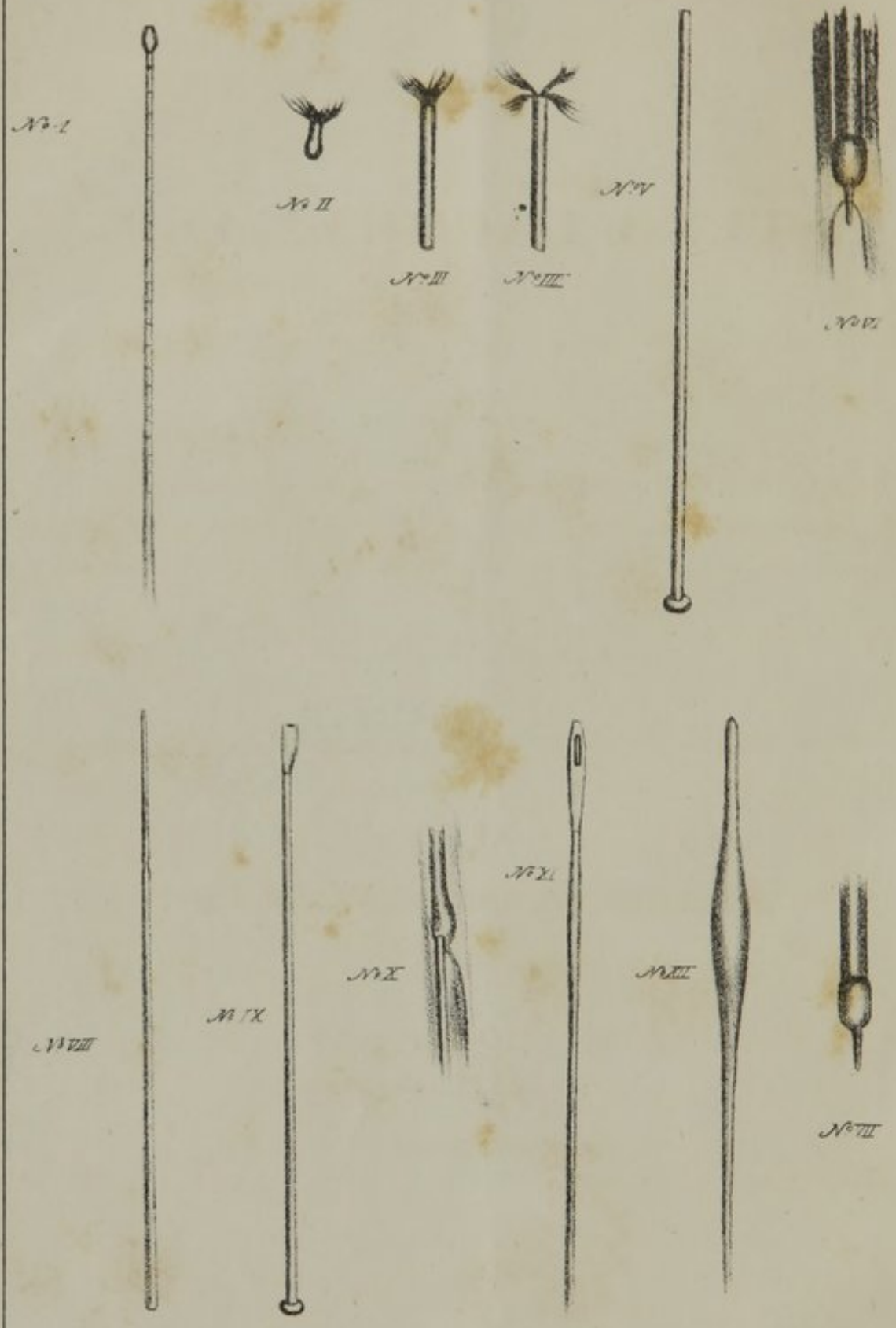
Prize essay, on fistula lachrymalis / by Robert W. Haxall.

Hazell (R. W.)

