, but this soon subsides, and each subsequent injection causes less irritation. In some of these cases not only does the fistula heal under this treatment, but healthy action appears to be excited in the diseased bone.

INFLAMMATION OF THE ORBITAL TISSUES.

ACUTE
CELLULITIS

INFLAMMATION OF THE CELLULAR TISSUE.—The cellular tissue contained within the orbit is occasionally the seat of acute inflammation and suppuration, but except as a complication of traumatic cases or periostitis this affection is very rare; those instances that do occur usually arise from the spread of erysipelas to the part, when the patient is in a low and weak condition of health. Under these circumstances the eyeball itself generally escapes, but, unfortunately, the patient's sight is too often much impaired, if not destroyed, from the extension of the inflammatory action to the optic nerve, as in the case of Tait (p. 47), or from effusion into the retina and its detachment from the choroid. Occasionally the matter burrows into the sheath of the muscles, deranging their action and giving rise to diplopia. A much more serious complication is apt to occur in the course of this disease, in the form of pyæmia; thromboses have been observed in fatal cases of this kind, extending into the sinuses of the brain, and even into the jugular and innominate veins.*

from the
spread of
erysipelas,

may cause
blindness,

or pyæmia.

Pain.

Fever.

Swelling
and dis-
coloration.

and sulphate of zinc each 15 parts, white vinegar 200 parts—*Medico-Chirurgical Review*, April, 1866, p. 556.

M. Nélaton also speaks in favour of this practice.

* French translation of Mackenzie's "Treatise on the Eye," vol. iii. p. 136.

an uncertain extent, in consequence of the effusion that takes place into the cellular tissues of the orbit. This protrusion is peculiar, in that the globe is usually thrust directly forwards, and not, as in periostitis and in the case of various tumours, with a certain deviation from the axial line, according to the direction of the compressing force. The cornea may remain bright and clear, or it may be that from exposure to the atmosphere, the secretions on its surface, and that of the conjunctiva, form hard dark crusts; the cornea becoming cloudy from desiccation of its epithelium, necrosis follows, and the eye is destroyed.

Exophthal-
mos.

In the course of ten or twelve days from the commencement of the attack, we may generally detect one or more points at which fluctuation can be felt, usually at the lower and inner part of the eyeball. As soon as the pus has been evacuated, the pain and swelling diminish, the eyeball sinks into its socket, and the parts regain their normal position. But although the eyeball may not be directly destroyed by the inflammatory process, yet, as I have before remarked, in very many of these cases the optic nerve is more or less involved, and is subsequently very apt to become atrophied; or necrosis of the bones of the orbit, or the formation of extensive cicatrices, may ultimately lead to atrophy of the globe.

Suppura-
tion.

Atrophy
of the optic
nerve,
or globe.

In CHRONIC INFLAMMATION of the cellular tissue of the orbit the symptoms are less severe than those above described. The patients are generally the offspring of syphilitic or scrofulous parents, or of old and worn-out ones.

CHRONIC
INFLAMMA-
TION.

The inflammatory process usually begins in the periosteum, the patient complaining of pain in the part, which increases towards evening, probably extending over the forehead. As the inflammation advances, the cellular tissue of the orbit becomes involved, the conjunctiva and lids are red and swollen, and the eyeball is thrust forward to a greater or less extent; the pain, however, is far less severe than in acute inflammation of the cellular tissue, on account of the gradually increasing pressure to which the parts are exposed. The protrusion of the eyeball in these cases is often considerable, and as their progress is slow, it is only by a careful study of the collateral symptoms that we shall avoid an erroneous diagnosis. In cases in which a

Symptoms
as in the
acute form,

but less
severe.

Distin-
guished
from orbital
tumours

and ab-
scesses.

CASE.

Duration
uncertain.

Leeches.
Cold com-
presses.

Poultices.

Stimulants
in erysipe-
las.

