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## ORIGINAL ARTICLES.

### THE CONSERVATIVE TREATMENT OF LACHRYMAL OBSTRUCTION.

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However perfect the eyes may be in other respects, comfortable vision cannot be enjoyed if the tears are retained in the conjunctival sac. The frequency of annoyance from lachrymal retention I believe is underestimated. We are too prone to think only of the large group of patients who suffer from epiphora consequent upon a more or less complete obstruction of the drainage system throughout its course or at some point in the canaliculi, sac, or nasal duct; or of the more pronounced cases of acute or chronic blenorrhœ. There is, however, a very large number of people who suffer more or less constant annoyance from a partial retention of the tears which rarely or never amounts to stillicidium, but which nevertheless keeps up a conjunctival hyperæmia from the constant soaking in tears. The retention may be so slight, or may have come on so gradually, as not to have fixed the attention of the patient, who will come simply for relief from discomfort in using the eyes. My first lesson in this group of patients was learned now many years ago by the case of a medical friend, who came because of his inability to read with comfort, particularly in the evenings. His glasses were carefully adjusted, but without affording relief. There was slight catarrhal conjunctivitis, and too red caruncles, which persisted in spite of washes and various applications. He made no complaint of epiphora and there were no indications of trouble in that direction until one blustering day he came hurriedly from his professional rounds, and I witnessed for the first time his eyes suffused with the retained tears. The puncta were then recognized as extremely minute. These were at once dilated with a fine conical probe, the point of a syringe introduced and a warm solution of boracic acid thrown freely through the duct. A second treatment relieved him permanently of the annoyance which for months I had vainly striven to remove. Attention once called to these cases of concealed retention I was surprised at the frequency of their occurrence, and the readiness with which relief can often be given. The cause, however, is by no means always to be found in the contraction of the lachrymal punctum but perhaps quite as frequently in some irritation in the nostrils leading to a turgid condition of tissues in and around the nasal end of the duct. The study and treatment of these minor

cases of lachrymal retention, led to some interesting observations regarding the punctum lachrymarum. In the attempt to dilate it I noticed that the probe was grasped as by a sphincter muscle. I suggested to my friend Dr. B. A. Randall, who was at that time associated with me in practice, that a careful anatomical study should be made of the part. Material was procured and the existence of a triangularly arranged series of muscular fibres were without difficulty demonstrated, a drawing and microscopical sections of which I here present. In cases where simple dilatation of this sphincter punctæ lachrymarum does not suffice the fibres should be nicked by means of the blunt pointed Weber knife, in the direction of the canaliculus. The fine tip of a syringe can then be inserted without difficulty, and many cases of a more serious type of disease than the one above described can be treated by this means alone, the duct being treated by syringing with a variety of solutions instead of by probing and syringing combined.

By these experiences I was convinced that a more conservative treatment of disease of the lachrymal passages than I had before employed was sufficient in a large number of cases. It was possible to thoroughly cleanse the lachrymal sac and to inject any desired application for the relief of the inflammation of its walls, through the dilated or enlarged punctum, without slitting the canaliculus.

It is not intended by this to imply that all cases of lachrymal obstruction can be treated successfully without the use of probes, but that simply I have by this means been able to relieve a certain number of cases which it had been my practice to treat by the method of Bowman. This experience has, however, had the additional effect of introducing a more conservative management of even the severer forms of lachrymal disease. It is probable that we have been too prone to draw analogies between closure of the lachrymal passages and urethral strictures, and have in consequence adopted the same theoretical considerations as a basis of treatment. The peculiar anatomical arrangement of the canaliculi and their relation to the common duct by which the tears are conveyed into the lachrymal sac, should not be thoughtlessly disturbed by slitting the canal up to its orifice at the sac. I do not think this can be done without in a measure disturbing the physiological function of this admirable apparatus. At no time should the incision be carried further than the beginning of the common duct. This will suffice for the insertion of any probe which it is wise to pass through the bony duct, except in comparatively rare instances where the duct is much larger than the average as found in the dried skull.

