Affections of the Lachrymal Apparatus

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Amelioration by the...
Affections of the Lacrimal Apparatus

This is an apparatus composed of extremely delicate structures and changes in it, apparently trifling, are sufficient to alter the nerve balance which ought to subsist between & secretion and secretion; so that extreme care is requisite in forming a correct diagnosis of lacrimal diseases as well as much caution in treating them.

A subject like this is necessarily incomplete without describing the structures of the parts concerned, but the space allotted to a Thesis scarcely permits the consideration of this in detail. The object being simply to give as concisely as possible the more recent improvements which have taken place in modern times in this department of
Ophthalmic Surgery.

It is a proverbial fact that medical practitioners in general are lamentably ignorant of the proper treatment of these minor operations of Ophthalmic Surgery; the cause of this is obvious. So many rare and serious diseases meet them at every turn during the course of their medical studies, diseases which it may never be their lot to see again, that they are almost irresistibly impelled to devote a great portion of their time to them, to the exclusion of others which should have occupied a fair share of their attention.

In this as well as in other large schools of Medicine, the opportunities and facilities afforded of witnessing the general run of Eye diseases are so great that there is no reason why they should be so much neglected.

Having now concluded these preparatory remarks, in the next place we must consider the division and arrangement of the subject. After due consideration the following appears to be the most rational and scientific one and it will be accordingly adopted.
I. Secretory Lacrymal Organs.
  Inflammation of Gland.
  Enlargement of G. (Chronic and Specific)
  Tumours of G. (Encysted)
  Injuries of G.
  Necrosis and Evisceration

II. Excreting Lacrymal Organs.
  Injuries of Puncta and Lacrymal Canals.
  Displacement of Puncta.
  from Ejecutrices, thickened, Inverted eyelid.
  Dilatation and Contraction of Puncta.
  and Lacrymal Canals.
  Obstruction of P. P.
  Acute and Chronic Inflammation of Lac.
  Fistula of Lacrymal Sac.
  Muscles of P. P.
  Relaxation of P. P.
  Caries of Bones around Sac.
  Obstructed Nasal Duct.
"Dublin Hospital Reports" Vol III. p. 407

"Lawrence on Diseases of the Eye" page 644
Inflammation of Lacrymal Gland.

This gland is liable to become inflamed, and is generally found in children of a strumous constitution. The cellular membrane, which connects the ane of the gland, is probably the original seat of the Inflammation. Authors differ on the frequency of its occurrence. Schmidt and Dr. Sodol both agree as to its common occurrence; on the other hand, Beer represents that the disease is very uncommon, that he had seen it only a few times in the course of twenty-seven years. Mr. Lawrence states that he never met with it, and goes on to say that he saw twelve of the annual reports of diseases treated at the London Ophthalmic Infirmary, and that Inflammation of the gland is not even mentioned in the list of diseases. He further adds that if the preceding representation are correct, he must either have overlooked the diseases of the organ or mistaken them for other affections.

Causes. The most common are blows and exposure to cold. It is seldom idiopathic in its origin, and in some cases it arises in the ordinary forms of ophthalmia, giving rise to symptoms generally attributed to inflammation of the eye alone.
Symptoms. The first symptoms remarked are pain and fulness above the external angle of the eye; this latter symptom is sometimes long in showing itself. At length, the swelling becomes red and tense, the upper lid is parted with difficulty; the conjunctiva is inflamed, and the eyeball is pushed forwards and inwards. The pain in the orbit and head becomes more and more severe. In proportion as the gland becomes inflamed, the swelling and tension of the neighbouring parts are correspondingly increased; and fever, restlessness and delirium usher in suppuration. At last the matter points and bursts through the upper eyelid. In consequence of the close proximity of the gland to the periosteum lining the fora laceri males, the periosteum is liable to become inflamed and destruction of the bone may ensue.

Treatment. In acute inflammation of the gland, leeches are to be applied to the upper eyelid, forehead and temple; purgatives, rest and cooling lotions, if there is much fever, percussion should be employed. Then the formation of matter takes place; swells should be applied over the swelling. When the matter has fairly formed, it must
be evacuated. If found impossible to do this, by introducing a small knife through the conjunctiva, towards the root of the gland, it must be opened through the upper eyelid, the incision being made parallel to the superior edge of the orbit. Matter will continue to be discharged for some time and at length dry up; but it sometimes happens that the opening gets nearly closed, and continues to discharge tears, forming a true lacrimal fistula. This may apt to be the case, when the abscess has been allowed to burst of itself. If the abscess has burst of itself, the pus is to be examined with a probe, to discover whether the bone be diseased, if so, and if it be loose, it should be removed.