Tr. ferri.

morbid growth causes the eyeball to protrude, its axis usually deviates from its natural position, according to the direction of the pressure occasioned by the tumour (*see* Figs. 8 and 9); whereas in inflammation of the cellular tissue this is not the case. In doubtful instances, we may further satisfy ourselves as to the presence or not of pus in the orbit, by the aid of a grooved needle, taking care not to run the point of the instrument in the direction of the brain.

Sir W. Lawrence* mentions the case of a child, ten years of age, brought to him suffering with an affection of the right eye, which was said to have existed for a week. The globe projected half an inch further forward and outward than the left one. The internal angle of the eye and parts around it were red and swollen, and deep-seated fluctuation was obscurely perceptible in the orbit. A lancet was thrust three-quarters of an inch deep into the part, and out flowed a dessertspoonful of pus. The progress here was rapid, and the wound healed in a week; but these chronic abscesses may even take years to develop themselves, as in an instance recorded by Dr. Mackenzie.†

The *Treatment* of inflammation in the cellular tissue of the orbit, differs in no respect from that of similar affections in other parts of the body. In the early stages of the more sthenic forms of inflammation in this situation, we may endeavour, by leeches and cold compresses constantly applied, to allay the irritation going on in the part, and to prevent suppuration; but if this does not succeed, we must then promote it by means of poultices and hot fomentations. As soon as matter has formed, the abscess should be freely incised and the pus evacuated, the poultices being continued till the suppuration ceases.

If the case is complicated with erysipelas, I need hardly say that antiphlogistics are not to be thought of; on the contrary, the patient's strength must be supported, the pulse and the temperature of the body being our safest guides as to the amount of nourishment and stimulants required. I have great faith in the sesquichloride of iron in these cases: fifteen drops of the

* Lawrence on "Diseases of the Eye," 2nd edit. p. 744.

† Mackenzie, "Diseases of the Eye," 4th edit. p. 302.

tincture should be given every six hours, with as many grains of chlorate of potash; it appears to act by determining a rapid oxidation of the blood, and in this way the poisonous materials, whatever they may be, which induced the attack, are destroyed. Opium, or still better, the chloral hydrate, will be required to enable the patient to sleep; indeed, in the early stages of this form of the disease, there is no better practice than to give the system rest, and at the same time support the patient's strength with soup and stimulants, administering also the tinct. ferri sesquichlor.; we may thus hope to ward off the suppurative stage of the affection, or at any rate promote its speedy termination. We must bear in mind the fact, that so long as the inflammatory action lasts, the close proximity of the parts to the brain endangers its extension to the cerebral membranes, a complication likely to lead to the most serious consequences.

INFLAMMATION OF THE CAPSULE OF TENON occasionally occurs in rheumatic subjects; in other cases it is said to arise from injuries to the part, or it may be from extension of erysipelas from neighbouring structures.*

Symptoms.—The subconjunctival tissue is deeply injected, but the iris is healthy, nor can we easily account for the persistent chemosis and injection of the vessels in question. The patient complains of slight pain in the eye, particularly when he turns the eyeball from side to side, but there is no impairment of vision; slight protrusion of the eye may occur, and the mobility of the globe be impaired, so that diplopia may exist.

The symptoms above described usually disappear after a time, and no serious consequences are likely to follow, unless in cases preceded by erysipelas, when the optic nerve is liable to become involved, optic neuritis and atrophy of the papilla resulting.

Treatment.—Hot compresses generally give the patient much relief, and iodide of potassium in large and repeated doses often appears to be very serviceable, but as a general rule in these cases Nature will effect a cure, and we may often with advantage wait patiently for this result.

Opium.
Chloral.

Support
the patient.

Brain in
danger.

INFLAMMA-
TION OF
CAPSULE OF
TENON.

Subcon-
junctival
injection.

Pain.

Exophthal-
mos.

Warmth.

Pot.
iodid.

* "Maladies des Yeux," Wecker, vol. i. p. 696.

ORBITAL GROWTHS AND TUMOURS.

EXOPHTHALMOS.
Varieties.