Prize essay on
fistula lachrymalis ++



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PRIZE ESSAY,

ON

FISTULA LACHRYMALIS.

"Que les efforts infructueux de nos prédécesseurs ne nous decourageant point;
"écartons-nous des sentiers battus, sortons de l'ornière de la routine, envisageons
"le sujet sous d'autres faces, et peut-être verrons-nous luire une clarté nou-
"velle."

BY

ROBERT W. HAXALL, M. D.

OF RICHMOND, VA.

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TO THE PUBLIC.

If the following short essay upon Fistula Lachrymalis, shall tend in any degree to establish a more rational and radical treatment than any heretofore pursued, particularly in respect to that branch of the subject treated of under the head of *Obstructions of the Nasal Duct*, it will abundantly compensate the writer for the time bestowed upon its composition. As stated in the text, it will be seen that but few experiments have been instituted for the purpose of proving the positions advanced; reason, based upon physiological principles, and the anatomy of the structures concerned, has served as the only guide in the treatment herein detailed.

The subject, so far, is certainly but imperfectly discussed; every opportunity for testing the validity of the plan now offered to the consideration of the profession, will be eagerly embraced, and at some future day, when a mass of facts shall have been collected, their result may be made public.

The following letter was received from the Secretary of the Medical Committee of Harvard University:

"*Boston, August 1st*, 1832.

"Sir,—It gives me pleasure to imform you, that at the "Annual Meeting of the Boylston Medical Committee of "Harvard University, held this day, the premium of fifty

"dollars, or a gold medal of that value, was awarded to "a Dissertation on Fistula Lachrymalis, with the motto "*Que les efforts*," &c.

"On opening the accompanying letter, it appeared that "you were the author. Will you have the kindness to in- "form me whether you prefer the medal or the money.

"With much respect,

"I remain your obedient servant,

"GEO. HAYWARD.

"ROBERT W. HAXALL, M. D."

"By an order adopted in the year 1826, the Secretary "was directed to publish annually the following votes, viz:

"1st. That the Board do not consider themselves as ap- "proving the doctrines contained in any of the Disserta- "tions to which the premiums may be adjudged.

"2nd. That in case of the publication of a successful "Dissertation, the author be considered as bound to print "the above vote in connexion therewith."

GEO. HAYWARD, *Secretary.*

Boston, August 10th, 1831.

PRIZE ESSAY,

ON

FISTULA LACHRYMALIS.

SCARCELY any surgical disease with which we are acquainted, seems to have been so little understood by the ancients, as that which forms the subject of the present essay. A want of that minute and practical anatomy, which so pre-eminently distinguished surgeons of a more modern date, and of our own time, together with a total disregard of all post-mortem examinations, can furnish the only clue to their protracted ignorance of this disease.—Hence too, arose their many wild and suppositious theories with regard to its pathology, and their no less futile and unprofitable modes of treatment. Possessed, in almost all cases which presented themselves, of the unreal ideas of caries and callosity, they esteemed these supposed pathological conditions as indicative of those remediate agents, the use of which, instead of relieving, could only tend to aggravate.

It is not a little surprising that even after the existence of the Lachrymal Sac was known, the true seat of this affection (or at least one of them, for it will be shown that others exist), should have remained in obscurity,—the Ca-

runcula Lachrymalis being looked upon as the punctum saliens of all the mischief which followed. FALLOPIUS himself, who first gave an accurate representation of the Sac and Nasal Duct in the sixteenth century, seems to have fallen into the same mistake; and it is truly remarkable that a similar error, according to HEISTER'S account, should have continued down to the commencement of the last century. Being acquainted with the true anatomy of the parts concerned in Fistula Lachrymalis, an erroneous notion of its pathology appears still to have existed, and for a long time patients were doomed to undergo the painful application of eroding escharotics and disorganizing cauteries. Demonstrative and physiological anatomy however, within late years, has done much in clearing away the rubbish which encumbered medical opinions, and among the great mass of diseases relative to the pathology of which we have become more enlightened, it will be found that this has not been the last to benefit by the change.