Enlargement of Lacrimal Gland.

This disease is confined to the early period of life, and probably depending on a preposterous predisposition, it is characterized by its slowness of progress, although sometimes it acquires considerable magnitude; occasional edema of upper eyelid, little pain, a sensation of fulness above the globe, and the eye of the affected side is not so freely moved as the other one. Mr. Ludd states that in some instances this af-
Lib. cit. page 88.
Section, after a certain period, will continue stationary for many months, or even for years, while in others it will undergo that form of supplicative inflammation peculiar to serofulular glands, and will thus prove a tedious and troublesome disease.

Dr. Mackenzie thinks it probable that this serofularis enlargement of the gland has been sometimes confounded with seirhus, especially when both glands have been affected in the same individual.

Treatment. Cast liver oil, the habitual salts and preparations of Iron should be administered, but above all fresh air and good diet are indispensable. As local applications, leeches, blisters to the temple and back of ear. Very often, small doses of calomel, or blue pill at night with a mild laxative in the morning prove beneficial. If this inflammation gouty in suppuration, as soon as fluctuation is felt the matter should be evacuated and it will be found to consist of purdy matter of a tuberculous nature.

Besides this chronic or stromous enlargement of the gland, there is another form of disease, in which there is a change of structure of the part, accompanied with increase of size and hardness,
"Heber die Krankheiten des Hörnorgans" p. 73.
This has been denominated seirhus by some writers who have represented the disease as cancerous. There cannot be a doubt that this term has been too indiscriminately applied to mere enlargement of the gland, and this is in keeping with the hasty general latitude of expression and looseness of description, concerning the supposed cancerous deposits in other parts of the body, arising from the imprecision of the means of defining and discriminating the new product. Where the authority of Dr. MacKenzie and Mr. Dalrymple, and other competent observers, is believing in its existence; but there cannot be a doubt that it is of very rare occurrence. Mr. Lawrence emphatically denies ever having seen any evidences of malignity in the lacrimal gland, in cases which have fallen under his own observation, or those noted by other authors.

Tumours of L. Gland (Encysted)

Cysts have been supposed to be developed in the lacrimal gland, and Schmidt describes them under the class of hydatids; but since he wrote, in 1803, little has been said on the subject, except to question
the nature of the disease he describes, and the correctness of this pathological reasoning which is too obsolete to be quoted. This is a disease of very rare occurrence. Schmidt relates only two cases of it, and Beer three. In one of Beer's cases, the disease became completely evident only after death. The tumour contained a small quantity of fluid of a thin, clear, sharp and saltish taste. In another case it was opened during life, and the fluid discharged was yellowish like perum, but so acid that it immediately caused a small pimple when applied to the tongue. It must be difficult, if not impossible, to determine the exact nature and original seat of such a disease. Nor is the diagnosis important, as the symptoms and treatment will be essentially the same, whether the disease has begun in the gland or in its neighbourhood. One of the most prominent symptoms attending this tumour is protrusion of the eye. It is pushed forward from the orbit, forward, towards the nose, at the same time vision is impaired. Then such is the state of matter it must be treated on the same principles as other orbital tumours.
Injuries of Lacrymal Gland.

These are of exceedingly rare occurrence, owing probably to the protected condition of the gland, and great difficulty in getting at it; however it might be wounded by such instruments as a file, scissors or penknife, being driven upwards, backwards and outwards into the fossa lacrymalis, thereby dividing the excretory ducts of the gland.

The effects of such an injury will be apt to resemble those of a wounded parotid gland or duct; that is to say, the frequent distilling of tears like that of saliva, will be likely to prevent the healing of the wound and produce a true lacrymal fistula. Great care and nicety is requisite for the treatment of such a case; we should employ, for that purpose, flax, strips of adhesive plaster over the wound, and a compress or roller over the eyelids, and the patient should be made to keep the eye as much as possible at rest.

Hyroma and Epiphora.