EXOPHTHALMOS, or protrusion of the eyeball, may be conveniently considered under two heads:—

1st. Protrusion of the eyeball arising from an increase in the contents of the orbit—as, for instance, from hypertrophy of its cellular tissue, or the growth of a tumour.

2nd. From diminution of the cavity of the orbit, by the encroachment of its walls upon the eyeball—as, for example, in cases of bony tumours springing from the walls of the orbit, or from an abscess of the antrum forcing the inferior wall upwards.*

EXOPHTHALMIC GOITRE.

Nervous origin of.

M. Trousseau's view.

Dr. Laycock's.

Among the most remarkable of the affections of the orbit included under the first heading, is exophthalmic goitre, described by Dr. Graves,† and more fully elucidated by his friend the late Professor Trousseau, in his admirable clinical lectures. He considers that exophthalmic goitre arises from a neurosis of the sympathetic, resulting in local congestions, the proximate cause of which is an alteration produced in the vaso-motor apparatus. "It is a morbid entity, because it presents special phenomena; palpitation, and congestion of the thyroid gland and of the eyeballs. It is a pathological variety of the great class of neuroses, with a paroxysmal course, and should be regarded as entirely distinct from ophthalmos due to organic diseases of the heart, while it cannot be confounded with goitre proper."‡

Dr. T. Laycock remarks that exophthalmic goitre occurs under a variety of morbid conditions of the nervous system. When the exophthalmos is symmetrical, it is spinal, the cervical and dorsal regions of the spinal cord being the seat of the disease, together with the corresponding cervical and dorsal divisions of the sympathetic; but when unsymmetrical, it is due to disease of the trigeminal ganglion, and branches of the fifth pair.§ In either case, it seems

* "Maladies des Yeux," Wecker, vol. i. p. 705.

† "Clinical Lectures," p. 587.

‡ "Lectures on Clinical Medicine," by A. Trousseau; translated by Dr. Bazire, p. 579.

§ On the Cerebro-Spinal Origin and Diagnosis of the Protrusion of the Eyeball, commonly called Anæmic, by Dr. T. Laycock: *Medico-Chirurgical Review*, July, 1863, p. 251.

probable that from irritation of the sympathetic, hypertrophy of the adipose tissue, and dilatation of the veins of the orbit occur.

Exophthalmic goitre is almost confined to the female sex. Out of fifty cases referred to by Withusen, only eight occurred in men.*

Symptoms.—The symptoms of this remarkable disease are, in the first instance, nervous irritability, a sensation of fulness in the head and face, violent palpitation, usually coming on in paroxysms. In the case of female patients, menstruation generally becomes disordered. Some enlargement of the thyroid gland subsequently occurs, and protrusion of the eyeballs, alike on both sides, commences. This may be very gradual in its progress, and is preceded by obvious changes in the integrity of the muscular apparatus of the eyes, their axes being inverted; the eyes have also a remarkable staring expression due to retraction of the upper eyelid; the lid fails also to follow the movements of the globe of the eye as the plane of vision rises and falls—it remains too much elevated, quite independently of the exophthalmos. The eyeballs continue mobile, but may in time become so far protruded as to prevent the patient from closing the eyelids over them. In one case mentioned by Trousseau, "the eyeballs were thrust out of the orbit;" but this, of course, is a rare occurrence. In other instances, the eyeballs are only slightly protruded; but their lustrous appearance, the enlargement of the thyroid gland, together with palpitation and other nervous symptoms, are pathognomonic of the malady.

The affection does not depend upon disease of the heart, although palpitation exists, no structural changes, as a general rule, can be detected in this organ.

The patient complains of shortness of sight, and difficulty in keeping his eye fixed on any one object, but beyond this there is seldom any impairment of vision. The ophthalmoscopic appearances of an eye affected in this way indicate congestion of the retina and choroid; but the dioptric media may remain transparent.