In those cases where probing the duct is needful, the disease has usually been of long standing and has resulted in a more or less uniform thickening of the lining membrane, which has either partially or com-

pletely occluded its lumen. The same patient will frequently exhibit great variation in the degree of occlusion. During acute exacerbations the closure is complete and the sac will be distended by the accumulated tears, mucus, dust, etc., which is swept into it from the eye, or by the secretions from its own walls, while at other times the tears find their way into the nose with difficulty through a much narrowed duct.

The surgeon will usually be consulted for the first time when the annoyance is exaggerated by the acute conditions fastened upon a chronic trouble. The passage of the probe at such times is often necessary, and always a temptation to the surgeon, but when done should be undertaken with caution, since the inflamed mucous membrane lining the irregular bony walls of the duct is not only tender but is liable to fold in front of the probe and be perforated or torn, an accident which invariably retards the progress, makes the patient worse and complicates the subsequent treatment. I have again and again seen permanent injury result from this accident. Under these circumstances if the probe does not pass with the exercise of mild force I have desisted from any violence and for a few days treated the sac by syringing, paid careful attention to any trouble in the nostril, and if reaction was marked, applied hot water compresses to the side of the nose and over the sac. When the acute stage has subsided the probing is again attempted. A few drops of a 4 per cent. solution of cocaine thrown into the sac, after thorough cleansing, will not only relieve the pain from the probing but by contracting the turgid tissues permit its readier passage. It has been my habit to pass a probe sufficiently large to fit closely and allow it to remain for half an hour. After a few minutes a "throbbing" sensation in the region of the duct comes on which later disappears. The probe should then be withdrawn, and the duct thoroughly washed with a warm saturated solution of boracic acid, or Dobell's solution, and this followed by some astringent. I employ a solution of silver nitrate gr. j., f3i, or a light wine-colored solution of iodine. This can be prepared by a drop or two of tinct. of iodine, or Lugol's solution in a half ounce of distilled water. Weak solutions of tannin are often useful.

In acute blenorrhœa of the sac, if seen early, hot water compresses are directed and if possible the sac flooded with corrosive sublimate solution  $\frac{1}{1000}$ , or what is often better, by solutions of blue pyoktannin. If the swelling is great and suppuration evident, the sac is opened in the usual manner and washed with the sublimate solution or pyoktannin through the incision, and hot water compresses continued. As soon as the swelling subsides the canaliculus is opened and the probe passed into the nose. The incision on the face rapidly closes and the closure of the duct which usually precedes the acute blenorrhœa treated in the manner above described. By these means I think it is possible to avoid the painful and I believe often injurious treatment by incision or by passing large probes with the idea of stretching or rupturing strictures of the duct. While by these means immediately good results are marked the closure recurs in a worse form than before. I have in a few cases seen narrow paper like strictures in which such treatment was indicated. In only one case have I ever felt justified in incising a stricture. In that instance it was a thin elastic membrane at the

bottom of the sac. I long ago pointed out that the proper office of the probe is to place the thickened membrane under pressure for the time between the probe and the bony walls of the duct, and by this means hasten the absorption of inflammation products, much as the thickened edges of an old ulcer of the leg were removed by strapping.

The conservative management here urged, finds added force when we consider the etiology of this troublesome and frequent affection. Sudden onset of inflammation leading to obstruction of a hitherto healthy duct and sac has in my experience been rare. Inquiry will usually elicit the fact that the acute blenorrhœa is usually fastened upon a long standing case of more or less complete obstruction. Our task therefore is to discover the cause of the chronic disease.