Much contrariety of opinion has hitherto existed among modern writers, and I know not that the point is yet fully settled, as to what a Fistula Lachrymalis really is. Some have given this name to various diseased conditions of the lachrymal organs, dividing them by way of distinction, into true or false, perfect or imperfect Fistulæ; while others have confined the term to that state of things alone, in which there exists a fistulous orifice, giving vent to the altered secretions of the part. As far as I have been able to make the examination, authors of the present time appear inclined to adopt the latter definition, because it gives a more accurate idea of the *true* nature of the affection,

and because it must unquestionably tend to reconcile existing differences in regard to particular medicines and modes of operating. There is another reason however, which induces me to adopt a similar view; it is certainly sufficiently evident, that all those abnormal states of the lachrymal organs, which if not placed under some remedial influence, would ultimately lead to Fistula, may be, and are often cured without producing this result. This laxity of terms has no doubt been the cause of much misunderstanding among medical men; and so sensibly have I experienced it, that whenever I hear others speaking of cases under their care, the question inevitably follows, for what stage, of what is commonly called Fistula Lachrymalis, have they been called upon to prescribe? Why then should we call a simple inflammation of the Sac or Nasal Duct a Fistula, when none in reality exists and probably may not? With the same propriety might we say, that a person labouring under stricture of the urethra, was affected with gonorrhœa, because the former was the consequence of the latter, or that one in whom there existed an adhesion of the pluræ, was the victim still of acute pleurisy.

CAUSES.—Limiting the term Fistula Lachrymalis, as we have thus endeavored to do, to that condition of the organs in which a fistulous orifice is observable, it necessarily follows, that the various antecedent diseases to which these organs are liable, must be considered as *proximate* causes of Fistula; and whatever cause or causes are found to produce such diseases, are to be regarded as the *remote*. Adopting then this view of the subject, the question propounded by the committee can only be answered by giving

a succinct account of the different affections to which the lachrymal organs may be subjected;—and to be as distinct as possible, the following arrangement seems best suited to our purpose. We will consider—

1st. The diseases of the Puncta and their Canals.

2nd. Dropsy of the Lachrymal Sac.

3rd. Acute Inflammation of the Lachrymal Sac.

4th. Chronic or Strumous Inflammation of the Sac; and

5th. Obstructions of the Nasal Duct, either by a diseased condition of its living membrane, or by the interposition of external substances.

1st. *Diseases of the Puncta and their Canals.*—Observation has sufficiently established the fact, that the healthy performance of the functions of the Lachrymal Sac and Nasal Duct, depends upon the regular absorption of the tears by the Puncta; in default of this, the Sac is found to take on a diseased action, arising no doubt from a want of the customary impression made by the reception of the tears. Following in regular order, on the principle of continuous sympathy, the Nasal Duct soon becomes involved, and as the consequence of this, a disease arises which nosologists have termed Mucocele, or Dropsy of the Sac. As in this case, the distention of the Sac is sometimes so great as to cause its rupture, producing in our restricted sense of the term a Fistula, it seems necessary that some notice should be taken of this particular affection, and of the means adapted to its cure. These shall be mentioned in their appropriate place.

Various are the affections to which the Puncta and their Ducts are liable, arising in a large majority of instances

from inflammation, pure, or modified by constitutional differences. The causes of this inflammation are such as produce a similar condition in other parts and textures of the body; such as cold, exposure to a damp and changeable atmosphere, wet feet, &c :—It is also found to exist as the sequence of some of the eruptive diseases, as measles and small pox. As the inflammation progresses, the eye becomes irritable, the tears fall over the cheek, the edges of the eyelid in the neighborhood of the Puncta are tumid, and the integuments somewhat puffy. Pain manifests itself in a greater or less degree, and the general system sometimes, though rarely, sympathises.

The curative means to be used are general bleedings in plethoric constitutions, the application of leeches, blisters behind the ears, laxatives; and after all active inflammation has subsided, gentle astringent solutions.