These are two diseases of an opposite nature. They may be regarded rather as symptoms than
diseases in themselves. Keroma is of two kinds; lacrimal, dependent on a suppressed or imperfect secretion of the tears; conjunctival, on a deficiency of the mucous secretion, which, in the natural state lubricates the surface of the eye. Epiphora as has been stated is a condition precisely opposite to the other; namely, an overabundant and frequent discharge of the natural secretion. We find an analogous condition occurring in the secretions of other organs. To take a familiar example in the secretion of the menses, at one time we have a decrease in the secretion constituting what is called Amenorrhea; at another, an increased flow called Menorrhagia.

Keroma may depend on a diseased condition of the gland, to an injured state of its ducts, or to nervous irritations. It is of common occurrence in people advanced in age, and in the inconstant stage of Amacrosis it is a symptom of frequent attendance. In such cases we do not see the dryness the eye looks quite moist; simply because the mucous secretion of the conjunctiva is not affected; in fact the
have to be guided more by the feelings of our patients than anything else. If becoma depend on the first of the causes above ascribed, local bleeding and the antiphlogistic regimen will be necessary. If the affection appears to be sympathetic, purgatives, tonics and antispasmodics may be had recourse to. And lastly, if it be due to nervous inertia, tonics and tonics such as snuff or Peratine may be employed. Tincture water applied to the eye affords much relief to the sufferer; it is not only a substitute for the tears but also serves to pleas the parts, and disposes them to resume their natural functions.

Epiphora is a disease of the secreting lacrimal organs, or an over discharge of tears. Thereby differing from Stillicidium lacrymarum which is merely a dropping of tears, from some in capability in the secreting parts of the lacrimal organs to remove the tears and the mucus of the conjunctiva, after they have done their duty. Stromue of phthisalia, is a frequent cause of Epiphora, any mechanical or chemical irritation, applied to the conjunctiva, instantly produces a discharge of tears.
Before prescribing any remedy, general or local, for Epiphora, let us be assured that it depends on no mere mechanical irritation of the eye, such as that of an inverted eyelash, or particle of dust embedded in any part of the conjunctive.

As local and soothing applications, the eye may be bathed two or three times a day, with laudanum and warm water, or a peroxide solution of bellerophon may be substituted for the laudanum. In some cases nothing relieves more than a solution of two or three grains of Nitrate of Silver in an ounce of distilled water, dropped on the eyeball with a camel hair pencil once or twice a day. Blasors applied to the temple are also very serviceable.
II. Affections of the Excreting L. Organs.

Before proceeding to describe in detail the various subjects under this heading, it would not be out of place to state how indebted we are to Mr. Bowman for his able researches and improvements in the treatment of Epithelial and Lacrimal Obstructions. Diseases so frequent, obstinate and intractable in their nature, and which were a great source of trouble to our predecessors from the peculiar and complex construction of the parts concerned and their small size and tortuous disposition.

Injuries of Puncta and Lacrimal canals.

The lacrimal canals and lacr are so small, so protected by their situation in the corner of the eye and by the surrounding bone, that they seldom suffer from external violence; if they should be injured, we can do nothing more than keep the parts at rest, and employ the local and general treatment most likely to arrest inflammation. Mr. Laurence mentions having seen a case where one of the lacrimal canals and its corresponding puncta were obliterated by
accidental injury, without any observable defect in the absorption of the tears. The lachrymal sac is occasionally lacerated, often by incised and lacerated wounds. These must be treated with care lest they degenerate into fistulae. Should the opening into the sac contract to a small size, and its edges threaten to become callous, they must be touched with nitrate of silver, and brought to heal slowly by granulation.

The osseous canal through which the nasal duct passes, is sometimes shattered, and its sides pressed in by severe blows on the face; in such a case we would find obliteration of the passage for the tears.

Displacement of Punctum.

A common one is that which attends ectropion, in which the mucous membrane of the lid is thickened, and often cuticular, and the tarsal margin, including that part surmounting by the punctum, becomes flamed and flattened, and the punctum thrown out of the course of the tears. The treatment of this displacement may sometimes resolve itself wholly into that of the Ectropion, and the punctum.
when rested, as far as possible, to its proper direction may, in a great measure, resume its function.