I recall one case which may be regarded as an exception to this rule. A man in middle life came for relief from epiphora. The closure seemed quite complete, the parts were inflamed, and any attempt to pass the probe was extremely painful, and aggravated his trouble. Inquiry about his health discovered a syphilitic node on his scalp which had been incised by a physician who had mistaken it for an abscess. He had had the initial lesion several years before, had a syphilitic child, and his wife had had two miscarriages. All active local treatment for his lachrymal trouble was omitted and the mixed internal treatment prescribed under which he made a rapid and complete recovery from the lachrymal disease.

A frequent cause of the affections of the duct is to be found in the nose. I have often surmised that certain deformities of the bony duct may be associated with the frequent deformities of the bones of the nose. In a few instances this has seemed almost a certainty, but I have not had opportunity to demonstrate it upon any anatomical preparation. A very cursory study of any series of skulls, however, reveals great variety in the size and form of the duct. It is certain that in a considerable percentage of cases the lachrymal disease does not improve until attention is paid to the nostrils. I recall the case of a gentleman in middle life, suffering from epiphora, whom I treated in 1879. He was a large muscular man, in good health. Bowman's probes of medium size passed with but little difficulty through the duct. There seemed no reason why his epiphora should exist. Incidentally he called my attention to some trouble with the corresponding nostril which he hoped could be relieved. I discovered a broad superficial ulcer on the floor of the nostril, which spread itself around the orifice of the lachrymal duct, and over the anterior end of the inferior turbinated. This rapidly healed under a few applications of silver nitrate and the epiphora disappeared. Since then the nostrils have been subjected to inspection in all cases of lachrymal trouble. The frequency of the association of epiphora with various forms of nasal trouble will, I am sure, surprise the surgeon who has not investigated it as a routine matter.

It is by no means sure, however, that in all cases of such association that the lachrymal disease is an extension upwards of the inflammation in the nostril. While this I think is unquestionably true in some cases, as has been demonstrated by Dr. Harrison Allen, and in my own practice many times, and quite recently by Dr. Geo. E. de Schweinitz in a most instructive group of cases presented to the Philadel-

phia County Medical Society, it is altogether probable that in certain other cases the trouble in the nostril is secondary, being caused by the absence of the tears, which serve the purpose of cleansing, and keeping the parts moist. It is folly to probe a lachrymal duct day after day, so long as its lower end opens into the infectious accumulations of a diseased nostril without at the same time giving proper attention to the existing nasal affection. The lachrymal diseases of childhood are ordinarily of this class.

In a still larger group of patients the lachrymal retention is apparently due to a persistent hyperæmia and turgidity of the mucous membrane, common alike to the conjunctiva, caruncles and lachrymal apparatus. In these cases but little is to be gained by any method of treatment directed to the drainage system alone. It will be found that this condition is another link in the chain of symptoms produced by eye strain, just as blepharitis ciliaris is due to the same cause, as was pointed out by Roosa in 1876.

In some collated, but not yet published statistics, I have shown that in 86 per cent. of all cases of blepharitis it had been found necessary to correct some existing error of refraction or muscular balance. In my paper on incipient cataract, read before the Section last year, I pointed out the large percentage of epiphora associated with the inflammatory conditions of the internal tunics of the eye. In a word, this hyperæmia of the external tunics, including the lachrymal apparatus, is often but the outward expression of intra-ocular conditions. The refraction errors and muscular anomalies are the most frequent cause of the turgid choroidal and retinal circulation. It is in this large group of patients that we find lachrymal retention so common. Given the tortuous uneven walls of the average nasal duct, line it with an engorged mucous membrane, and it is easy to mistake a bony prominence in the duct, for a stricture, especially when it is encountered at the end of a lachrymal probe. This is particularly true where we are led to anticipate the existence of a stricture because of the retained tears. We have here all the conditions for the establishment of a so-called vicious circle. An engorged membrane partially or wholly closing the nasal duct retards the onward movement of the tears, containing as they do in suspension, the mucous and dust from the conjunctiva and cornea, and the excreted products from the interior of the eye. The presence of this accumulation aggravates the existing local conditions, and it would be just cause for surprise if nutritional changes in the mucous membrane of the drainage system did not supervene, and more or less complete closure of the duct result through thickening of the membrane.