A tumefaction and thickening of the lining membrane of the Ducts, are not unfrequent products of antecedent inflammation; atony of the Puncta and their canals, with a patulous state of the former, are also effects of the same cause. These different conditions are discoverable, by the greater or less resistance opposed to the introduction of the Anelian probes, and by the tears not finding a passage to the nose, while the Puncta and the Ducts remain unobstructed. In the state of parts first mentioned, the cure is to be accomplished by means of injections with the vinous tincture of opium or other combinations of opium with astringents. Mercurial and iodine ointments, and injections of the same preparations, will present the best prospect of relief in the thickened state of the membrane, and in cases of

atony and relaxation, our dependence must be placed upon astringent solutions.

The introduction of ANEL'S probes as here recommended, should be repeated as seldom as possible. Perhaps we can with difficulty ascertain the true condition of the lining membrane of the lachrymal canals, without resorting to them. Being a necessary evil, they cannot in all cases be dispensed with; but in the absence of symptoms decidedly denoting a diseased condition of the membrane referred to, they ought not to be used, and when used, most cautiously managed. The irritation caused by them not unfrequently augments the original disease, rendering it more tardy in its termination and more dangerous in its consequences.

A similar objection attaches in a measure to the employment of the syringe. Whenever therefore, the Puncta are found capable of discharging their functions, ointments should hold a preference over injections.

2nd. *Dropsy of the Lachrymal Sac.*—The diagnostic signs attending this form of disease are so strongly marked, that it can seldom or ever be mistaken; unlike Hernia of the Sac, it often grows to a large size, assuming from the first a blue or purple hue, unyielding upon pressure, and incapable of being emptied either through the Puncta or the Nasal Duct. Its colour, freedom from pain, together with the absence of other symptoms characteristic of inflammation of the Sac, sufficiently distinguishes it from that affection.

External topical applications are of no avail in the treatment of this disease; and so utterly ineffectual are they, that the first step to be taken is to lay open the tumefied

Sac throughout its whole extent. Its contents having been emptied, and a few injections of warm water thrown in, a cautious exploration of the Lachrymal and Nasal Ducts should next claim our attention. Having remarked under the former head upon the diseases of the Puncta and their Canals, and given the general outlines of their treatment, it would be supererogatory to repeat them here. An obstruction being found in the Nasal Duct, the plan laid down in this, the last division of our subject, is to be pursued; and should blennorrhagic symptoms of the Sac remain, the course adopted in treating chronic inflammation of this organ will be the one upon which our dependence must be placed.

I am aware that the practice of laying open the Sac, is by no means universally adopted; many resort to the plan of passing very fine silver probes through the Puncta into the Nasal Duct, for the purpose of breaking down any obstruction which may there exist. This method I conceive to be not only difficult, but even dangerous; and, particularly where obstructions in the Nasal Duct are alone found, but too well calculated to produce a state of things in consequence of excessive irritation, which ought certainly to be avoided.

It has also been proposed to pass a seaton through the Puncta, bringing it out at the nostril; either plan I believe to be objectionable. As however it would be anticipating the remarks I shall hereafter make upon this branch of our subject, they will not be enumerated here.

3rd. *Acute Inflammation of the Lachrymal Sac.*—Multiplied experience testifies to the fact, that inflammation of

this organ, together with obstructions in the Nasal Duct, are most frequently complicated with Fistula; we will therefore dwell somewhat more at large on these affections.

Pure, idiopathic inflammation of the Sac, uncomplicated with any constitutional taint, must be regarded as an unfrequent disease. It is however occasionally encountered, and its causes are those to which inflammation is commonly attributable. When unrestrained by appropriate remedies, or utterly neglected in its treatment, three distinct stages characterized by their peculiar symptoms, may be observed, viz:—of active inflammation, of suppuration, and lastly, as I shall call it for want of a better name, its stage of declension.