Mr. Bowman has pointed out that even slight diversion of a punctum may turn this orifice out of play, and his observations go to show that there is much inconvenience to vision, by slight displacement of the lid from arrest of the tears on the front of the eye, they are retained by the lid against the corner and cannot escape, therefore produce false refractions of light. He asserts that a close examination is necessary to detect the cause of Epiphora. The lid is either in its natural position, or precedes slightly from the globe when that is turned up. However, the prominence on which the punctum is placed has disappeared, the orifice lying on a rounded flattened cutaneous surface at a little distance from the mucous lining of the lid, much reduced in size, not wetted by the tears but dry and contracted. The cause of this slight displacement are chronic inflammation of the conjunctiva near the punctum producing thickening and erosion, chronic affections of the skin of the lower lid, somewhat resembling eczema, by which a contraction of it ensues, the punctum is drawn outward.
"Dublin Journal of Science," Vol. XXVII.
As further causes of displacement—might be enumerated mechanical injuries, contractions from ulcerations, burns &c. In fact the punctum may be wanting from congenital defect, as many writers testify. Mr. Wilde alludes to a case mentioned by Marzucchi in his "Epistola," in which all four puncta were closed and gives an instance by himself of a young girl without a punctum in left upper eyelid or the papilla, on which this aperture is usually situated.

A case in point which has come under my own observation perhaps would be the best mode of illustrating Mr. Bowman's operation.

Margaret Black, at 32, native of Kirkaldy, was seen on the 12th of January 1862. Labouring for the last six months under Erysipela of left eye, arising from displacement of the punctum consequent upon slight eversion of the lower eyelid. The ciliary margin was pretty thick, swollen and excoriated from the irritation of tears.

The patient was seated on a chair with her head leaning against the chest of the operator, who stood behind and bent over her. The ring finger of the left hand was placed on the skin over the lower
edge of the orbit, and fixed it there, while the lower
canal was tightened or relaxed by a sliding move-
ment of the skin upon the bone—the punctum being
at the same time exerted. The right hand, now
inserted the No. 1. probe, the canal being relaxed;
and then placed the probe between the index finger
and thumb of left hand which held it in the canal,
and further exerted the punctum by turning the probe
downwards on the cheek, while the ring finger stretch-
ed and fixed the canal by a sliding movement of
the skin outwards towards the malar bone. A fine,
sharp pointed knife, held in the right hand, now
slit up the canal on the exerted conjunctival aspect
from the punctum, as far as the caruncle, and the
probe was then raised on its point out of the
canal, to make sure that the edge of the punctum
had not escaped division. Care was taken not
to slope this little incision obliquely through the
tissues it severed, as there would then be a broader
surface exposed, and greater chance of union by
the first intention.

January 17th. Since the operation was performed a
probe has been daily introduced, and the edges pre-
vented from adhering. The groove is now patent.
A Mackenzie on Diseases of the Eye. Lect. viii. p. 268
and the tears flow into the nostril in place of trickling over the cheek as formerly. This little operation requires much care and nicety and is facilitated by using a probe grooved to within a short distance of the end, so as to prevent the point of the knife slipping to one side.

**Dilatation and Contraction of Palpebrae and Lacrimal Canals**

Cases sometimes occur in which the palpebrae and canals are in a state of relaxation, attended probably, with atony of the tensor tarsi. Mr. Haynes Walton seems inclined to think that a fatigued state of the palpebrae does not interrupt the passage of the secretions; but that it does so, in my mind, there cannot be a doubt. In such a case the palpebrae stand widely open, and are turned forwards from the conjunctiva of the eyeball, with which they are naturally in contact. They appear to have lost their contractile and absorbing power. The quantity of tears which from time to time roll over the cheek is not considerable; they fall in single drops at intervals, and only from the nasal angle of the eye. The nostril belonging to the affected side is dry. Dr. Mackenzie thinks that the most common cause which gives rise
"Royal London Ophthalmic Hospital Report." October 1857.
to this affection is an injudicious use of Arels' prongs and
syringes in the treatment of Dacryocystitis. In most cases the disease will yield to the judicious
use of astringents.

Cases occur every now and then, in which there is con-
traction or stricture of the puncta and lacrimal canals
caused by ulceration, transfixation of their lining mem-
branes and accidental injuries. It is remarkable that
the tears do not always accumulate in these cases,
either from the remaining puncta doing double duty, or
from the ordinary secretion of tears being recently
The proposals of Bomo and Petit, to make new canals
by carrying a thread, or making an incision, into the
sac, have long since been forgotten. Such artificial
passages close as soon as the seton or bougie ceases
to be inserted.