That this reasoning is not at fault, is substantiated by abundant experience. Many cases might be cited in demonstration. The following will serve as the representative of a large group which might be brought forward:

A. A. B., æt. 60. In good general health, a wealthy merchant, has been annoyed by epiphora for twenty years. Now worse, now better, but never absent, but much worse of late years. He has been a life long victim to attacks of sick headache and "weak eyes." He is a great traveler, and a man of broad culture and general intelligence. Both inferior canaliculi had been slit by Abadie, and he has been treated by probing and syringing many weeks at a time in several European cities by surgeons of great celebrity. He

had given up all expectation of relief from his epiphora, but came for some advice about his reading glasses.

O. D. V. = 6 ÷ xxx + 1.25c. ax. 180°. V. 6 ÷ vi; O. S. V. = 6 ÷ xviii + .65c. ax. 30° V. 6 ÷ vi. The ophthalmoscope revealed a large semi-atrophic crescent embracing the temporal margin of both optic nerves, the choroid was woolly in the periphery, and in many places honeycombed.

The tarsal borders of the lids were red and thickened, the retro-tarsal folds and caruncles swollen; the eyes were suffused with tears. No. 3 of Bowman's probes passed tightly, but smoothly, through the nasal ducts, and fluid passed freely into the nose. He was given a collyrium of boracic acid to use freely with an eye cup, and a solution of homatropine to be used three times daily. The eyes were to be protected by smoked glass in bright light, and all use at near work avoided. The general conditions rapidly improved under this regimen and the daily treatment of the tear ducts. In a week the correcting glasses were ordered for constant wear, and a suitable combination prescribed for reading. In a month his epiphora had disappeared, he had no return of his headache, and his visits ceased. In six months he returned with a slight recurrence on the right side. His glass over this eye no longer gave him normal acuity of vision, and it was found necessary to change the axis of the cylinder from 180° to 15° and to make it slightly stronger when the retention of tears again promptly disappeared.

Many cases of like import might be recorded if it were needful to enforce still further the wisdom of conservatism in the management of an affection depending upon what at first sight might seem a remote etiological factor.

#### Discussion.

Dr. H. Gradle, Chicago:—In connection with diseases of the lachrymal passages our treatment and prognosis can only gain in certainty by a strict discrimination between the different forms of disease. This is not sufficiently recognized in the text books, although the speakers who have preceded me may have pointed it out. We must exclude all cases of reflex lachrymation without disease of the ducts. As a rule we can get the distinguishing criterion from the patient, where the duct is open the tears run *through the nose* when the eyes water. If the patient does not give this history, we can test the patency of the duct with the syringe or probe. Generally that is superfluous. In speaking of disease of the lachrymal passages, I exclude all these cases of reflex lachrymation with patency of the duct, and refer to those only where the duct or sac is at fault.

The text books speak of two classes of disease of these passages: 1, stricture somewhere in the duct or sac. 2, suppurative dacryocystitis; but they make no great distinction in treatment. These two classes are not identical and can be thoroughly separated in every respect. Stenosis of some part of the tear passage, does not endanger the eye from infection. There is nothing but stagnation of tears. On the other hand suppuration of the tear sac is not necessarily accompanied by stenosis, although it usually is. I have often been astonished to find very little resistance in entering the suppurating tear duct with the knife. Moreover, a point which is not commonly known is that in small children suppurative dacryocystitis can be cured without any operative interference simply by expressing the purulent contents of the sac regularly for a few weeks in succession.