Prognosis.—In some cases, after a very considerable

* *Dublin Medical Press*, vol. xlii., July, 1859.

interval, exophthalmic goitre gradually disappears of itself, the patient's general health improves, the palpitations and other nervous symptoms from which he suffered abate, and the enlargement of the thyroid gland, and protrusion of the eyeballs, subside. Suppuration of the cornea and destruction of the eye may, however, occur, from the exposure of the uncovered cornea to the air, or it may be due to paralysis of the "trophic" fibres of the fifth nerve.

Treatment.

Promote the general health.

Hydro-pathy.

Treatment.—From the foregoing history of this malady, we learn that it is no mere local affection, and the remedial measures we adopt must therefore be mainly directed to restore the general health; and as the large majority of cases occur in women, and are attended with catamenial derangement from their commencement, and often with anæmia, our treatment should be further directed by attention to these special features.

Trousseau recommends a judicious use of hydro-pathy, among other measures, as likely to improve the patient's general health; and he regards this as being the best and only rational plan of treatment in such cases. Galvanization of the cervical sympathetic with a weak ascending current, not only lessens the size of the thyroid gland, but seems to exercise a favourable influence on the course of the disease.* A firm compress and bandage may be employed with advantage, especially if the cornea becomes at all hazy. Should the retraction of the upper lid be very marked, the following operation may be advantageously performed. The horn spatula having been introduced beneath the lid to be operated on, a horizontal incision is to be made through the skin of the lid above, and parallel to the upper border of the tarsal cartilage. A portion of the fibres of the orbicularis muscle, and subjacent fascia, is to be divided so as to expose the levator palpebræ; and those fibres of this muscle which pass over and into the tarsal cartilage are to be very carefully cut through. An incomplete ptosis results, but this gradually diminishes, and neutralizes the retraction of the lid, if the operation is successful.†

* *The Practitioner*, 1873, p. 186.

† *Compte-Rendu of the Congrès d'Ophthalmologie*, 1867.

CYSTIC TUMOURS growing within the orbit are another cause of exophthalmos. In this situation, such tumours are usually attached to some portion of its bony wall. Their contents vary, being sometimes watery (hygroma), like suet (steatoma), like pap (atheroma), or like honey (meliceris). As in the case of ovarian tumours, they often contain a number of hairs.

It is almost impossible, before operating, to ascertain the connexions which many of these cysts form with surrounding parts; they sometimes extend backwards into the orbit, and even through the optic foramen, and as they are liable to suppurate at any time, they may excite dangerous inflammation of the tissues contained within the cranium.

Symptoms.—Cystic tumours in this situation usually increase in size very slowly, and without causing the patient any pain or much inconvenience, until they attain a considerable bulk and begin to displace the eyeball, forcing it forwards in the opposite direction from that in which they grow. When they have reached this size, on everting the lids, the cyst may generally be seen projecting from between some part of the orbital walls and the eyeball; it has usually a bluish tint, and fluctuation may be felt in it if the cyst happens to have fluid contents. Follicular cysts, however, often enclose sebaceous-like matter, when of course no fluctuation can be detected. In doubtful cases, we should do well to use an exploring needle before deciding as to the nature of the disease.

The Treatment to be pursued in instances of this kind is by no means so simple as might at first sight appear. It is not advisable to puncture the cyst and let out its contents, as they are almost certain to form again; and if the cyst is a large one, hæmorrhage may take place into it, and suppuration ensue—leading, perhaps, to a fatal result from extension of the irritation to the brain. The better course is to remove the cyst as far as that is practicable. Should it extend so deeply into the orbit as to prevent our taking it away entire, we must content ourselves with removing as large a portion of it as possible. To do this, it is often necessary to make a free incision through the eyelid, behind which the tumour projects; in fact, a sufficiently large incision must be made through the lid to expose the tumour fully, and allow the cyst to be dis-

CYSTIC TUMOURS OF ORBIT.

Contents various.

Absence of pain. Slow growth.

Bluish tint. Fluctuation.

Explore with a needle.

Treatment.

Remove the entire cyst.

sected away. Or, if it should seem more desirable, the outer canthus may be slit up and the lid everted with the same intention.