The disease is found to commence with a hard, circumscribed, bean-like tumefaction at the inner canthus of the orbit, answering in situation to the Sac; in its inception, this tumefaction is almost unapparent to the eye, although clearly discernible to the touch. As the inflammation and swelling progress, the pain which at first was barely appreciable, oftentimes become acute, diverging from its primary seat, and the redness of the part assumes a more lively hue. The Lachrymal Canals become affected, the Puncta are imbedded in the swelling of the lid, and their function of absorption being retarded or wholly impeded, the tears fall over the cheek and the nostril of the affected side is observed to be dry. It unquestionably sometimes happens, that the lining membrane of the Nasal Duct becomes inflamed at this period of the disease; nor does the phlogosis stop here—the adjacent portion of the orbicularis muscle and cellular membrane are found to be implicated, and an appearance not unlike erysipelas is the consequence.

As the disease advances towards its second period, a copious secretion takes place within the Sac, distending this organ in proportion to its quantity, and if it be not checked, causing its disruption.* By the process of ulceration however, the inflammation assumes a more shining and darker tint; a soft, yellowish or whitish spot may be detected upon some portion of the inflamed surface, fluctuation is perceptible, and if the bistoury of the operator does not produce an artificial opening, a true Fistula Lachrymalis must be the result. When either of these conditions happens. the disease is found to progress towards its period of decline; the remaining inflammation gradually abates, the contents of the Sac having found an outlet are discharged, they assume a healthier aspect, the tears are observed to be mingled with them, and *sometimes* the Fistula closes, or may be made to close by art.

True it is, that such a termination has happened; and this is but the fair side of the picture. When a course so auspicious is found not to take place, the lining membrane of the Nasal Duct must be affected with induration or thickening, stricture or adhesion of its walls. As a consequence of either of these conditions, a repetition of the symptoms already enumerated must follow: it sometimes happens too, that the Lachrymal Canals are irreparably injured by the violence of the inflammation or mismanagement, a state of things which possibly may require the ultimate destruction of the Sac. The pathological remarks advanced under the first division of our subject, may be referred to here. They teach us that a failure of absorption by the Puncta, or an obstruction in some part of the

* By the process of ulceration however.

Lachrymal Canals, end not in a simple stillicidium. The customary impression made upon the Sac by the admission of the tears is wanting, and dropsy of the organ is the consequence. It has before been remarked, when speaking of this disease, that the Nasal Duct soon becomes implicated; did it remain however unimpeded, a constant emptying of the Sac through this outlet, might with the patient at least, claim a preference over its destruction.

It occasionally occurs when the disease is suffered to run its course, or our remedies have proved unavailing, that more than one fistulous orifice is formed. Nor do we always find that the external orifice is parallel with the opening in the Sac; and the number of these Fistulæ, together with a greater or less deranged condition of the system, will materially affect any prognosis which we may be called on to pronounce.

TREATMENT.—From the early severity of the inflammation attendant on the form of the disease under consideration, it often results that the physician is called upon to afford timely aid; when such is the case, the prognosis is a most favorable one, for we have the authority of an eminent French surgeon for saying, that eight out of ten cases may be radically cured. The primary symptoms being those exhibiting a state of active inflammation, our remedies are clearly those, the agency of which tends to counteract this condition. Should the constitution of the patient be vigorous and sanguine, one or more general bleedings, combined with judicious purgation, should be premised; cold, evaporating lotions, gently astringent, may be used as local applications, aided by leeches and blisters

behind the ears, hot, stimulating pedeluvia and a restricted diet. Such is the general outline of the treatment indicated in the first stage, and independently of personal experience in its favour, we can adduce the names of PROF. BEER, MR. MCKENZIE, and M. LISFRANC. (1) Indeed, the latter gentleman appears to adapt this method of treatment to the commencement of the second period of the disease; for we find it reported in the Journal General for May 1829, that he had presented a case cured in fifteen days, of "Lachrymal Tumour and *Fistula*," to the French Academy.—How far this mode may be pursued, would seem to require nice discrimination; for should it be carried to too great an extent during the suppurative process, an obstinate blennorrhœa might result.