In looking over my experience for the past two years, I find that the cases of disease of the lachrymal passages presented one or the other of two different types. There is scarcely any connecting link between these two classes. One class of patients state that the eyes water only when out in the wind or when they use the eyes severely. In the other type the eyes water all the time and we see that the internal canthus is suffused with tears during the entire examination. The prognosis in the two classes is entirely different. What the pathological differences are, I am not prepared to say, but I can make this clinical distinction that in one class, there is lachrymation only from external stimulation, while in the other class there is continued lachrymation, evidently from some irritant point either in the nose or lachrymal passage. The first class of cases get well with very little treatment. If we split the duct freely in this class of cases, a single operation will be sufficient. I have also probed and syringed but have an impression that these procedures are often superfluous. In cases of non-suppurative stenosis of the duct, I find that one, two or three sittings with electrolysis are sufficient, provided the eyes water only

in the wind. On the other hand if the eye is continually suffused with tears, I have learned to regard the prognosis as very grave. A large proportion of these cases can be cured, but we cannot guarantee that there will not be a relapse. In other cases we cannot even cure the lachrymation temporarily if the patient does not continue treatment a very long time. We can gain a great deal by paying attention to the nose, but even with that many cases of the second type can not be absolutely cured.

Dr. H. M. Starkey, Chicago:—I was particularly interested in Dr. Risley's paper, because some of the points made in the paper were the important points to which I had intended to call attention had I been able to prepare the paper announced upon the programme. For the past eight years, I have found it advisable to use the knife and probe less than formerly and the syringe more, and have found it unnecessary in many cases to slit the canaliculus which is so often done as a preliminary to the treatment of the nasal duct. I was pleased to see in Meyer's work that he condemns this as a routine treatment. It is certainly very easy in a large proportion of cases to so dilate the punctum as to allow easy ingress for a No. 7 or No. 8 Bowman's probe. Usually the tissues at the inner part of the eye are sufficiently lax to permit of the turning of the probe. If this can be done, it is of advantage as it does not produce mutilation.

When we come to the treatment of the nasal duct and the lachrymal sac, we have to note the different varieties of disease there present. The remarks which I make apply particularly to cases of catarrh of the nasal duct and lachrymal sac. We have here a condition different from that found in stricture of the urethra, to which these cases have been compared. We have a small bony canal with its periosteum and connective tissue lined with mucous membrane. These tissues very nearly completely fill the lumen of the canal, so that there is no patulous canal, or a canal through which a large volume of fluid can flow at any time, as in the urethra. Here a slight degree of swelling will necessarily close the canal against the passage of tears. In other similar conditions we treat the case mainly by topical applications to the inflamed mucous membrane, and if practicable this seems to me to be the most rational treatment to employ here. While in many cases, the probe is necessary, I have found almost uniformly that frequent probing is unnecessary, and the point which I make particularly and which has not been brought out here, is that we should teach the patient as early as possible to wash out the lachrymal passage for himself. They almost invariably say that they cannot do it and it is something of a trick but in front of a glass they can soon learn to introduce the nozzle of the syringe, and then they soon learn to do it without the aid of the glass. If this is done frequently and antiseptic solutions are employed, the cure is much more rapidly attained. Afterwards, the patients continue this treatment at home, the injections not being so frequently repeated.

Of the utmost importance to the patient is the choice of lachrymal syringe. The easiest for the patient to use as well as the simplest and cheapest is the ordinary glass medicine dropper with point so drawn out as to easily enter the dilated punctum. Armed with this instrument I cannot recall a case where the patient has failed in his attempts to irrigate the lachrymal passages.