**HYDATID
CYSTS.**

HYDATID CYSTS of the orbit are occasionally met with, and these, as they increase in size, must necessarily displace the globe of the eye to a greater or less extent. If the tumour projects between the orbital walls and the globe of the eye, it may be felt as a firm, elastic swelling; and as it generally yields an obscure sense of fluctuation, the case may closely simulate one of chronic abscess. A grooved needle will settle the point; a colourless limpid fluid spouting out through the puncture if the tumour is caused by an hydatid cyst.

Remove
contents.

In these cases the cyst must be opened, and the included bag, containing the echinococci, should, if possible, be removed; this done, the cavity in which it has grown will probably very soon close up and cicatrize.*

**SANGUINE-
OUS CYSTS.**

SANGUINEOUS CYSTS are occasionally met with in the orbit, either of spontaneous origin, or as the result of an injury. It is almost impossible to discriminate between a tumour of this description and an ordinary cyst, unless by the exploring needle.

The symptoms and progress of these tumours differ in no way from those of other cystic growths: as they increase in size they cause more or less displacement of the eyeball, and diplopia.

It is seldom sufficient simply to puncture a tumour of this kind, and evacuate its contents, for the tumour is then almost sure to form again. The whole of the cyst should, if practicable, be removed.†

Remove
the cyst.

**FIBROID
TUMOURS.**

RECURRENT FIBROID TUMOURS (sarcoma) are not of infrequent occurrence in the orbit, and, as far as my experience goes, they usually spring from the periosteum lining its lower and inner angle. They are composed of elongated oat-shaped, caudate nucleated cells, like the so-called fibro-elastic cells, which are found

* "A Treatise on the Principles and Practice of Ophthalmic Medicine and Surgery," by T. W. Jones, 3rd edit. p. 738. Also *Australian Medical Journal*, No. 10, p. 243: case reported by Mr. P. H. MacGillivray.

† Poland on Protrusion of the Eye: *Ophthalmic Hospital Reports*, vol. i. p. 24.

in granulation and embryonic connective-tissue. A fibroid tumour of this kind may take a long time to grow, and in the first instance may be mistaken for a node; but the absence of a syphilitic history and of tenderness in the part would lead us to dismiss the idea of periostitis, while the smooth and softer surface of the growth precludes the supposition of a bony tumour. As the morbid growth increases in size, exophthalmos, or displacement of the eyeball occurs, and gives rise to diplopia.

These tumours have often extensive attachments to the walls of the orbit, although they may only appear as a small, hard, and nodulated mass upon an external examination. If allowed to remain undisturbed they continue steadily growing, the skin covering them in course of time ulcerates, an open sore is established, and the patient's health gradually fails.* When, therefore, in such a case our diagnosis is confirmed, and all idea of true cancerous disease excluded by the absence of cachexia and of enlargement of the neighbouring glands, we need not hesitate to advise an early operation with a view to prevent further mischief.

Treatment.—Extirpation of the entire morbid growth is not only desirable, but it is the only remedy upon which we can rely in these cases; and I would strongly insist on the fact, that the affected bone should be removed, as well as the tumour and parts around it. The necessary incisions must depend upon the situation and size of the tumour, and in most cases it is better to sacrifice the eyeball in the first instance, rather than, in our attempt to save it, to leave a particle of the tumour behind. In most cases also, we shall have to cut away a portion, and it may be a very considerable part, of the orbital walls. There is little difficulty in detecting the rough and diseased bone after the tumour has been torn away from its attachments, and the whole of this denuded bone must be taken away; nor is there much difficulty or danger in such a proceeding, unless the orbital plate of the frontal bone is involved; but even in that case, we must not hesitate to use the bone forceps freely. On more than one occasion, under such circumstances, I

May be
mistaken.

Extensive
attach-
ments.

Slowly
fatal
if not re-
moved.

Must be
extirpated
thoroughly

and un-
sparingly,

to prevent
recurrence.