In event of the remedies here recommended having failed to produce a resolution of the tumour, the inflammation as before stated, presents a darker and more shining aspect; a whitish spot is observable, and the second period is clearly established. Our antiphlogistic means should now be dispensed with, and after the use of warm poultices for a short time, it will be proper to resort to the knife, with which a

(1) In the time of HEISTER, such was the treatment recommended in "slight Fistulæ," a term at that time used to express what we would now call an inflammation of the Sac. After advising the Sac to be emptied by pressure with the finger, he continues his remarks by saying, "at the same time too, you must call in the aid of phlebotomy, purges, scarification, blisters, diet and regimen, according to the patient's peculiar habit and circumstances.—*London Ed.* 1759.

Before this time, compression was resorted to with success, as is affirmed by the testimony of DIONIS and GARENGEOT. But any method producing so much irritation as this will inevitably do, must be in direct opposition to all physiological principle.

full and free incision should be made, whether in the direction of the fibres of the orbicularis muscle or not, is, I conceive, a matter of but little importance. After emptying the Sac of its contents, we may attempt to diminish the suppuration from its lining membrane, by introducing a small piece of lint moistened with the vinous tincture of opium, or what may be found equally as efficacious, with the subjoined preparation: *Recipe*—acetate of lead 3 to 4 grains; pulv. opium 1 grain; and rose water 1 ounce—mixed.

The last stage is found to consist in an increased flow of mucus, intermingled with whitish striæ, kept up by a long continued irritation of the mucous follicles. Solutions of the mineral astringents are the remedies best adapted to remove this condition of the organ; and on the authority of PROF. BEER, I will insert the remedy on which he seems mainly to rely; fresh butter 2 ounces; red precipitate 10 grains; pp. tutty 6 grains—mixed. A bit of lint smeared with this ointment, is to be introduced into the incision made in the Sac, having previously used the following solution as an injection: *Recipe*—sub. acetate copper; nitrate pot ash; alum; from 3 to 4 grains of each; pulv. camphor 2 to 4 grains; distilled water 2 ounces; after dissolving and allowing it to cool, add wine of opium 1 to 2 drachms; rose water 4 ounces.

When Chronic Inflammation has been principally confined to the sanguine capillaries of the membrane, a species of induration termed by BROUSSAIS, "red hardening," is developed as its result. While it continues, the organ cannot, of course, resume its healthy functions; for its removal,

a camphorated hemlock poultice and the camphorated mercurial ointment have been advised on high authority. A similar pathological condition I have prescribed for in other mucous organs, and successfully treated by the following formula: *Recipe*—pulv. nitrate silver 2 to 4 grains; Goulard's extract 10 drops; spermaceti ointment 1 drachm.

Having thus obviated the various consequences of the previous inflammation of the Sac, our attention should now be directed to the condition of the Puncta and Lachrymal Canals and the Nasal Duct. Should the tears be found to escape through the opening made in the Sac, this circumstance will be sufficient to assure us of their freedom from disease; and should they also find an exit through the Nasal Duct, we may then consider our patient as happily relieved. It only remains for us to close the orifice, which will sometimes be effected without assistance from art, by merely withdrawing the tent. Should this prove unavailing, we resort to slight scarifications, for the purpose of exciting adhesive inflammation, or one or two applications with the nitrate of silver may be required. When the Puncta or Canals are injured, we follow the treatment already detailed, and the removal of obstructions in the Nasal Duct will form the subject of a separate consideration.

4th. *Chronic or Strumous Inflammation of the Sac.*—As the name which we have appended to this form of the disease imports, the symptoms will be found of diminished activity in comparison with those of the acute kind, and it may safely be said, that a scrofulous predisposition is always present. The insidious nature of the affection, furnishing but little warning to its victim, prevents him from applying

for assistance in its commencement; and even after its discovery, should a warm and dry atmosphere succeed, he not unfrequently congratulates himself with the idea of its final disappearance; the return of cool moist weather dispels his pleasing delusion, and he has to contend with a disagreeable and tedious disease. Aid is rarely demanded until the morbid secretion from its lining membrane has measurably distended the Sac; as in the variety already noticed, the tumour will be characterized by hardness and a bean-formed shape, but will differ from it by its almost total absence from pain and inflammatory redness. It is not very uncommon however, during the continuance of the disease, for the Sac to take on inflammation of a more active nature. The mucus secreted in its earlier stages, is thin, and varies but little in colour; but when the disease is further advanced, it assumes a thicker consistence and a yellowish appearance. The patient's situation is, for some time, rendered comparatively comfortable, by the ability he possesses of disgorging the Sac by pressure, either through the Puncta or the Nasal Duct. These outlets however, are finally denied him by a gradually increasing thickening of their lining membrane, or a total obstruction; this obstruction oftener taking place in the latter canal than in the former.