Dr. George M. Gould, Philadelphia:—The last speaker recalls to my mind a little point. Some of you may not have seen the last number of the *New York Medical Journal*, in which I have described a simple method by which in epiphora, etc., the patient can treat himself. The head is canted back and the inner canthus filled with an antiseptic and astringent solution. Then, with the finger pressing on the sac, it is emptied. When the finger is removed the sac expands, and the fluid is drawn in. Then pressing back towards the nose, some of the antiseptic fluid is forced into the duct. By repeating this process, the duct becomes antisepticized. I have had excellent success with this method. One lady who had had dacryocystitis for about sixty years, came back in one week cured. There is one thing that it is well to bear in mind: Never destroy a physiological structure if you can help it. No one seems able to describe the function of the puncta, and we therefore act as if the puncta had no function. I think that it has a definite function, and that we should be slow to injure the puncta, for slitting destroys their function forever. The function of the puncta is, I think, to serve as sifters of dust, etc., preventing their entrance into the duct, and we should therefore hesitate before destroying them.

I rose, however, more especially to call attention to the

method which I have described. Dr. Risley has demonstrated that the duct should never be injured by a probe being crushed into it. In that way cases are made obstinate by the contraction of cicatricial tissue. I have no doubt that in a few years the probe will rarely be used in any case of duct disease. If there is stricture, the method that I have described will do no good. If functional, as nine-tenths of duct troubles are, the result of slight inflammation closing the capillarity of the tube, this method differentiates it, and if it cures it that is all that is needed. If it does not cure it, cutting may be resorted to, as advised by my friend Dr. Thomas. I think that in the future, the two methods of treatment will be, the method which I have mentioned, and incision with a proper knife.

Dr. R. Tilley, Chicago:—The point advanced by Dr. Gould is an important one. I do not know that I have ever seen anything in regard to the function of the puncta, but it has seemed to me that they act rather as favoring capillary attraction than as sifters of dust, and that by this capillary attraction, the tears are passed down more readily than by a larger canal. For this reason I have interfered with the puncta as little as possible. If they are to be destroyed at all, I would rather do so by a clean cut than by stretching. I do think that we should avoid any disturbance of the anatomical character of the puncta as much as possible.

It does seem amazing to listen to the reports of cases of excessive lachrymation as cured by various methods. It seems to me almost as impossible to cure by the simple means referred to some of these cases of excessive lachrymation, as to make the waters of the Mississippi go down the channel of the Illinois River.

Dr. G. E. de Schweinitz, Philadelphia:—I have listened with pleasure to the scholarly paper of Dr. Gradle, and desire to refer to one or two points in this connection. He calls attention to the condition of the optic nerve in certain atrophic conditions of the nasal cavity. This relationship has received some notice in Germany, and my own attention has been called to it in Philadelphia by Dr. Harrison Allen. In some patients affected with atrophic rhinitis, an examination of the eyes will reveal distinct discoloration of the optic papilla, and although there may be no deterioration of central vision, there is often decided contraction of the visual field. This contraction may affect the form fields, or be limited to the color fields alone, and the contraction will usually be found to be greatest in the eye on the same side in which there is the most marked atrophy of the tissues in the nasal chamber. I understand very well what a large personal element enters into the taking of color fields, and how readily mistakes may occur, but if it is conscientiously done, repeated a number of times and, if necessary, controlled by independent observers, very trifling changes may be detected and very interesting results achieved.

Dr. Gradle's classification of the various causes for epiphora is interesting. In this connection I would like to call attention to the fact, well known, to be sure, but which often escapes attention, that epiphora may be one of the ocular symptoms, very well marked in cases of locomotor ataxia. I have sometimes seen it when other characteristic phenomena, for example, the Argyll Robertson pupil, temporary diplopia, insufficiency of convergence, anæsthesia in the area of the supraorbital nerve, and the early discoloration of the optic papilla, are absent.

Dr. Thomas, to my mind, has presented a strong argument in favor of stricturotomy in certain cases of obstructive disease of the lachrymal passages, and I am particularly impressed with the valuable points he has brought out, and with the ingenious knife which he has devised and exhibited. I hope when he closes the discussion he will state a little more explicitly the exact method of the introduction of this instrument.