* *Medical Times and Gazette*, Remarks by Haynes Walton, p. 87. Jan, 1865.

have removed a part of the orbital plate of the frontal bone, and the whole anterior part of the inner and lower walls of the orbit, with favourable results. In fact, I cannot call to mind an instance in which I have repented of doing too much; but, on the other hand, have seen a recurrent tumour return more than once, in consequence of an over-anxiety to save the eye or walls of the orbit.

If the bones are not involved, I need hardly say that we should leave them alone; but under any circumstances I think the application of the chloride of zinc paste to the wound immediately after the removal of the tumour is advantageous. Subsequently the part may be dressed with the carbolic-acid oil (one part to twenty of olive oil).

If the tumour returns, we should again attempt its removal; we have a distinctly local disease to deal with, and up to the last are bound to combat it on this principle. Large doses of iodide of potassium have been recommended as an adjunct to the above-described treatment in these cases.*

SCIRRHUS OF ORBIT.
SCIRRHUS OF THE ORBIT is, as far as my experience goes, the most common form of cancer in this situation. We see several fresh cases of this formidable disease every year among the patients in the Calcutta Hospital, whereas the other forms of cancer are rarely met with.

Diagnosis. *Diagnosis.*—A satisfactory diagnosis between scirrhus and the recurrent fibroid tumour in the orbit, is hardly possible in their early stages. I have seen undoubted instances of scirrhus, commencing as a hard and almost painless nodule attached to the bony walls of the orbit; nevertheless, this condition is not of common occurrence. Scirrhus in the orbit, as in other parts of the body, constantly extends in the tissues of the part in which it is seated, moving with them when pressed upon, and from the commencement is usually attended with some amount of pain. The morbid growth increases rapidly—there is a marked augmentation in its size in the course of a few months, and then pressure on it causes unmistakable pain. The skin becomes involved, and ulceration having taken place we can no longer be in

* J. Paget: Holmes's "Surgery," vol. i. p. 505.

doubt as to the nature of the affection, or a small quantity of matter scraped from the surface of the tumour, when placed under the microscope, reveals to us the characteristic structures of this terrible disease. The glands of the neck enlarge, and cachexia advances with rapid strides, terminating in death.

Treatment.—With regard to the treatment of scirrhus of the orbit, I am opposed to surgical interference in the first stages of the disease; the use of the knife, I believe, accelerates its progress, and the chances are infinitely small of our being able to eradicate the cancer. I have, in the early stages of scirrhus of the orbit, removed the whole of the structures contained within this cavity, leaving its walls entirely bare, and yet the disease has speedily reappeared, and run a very rapid course. I think it better, therefore, to leave the patient alone; the alternative is a fearful one, and it is frequently most difficult to abstain from an attempt to do something for the relief of the sufferer.* A case of scirrhus of the orbit is reported by Mr. G. Lawson, in which, after having excised the globe and tumour down to the orbital walls, he applied the actual cautery over the surface of the wound, and subsequently filled the orbit with strips of lint covered with the chloride of zinc paste. The patient progressed favourably, and eleven months afterwards there were no signs of the return of the disease.†

Cases of this kind seem hopeful, nevertheless they do not deter me from pressing my opinion, as to the advisability of non-interference with the knife in scirrhus of the orbit.

I have lately had a case in point under my care, R. B., aged seventy. This old man has been suffering for the last twelve months, from a morbid growth behind the outer part of the upper eyelid. At first there was some slight amount of redness of the eye, increased lachrymation, and pain in the part, but he took little notice of these symptoms until the tumour had increased to its present size. My house-surgeon kindly

* Tyrrell, "Diseases of the Eye," vol. ii. p. 225. Hasner observes, on the other hand, that we are bound to operate, if it is possible perfectly to remove the neoplasm; this, however, is the difficulty in these cases.

† *Medical Times and Gazette*, Feb. 9th, 1867, p. 155.

Escharotic applications.

Repetition of the operation.

SCIRRHUS OF ORBIT.

Diagnosis.

Moves with tissues.

Rapid increase.

Ulceration.

Characteristic cells.
Fatal cachexia.

Removal hurtful,

or useless.

Apparent exceptions.

CASE.

Tumour of orbit.