The beautiful simplicity and value, of the new
method of treatment proposed by Dr. Bowman,
requires itself to all. Reasoning from the
strict analogy which subsists between stricture of
the lacrimal canals and that of the urethra he was
led to adopt a precisely similar method of cure.
In the case of the former stricture the surgeon first
endeavours to overcome it by the introduction of bougies
varying in size according to a fixed standard. Failing
in his efforts to pass the larger ones passed the stricture,
he tried in succession the smaller ones. As a last
resource he divides the stricture with the knife.
Mr. Bowman has adopted exactly the same
principle. He found that the canaliculi were
naturally capacious enough to admit a probe
1/20 of an inch in diameter. He observed likewise
that the strictures existed in the canaliculi sometimes
about the middle but oftener close to the sac. He
accordingly had a series of probes constructed, reaching
from a fine hair probe No. 1. to one of 1/20 of an
inch in diameter No. 6, the larger ones being so bent
as to facilitate their passage through the nasal duct.
He commences first with No. 6, failing thus he tries
the others in succession. In cases where he does not
succeed in passing any of these probes, he then di-
vides the stricture with the knife.

Acute and Chronic Inflammation of Lacrymal Sac.
The symptoms which characterize the acute form of this
disease are a circumscribed swelling in the situation of
the lacrymal sac, hard, very sensitive to the touch,
and accompanied by a feeling of obtuseness, deep seated
pain, extending to the nose and to the eye. This swelling gradually becomes red, at last extremely red, and then the least touch is insupportable. The capillaries are shrunk, the pupilla scarcely visible, the absorption and conveyance of the tears into the lacrymal sac, and through the nasal duct into the nose, completely stopped; and a styloideum lacrymalum is present. The nostril on the affected side is at first uncommonly moist; but it soon becomes dry, the inflammation extending to the mucous membrane of the nostril. The redness about the nasal angles of the eye, extending with some degree of swelling even to the cheek, gives to the parts when viewed at a distance an appearance as if the integuments were attacked by erysipelas; but on a nearer examination, the peculiar redness, and all the other characteristics of phlegmonous inflammation, are recognized, and in the midst of the diffuse desiccation and pus formation, the circumscribed swelling of the lacrymal sac is evident not merely to the touch, but even to the view. If purely happens, after the sac is once filled with pus-exudent fluid, that the symptoms begin to subside, without the skin giving way. If they do, a discharge of matter takes place from the puncta,
"Lawrence on Diseases of the Eye" page.
the swelling falls, and the passage into the nose becomes patent. The tumour, however, in general, invades, the pedicle becomes darker, the skin more glistening, the fluctuation more distinct. (The skin sometimes mortifies and brooks from over distention, Mr. Laurence relates a case in which this occurred.) We now see in the middle of the swelling a yellowish soft point, generally below the tendon of the orbicularis, but in some rare cases above it, and which soon gives way. The collection of purulent mucus left to itself, works a passage through the orbicularis palpebrarum and through the integument, but by this opening, the thinner parts mostly of the purulent secretion will be discharged, and the tumour will, at least for some time, be but inconsiderably diminished. By and By, we observe, when the press upon the superior part of the pae, that not merely purulent mucus is discharged by the opening, but occasionally also a quantity of pure tears, a proof that the function of the puncta et canaliculi is re-established. For some time after suppuration has stopped, there continues from the mucous membrane of the pae a puerile secretion, opaque and still somewhat like pus. At length this also ceases in its
turn, and the proper mucus comes to be secreted in natural quantity. These at last entirely disappear. The opening of the sac now heals either spontaneously or by the assistance of art.

Treatment. In the early stages of the disease, leeches should be applied around the inner angle of the eye, and abate the entrance of the corresponding nostril. Fomentations are to be applied to the part, rest and abstinence enjoined, and the bowels and skin acted upon by laxatives and diaphoretics. If by these means evacuation should not be secured, the sac is to be opened as soon as it becomes soft and fluctuating, and issues given to its contents. After the incision of the sac, the fomentations are to be continued. When everything has become quiet, and before permitting the opening of the sac to close, we must satisfy ourselves of the perviousness of the canaliculus and nasal duct, by sounding them with probes.

Chronic Inflammation of Sac.