Dr. Gould's suggestion, it seems to me, is worthy of careful investigation. In curious confirmation of what he says concerning the *habitat* of the gonococcus is the well known fact, especially dwelt upon by Horner, that gonorrhœal ophthalmia almost never produces dacryocystitis, because the germs do not find a favorable soil in the mucous membrane of the duct and sac. An exception to this is the association of purulent ophthalmia and purulent disease of the lachrymal sac in connection with certain exanthematous diseases, but then in these diseases there is also a rhinitis, which is probably the primary factor.

Dr. Leartus Connor, Detroit:—I have not had the opportunity of hearing all the papers, and perhaps the points which I wish to make have already been referred to. In the little note that I made yesterday, I called attention to one case in which exophoria produced distinct, long-continued

rinitis. I have seen a number of cases in which the canaliculus had been slit and the duct treated with probes for a length of time, without satisfactory relief, entirely cured by the relief of an existing eye strain. In managing a case of epiphora, I first remove the eye strain. A large proportion of the cases in the early stages are relieved by removing this source of irritation to the lachrymal apparatus. I accept the view that if it be possible to maintain the anatomical and physiological structure of the lachrymal passages, it should be done. I have therefore followed the line of treatment referred to by Dr. Gould, and thus relieved a certain proportion of cases. Finally, we come to a class of cases where the disease is not relieved by the measures mentioned, and then the knife and probes have done me great service, and I should be loath to throw them aside. I have had the greatest satisfaction in the use of Williams' probes, but it is extremely difficult to procure these made in the proper way. The probe should be stiff and elastic, so as to bend without tearing the tissues. With these probes I have been able to pass through strictures of the lachrymal passages without injury to the tissues, a thing I could not have done so well with the stiff Bowman's probe.

Dr. Charles Hermon Thomas, Philadelphia:—In regard to the parallelism between the conditions found in urethral surgery and in that of the lachrymal duct, of course it is easy to force the comparison too far. The conditions are not identical, yet in some respects they are parallel. There is one point of likeness however, which may be stated emphatically, and that is that in treating stricture of the urethra, every good surgeon considers it all but criminal to make a false passage, and the same is true in regard to stricture of the lachrymal duct.

If there is one thing more than another which should be borne in mind in carrying out the plan which I have suggested, it is to *take time* to get through the stricture by means of dilatation, and not by forcing. No surgeon would think of making enough pressure to force a false passage in the urethra. He would repeat the attempt, sitting after sitting. In trying to get through these strictures I take all the time that may be required. I try first to coax through by the Williams' probe. If it does not pass, Anel's probe is to be tried. If this fails to find a passage, I wash the duct out with the syringe and tell the patient to come the next day. After a way through has been found the conical end of the stricture-tome is to be introduced, and using it persistently as a dilator, it is passed through the stricture. Then a draw cut, not a cut by thrusting, is made. The incisions are to be made laterally and in front. In this way it is impossible to do harm.

A particular point is to be noted in regard to slitting the canaliculus and the opening into the sac. One gentleman asked if I had ever known an instance of shrinking of the opening into the sac. I have known such cases. This trouble was met with when I used the Weber knife. I now use a director and Beer's knife, pass it along until the knife has entered the sac completely, then withdrawing elevate it a little and cut upwards making a free opening in the sac. There is no more danger of such an opening closing than of the canaliculus closing.

I agree with all that has been said in regard to Williams' probes. As to Bowman's probes, if they are to be used at all they should be provided with conical tips.

Dr. Samuel D. Risley, Philadelphia:—I have but little to add to this interesting discussion, but am much gratified at the tendency to conservatism manifested by the remarks already made. What I wished to enforce in my paper was the possibility of treating these forms of disease without recourse to the violent measures which were employed during the early days of my ophthalmic career. I distinctly remember seeing large probes passed forcibly through the bony duct, which could have no other result than crushing the bone and doing permanent injury. Even in later years, I have seen cases where I felt sure that the existing form of the disease was due in large measure to the violent methods of treatment to which the duct had been subjected. I have had no experience with the slitting of so-called strictures of the duct. As I pointed out in the paper, I think that stricture in the ordinary sense, that is a closure of the duct at one point, is comparatively rare; that the closure is due to more or less uniform thickening of the lining mucous membrane, and reasoning *a priori*, to pass a knife through this, however gently, and cutting it must leave a scar in the mucous membrane, and every scar is an injury to the tissue. This is simply reasoning without experience, however, and I have no doubt that Dr. Thomas's observations have been accurate and thoroughly conscientious, and do not criticise his methods. It has always

seemed to me to be more rational to get rid of the thickening of the duct by gentle means.

I was interested in Dr. de Schweintz' remarks in reference to the narrowing of the field of vision. I did not hear Dr. Gradle's paper, but judging from the discussion I think that he alludes to intra-ocular conditions found in association with nasal disease. I have seen a number of interesting things in this line and now have under treatment a young woman with impaired central vision and much contracted field both for form and red and blanching of the outer half of the optic nerve. I had seen her some years previously on account of a small coloboma of the nerve sheath. She came back with the condition described. Her father had had hæmorrhagic glaucoma, for which I did iridectomy and subsequently had to remove the organ. We can therefore understand what great anxiety must have been caused by the failure in the daughter's vision. I could find no intra-ocular cause for it. She also had violent hemi-crania. I examined the nostril and on the corresponding side found the cavity quite thoroughly occluded by hypertrophic tissue. After a few days' treatment in which the hypertrophy was removed, vision improved, the field for form and red became almost normal. The central vision also improved and the hemi-crania disappeared.

Dr. G. A. Aschman, Wheeling, W. Va.:—I was much pleased to learn of the advocacy of conservative treatment. I have always tried to avoid slitting of the canaliculus wherever possible. There is one point which should be emphasized to the profession generally. It has been the experience of every one to have a patient referred to him after the family physician has slit the canaliculus, generally he does not use probes. In the majority of cases this fails to give relief and the patient is sent to us. Often a great deal of harm has already been done. As Dr. Tilley thinks, there is a capillary attraction here which is lost when we cut the puncta.

In regard to the point with reference to gonorrhœa passing through the nostril to the eye. I was struck by the point all the more because in one of my cases after closing the puncta on one side, secretion seemed to increase on the other side. There is undoubtedly some connection between the two.

In regard to closing the puncta to prevent inoculation from the lachrymal sac, I would state that in speaking with Dr. Knapp, he said that he had used the electro-cautery but had not always succeeded in closing the puncta sufficiently. So far I have had no difficulty if it is thoroughly done after treating by injection the canaliculus and sac. There has been firm adhesion in all cases. So many eyes have been lost in this way that it is important that we should find some reliable means of excluding infection from the sac.

Dr. George M. Gould, Philadelphia:—I only wish to add a word in regard to Dr. Connor's case. The reports of such cases are often looked upon with suspicion. If there is anything certain it is the fact of the existence of reflex neuroses. I wish to support the case cited by Connor by a case of my own. Mr. T., a well educated gentleman and one who has not the least sign of hysteria, finds that whenever he wears a stronger myopic lens given for temporary use than the one ordered "for constant use" he will have all the symptoms of an intense common cold. In two hours the nose will become congested and run, the voice will become hoarse—in a word there will be all the symptoms of an acute coryza. Putting on the weaker glasses these symptoms will in two hours disappear. This has been repeated so frequently that there can be no question in regard to it.

## INSUFFICIENCIES OF THE OBLIQUE MUSCLES AND HOW TO CORRECT THEM.

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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In the *Archives of Ophthalmology*, Vol. xx, No. 1, 1891, I announced my discovery of "Insufficiency of the Oblique Muscles." I closed that paper by saying of the nervous symptoms brought about by that state: "I can see no hope of prevention or cure." On the 17th day of May, 1892, while a patient was before me whom I had known to be a sufferer from