This is by far the most common disease to which the secreting lacrimal organs are subject. It occurs more frequently in females than in males. Dr. MacKenzie divides the disease into five stages:
1st. Watery Eye. This stage of the malady is in general attended with no pain, but on comparing the diseased side with the healthy one, we may observe an additional degree of fulness at the inner canthi. The canaliculi, caruncle, and integuments are thickened, and somewhat inflamed, and the orbicularis palpilbrarum and tenia tarsi are incapable of acting as in health.

2nd. Stage Blenorhea. As this stage approaches, pain is felt in the seat of the sac; we find that a quantity of puriform mucus wells out through the punctae, and overflows the eye, but not down through the nose as it is often in these cases tympanified or streaked and consequently we find that the nostril on the affected side is dry.

3rd. Abscess. This stage is attended with hemiania, and fever. The longer the disease has lasted, the more liable does the sac become to attacks of inflammation which though repeatedly disintegrated, generally end at last in the sac painting like an abscess, bursting, and discharging the puriform fluid which it contains. After this the skin may heal up, the disease return to the blenorheal stage, or even to that of mere watery eye, and for years the patient may in this state.
suffer from repeated abscesses of the sac, without submitting to any efficient mode of treatment.

4th. Fistula. If in the stage of abscess, the collection of purulent mucous be left to itself, it will form a passage through the fibrous membrane by which the sac is covered, the vestibularis palpebrarum and the integument. The opening thus formed may not close, but merely contract after the contents of the sac are evacuated, manifest no disposition to heal, and degenerate into a fistula of the sac. Through such an opening, a great portion of the mucous and tears taken up by the puncta are discharged, very little or none going down through the nasal duct. The opening is not always directly opposite that which has been wrought by suppuration in the parts above described; it sometimes is the case that though there be but one opening into the sac, the matter forms beneath the skin several sinuses, which open by small orifices at different places, more or less remote from one another.

5th. Stage. Caries. On introducing a probe the canal that it comes immediately in contact with bare rough bone. The os unguis and inferior turbinate bone are particularly subject to this carious state, but it some-
times extends also to the ethmoid and inferior maxillarly. Various fistula seldom if ever occurs, except in long neglected cases, or where the individual is affected with Syphilis or some other constitutional disease.

And now as to treatment. The various expedients hitherto in use for relieving this condition, without inserting a style or tube through the skin into the pre- and down the nasal duct, to be worn for a certain time, may be said to have signally failed, though occasionally attended by partial or temporary benefit. Such expedients are leeches, blisters, injections of warm water or various astringents, the frequent pressing of hair probes as the puncture will admit, together with suitable constitutional treatment. The patient by frequently pressing out the mucus may often succeed in abating his annoyance and keeping it in check. The insertion of a style is an expedient so objectionable in itself, as never to be permitted to till the last moment. It is unsightly, especially in females; it is painful, and the patient has constantly to wipe away the discharge escaping by the aperture. The puncture made to admit the style, is also frequently followed by the formation of
an abscess outside the sac, spreading under the abductor
muscle, and apt to grow into that serious pleur- for the cure of which, free
division and sometimes excision of the overlying skin
is necessary.

During several years in which Dr. Boweman was
in the habit of using the style, he studied its proxime
movements and devised a remedy for some of them. In
particular he found it desirable to make the first
opening large enough to allow of the free escape of the
discharges from the sac by the side of the neck of the
style; for if the orifice were made too small, an abs-
cess between the sac and the skin was very prone to follow.
But this large preliminary opening was apt to allow the
head of the style to burry itself in the sac, so he therefore came
to use in the first instance, a style so long as to rest on
the floor of the nose, while the head just stood out in
the orifice of the skin. As the inflammation following the
puncture subsided, and the orifice gradually contracted
with the progress of the cure, the length of the style was
from time to time diminished by means of the cutting
pliers and smoothed on a stone, so as to keep the head
upon the skin. He has now in ordinary cases abandoned
entirely the use of the style inserted by the skin.
"Brodie Chirurgical Transactions" Vol XXIV.
Influenced by these considerations, and having in view the perfectly innocuous result of laryngotomy when the function where it was mortised, Mr. Bowman began as early as 1851, to slit it up as far as the caruncle, in all cases of laryngeal obstruction, and has since, by degrees, arrived at a method of treating almost all such obstructions without opening the skin at all. He has found it possible to treat the greater number of cases, mechanically, through the upper or lower cannula, thus opened at the junction, by passing probes of suitable size, downwards into the nose; thus commanding the entire length of the passages, and not being limited as by the old method of the plugging, to occlusion of the nasal duct. By this means the inconveniences of the opening of the skin have been avoided, and there has been established, from the very commencement of the treatment, a permanent opening, unseen, and attended by no inconveniences through which the treatment by probes can be at once resumed, in the event of relapse.

And now to describe the subsequent steps of the treatment. In all cases it is preferable to explore the nasal duct by passing down the No. 6 probe into the nostril. Then the sac discharges pus or mucus, this always has to be done again and again, in order to open thoroughly.
the duct. When the probe is introduced from the canal, it enters the sac behind the tendo calcanei, and is in a good position, for finding as it were, the orifice of the nasal duct. But to make this proceeding as easy as possible, the larger probes (Nos. 5 and 6, which are the only ones used for this purpose) are slightly curved at each end in two different directions within the terminal end, or fourth and a half, while the central part is straight, and they are cylindrical in their whole length. The effect of this is that when the probe is inserted into the sac, and brought into a vertical position, a slight rotation on its long axis makes the lower point, which is in search of the orifice of the duct, describe a small circle, and by slightly varying the inclination of the probe, and making gentle pressure at the same time, with slight rotation, the point never fails to enter the duct. The right and left probes have opposite curves to suit the inclination of the duct.

The probe is known to have entered the punctum by the depth to which it has compared with the external portion of the punctum, and also by its coming in contact with the floor of the nose. It is allowed to remain there for a few minutes or is immediately withdrawn, according to circumstances.

In any ordinary case of Chronic Inflammation of the lac.
we may consider the cure well begun, and often half accomplished, as soon as a full sized froze has thus passed into the nose through the whole course of the natural channels. The frozing may be repeated every day, every other day, every three or four days, or every week, according to the progress of the cure and accidental circumstances. The patient should be enjoined, frequently to press the sac and evacuate the pus or mucus as it is secreted both by the canaliculus and nasal duct, but somentations are also used if required. We commonly find in a few days, that no more pus is formed, and in a few weeks that mucus ceases to accumulate.

Fistula of Sac.

It must be apparent from what already has been said, that this disease is usually the consequence of neglect in acute inflammation of the secreting lacrymal organs or of reiterated attacks of inflammation during the course of chronic Dacryogritis. If the inflamed sac be not opened at the proper time, but the collection of puriform mucus be left to itself, it will form an opening for itself, which may
close soon after, and everything go on well. But in many cases the opening mostly contracts, manifests no disposition to heal and degenerates into a fistula of the sac, through which a great portion of the mucus and tears taken up by the puncta are discharging every little or more going down through the nasal duct. Lacrymal fistula is occasionally complicated with a cicatrix fungous state of the duct & sac, but generally with structure of the nasal duct.

The treatment for such symptoms ought according to be applied, and in the majority of cases, will with great certainty both of relief & cure.

**Cystoma of Lacrymal Sac.**

This disease presents in its commencement the oblong shape of the sac, the tumour which it forms slowly increases and varies in size. Dr. Mackenzie says he has seen it reach the size of a pigeon's egg without bursting. The integuments covering the tumour are commonly of a livid colour. The tumour is often so hard that it scarcely yields at all to the pressure of the finger. In other cases it is soft and elastic. But whether hard or soft to the touch, no degree of pressure is capable of evacuating it either through
the puncta in into the nostril, it is so pent up within the sac. It is not until the overfilling of the sac has reached its highest possible degree, and the mucocle threatens to burst, that the disease is attended with a painful feeling of tension. The patient at this period can see more than half open his eyes due to the increase in size of the tension. The lower lid especially is put upon the stretch, and projects towards the nose. The sac is also very considerably extended within the orbit. The frequent swelling of the integuments in mucocle, has led Schmidt among others to describe this disease under the name of "tumor of the lacrimal sac".

Mucocle is the consequence of an obstructed state of the lacrimal canals and nasal duct. Consequently the mucus from the internal surface of the sac accumulates, and forms the tumor in question.

Treatment. The tumor should be laid open and its contents evacuated, with injections of warm water to keep it clear. In the next place we probe the nasal duct to see if there be any obstruction, and if so, we must overcome it if possible before we allow the wound to heal up.
Relaxation of Lacrimal Sacs.

The sac in this disease presents a tumour of the shape and size of a horse bean; sometimes however much larger; the integuments covering it are scarcely or not at all distended, it is not painful, and it yields easily to the pressure of the finger.

These symptoms are sufficiently characteristic to distinguish relaxation from Xerocoele. Its contents consisting of tears mixed with transparent, or yellowish streaked, mucus may be evacuated through the puncta or the nasal duct; the tumour is indeed for an instant almost completely removed, but its integuments remain folded and wrinkled, and it very soon becomes filled again. The sac in this disease has lost its natural contractility of texture, as also that part of the orbicularis palpebrarum which covers it.

Treatment: The patient should be enjoined to empty the sac frequently with his finger in a downward direction towards the nose, and if this can not be obtained, it may be allowed to escape through the puncta.

A small blister on the puncta of Iodine applied over the tumour may often suffice to produce a cure.
Caries of Bones around Sac.

It cannot be denied that carious foci occasionally arises in the manner described in the 5th stage of chronic inflammation of the sac. In cases of the abscesses from constitutional causes, the swelling is more deeply seated, and the symptoms of disease in the pacifying apparatus of the tears more slowly developed, than in primary affections of these parts. When the mucous membrane is the part first affected, the tears are not absorbed nor conveyed into the nostril.

We must be guided in our treatment according to the cause of the disease, if it depend on Syphilis or Ulcer we apply the medicines found most beneficial in such cases. No operation practiced on the diseased bone can be of any use, either while the sear persists or while the syphilitic action is going on, or afterwards. Dr. Mackenzie of Glasgow recommends the introduction of a style, and the cautious injection of a solution of Nitrate of Silver. If the former method enough has been said already, and it does not bear repetition here.
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Obstructed Nasal Duct.

Though the nasal duct does not exceed two thirds of an inch in length, there are three points in its course at which stricture is particularly apt to occur. One of these is exactly where the par end of the duct begins. The caliber of the duct is frequently narrowed there by a circular fold, the thickening of which will cause obstruction. A second fold of the same kind occurs in the middle of the duct, in many subjects though not in all; and hence this part becomes from a similar cause the frequent seat of stricture. The third and perhaps the most usual sitation of stricture is at the termination of the duct in the nostril. Besides stricture, the nasal duct may be obstructed by calculous concretions or by inflammation of the lining membranes.

Rumbold's methods of treatment have been advised for remedying this malady; Mezgan and Cabanis attempted dilatation by means of a mesh, drawn up through the duct and into the sac, by means of a thread, previously introduced into the nostril from the upper fundaments. Du Fresnay passed a piece of catgut through the obstructed duct and nostril, and drew down a portion of it every day. Harveng and Gyrowel, and others have cauterized the
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obstruction or contracted parts of the nasal duct, by means of the actual cautery, or nitrate of silver, introduced through a conduct to the affected parts. The one applied the caustic through an opening in the laryngal sac, and the latter by the nostril. Dauger has proposed to puncture the maxillary sinus. And last of all, the plug has been had recourse to. These modes of practice have been found painful, dangerous and ineffectual in many cases.

After having dwelt so long on Mr. Bowman’s plan of treatment in a former part of this section, it will be needless here to repeat it. Suffice it to say, that all such structures can be overcome by the proper use of the probe.

In conclusion, I may be allowed to remark, that in choosing this subject for my thesis, I chiefly desired to consider the diseases affecting the Excretory Laryngal organs, but it was deemed more expedient for the purpose of rendering the paper more complete, to describe also as briefly as possible those of the Secretory organs. In so far as the frequency of these latter affections is concerned, they are inferiority of less importance than the former. And besides no important improvement
has taken place of late in the method of their treatment. But so with the former. Through the exertions of Mr. Bowman, a complete revolution has taken place in the faculty of curing these forms of eye diseases.

I cannot allow this opportunity to pass without expressing the grateful feeling I experience towards Mr. Walker, through whose kindness I was permitted to witness, during the space of three months in which I acted as clerk to his wards in the Royal Infirmary, many examples both of the rarer and more common varieties of eye diseases. During this period, referred to, a tolerably extensive series of cases, illustrative of that class of affections in which Mr. Bowman's plan of treatment is applicable, came under my notice. These cases might have all been adduced, as they were all treated successfully; but I thought it sufficient for my purpose merely to describe the operations themselves in detail. I can only add further that I am perfectly satisfied with his method of treatment, and that it is quite sufficient for all cases which may present themselves.

Valentine Flannor Cunningham