The *proximate* cause of Strumous Inflammation of the Sac, is a subject concerning which some difference of opinion exists. It was the belief of SCARPA, and but few comparatively have embraced his doctrine in its full extent, that the lining membrane of the lids and the meibomian glands were first affected;—in consequence of inflammation,

a viscid and unctuous substance is poured out from them, diffusing itself between the lid and ball of the eye, and is finally carried through the Puncta into the Sac. The affection of this organ is regarded as the second step in the process, and Fistula as *its* result. It is not our intention, however, to enter minutely into all the reasons advanced in behalf of these opinions, or to relate all the arguments used in refutation of them; our purpose will be attained by recounting a few only.

The author of the doctrine asserts, that the lining membrane of the lids and the meibomian canals will *always* be found in a turgid condition, and covered with the sebaceous matter to which we have alluded; that pressure made upon the Sac will cause a similar substance to regurgitate through the Puncta, and that in the early stage of the disease at least, it may be entirely cured by addressing our remedies exclusively to the parts in question.

These arguments have been answered by the assertion, that inflammation of the Sac is not the invariable consequence of a diseased condition of the eye-lids and the meibomian glands,—that the Sac is sometimes affected without any disease attacking them, and that inflammation of this organ is often relieved, and fistula cured, without reference to the condition of the lids and glands. It is certain, that these organs, together with the Sac, are not unfrequently diseased at one and the same time; and it is possible, that SCARPA might have been deceived when he supposed that he had cured a tumour of the Sac by applying his remedies to the lids and meibomian glands only, by overlooking the fact, that these medicaments were actually conveyed

into that organ by absorption through the Puncta. In my own mind, these objections are conclusive.

Inflammation of the schneiderian membrane, spreading itself to contiguous organs, may also be enumerated as one of the causes of this disease; and there can be but little doubt that the Sac itself may be primarily affected.

TREATMENT.—The activity or chronicity of the inflammation will of course modify and determine our treatment; as a general rule however, it may be remarked that the lancet is seldom or never to be used. Local bleeding may become necessary, and blisters behind the ears kept constantly discharging by some stimulating application, (savin ointment,) are oftentimes highly serviceable. The tumour, after pressing out its contents, may be rubbed with the camphorated mercurial ointment, or with an ointment made with the hydriodate of potash, a remedy on which I am inclined to place much dependence. The iodurets of mercury I have never seen used, but should infer their efficacy from analogy.

It is in this form of the disease particularly, that all unnecessary irritation is to be most studiously avoided; already too great, and where the Sac is itself originally affected, soon extending to the Lachrymal Canals, we irretrievably fix its chronic character by the application of any harsh measure. For this reason then, injections with ANEL'S syringe are to be entirely discarded, and the use of his probes should be equally reprobated. Our means are to be confined to solutions, dropped into the inner canthus of the eye, which will be carried by absorption through the Puncta into the Sac; corrosive sublimate may be thus used,

and the following recipe of PROFESSOR SCHMIDT will also deserve a trial: *Recipe*—rose water 4 ounces; nitric acid 1 scruple; alcohol 1 drachm—mixed. When the disease which SCARPA has described exists, the internal membrane of the lids may be smeared with the ointment of nitrate of silver and Goulard's extract, the recipe for which we have given on a former page; or with an ointment prepared with red precipitate. The remedial power of unguents will not be confined to the spot upon which they are applied; they too are capable of being absorbed, and will have a beneficial influence upon the disease of the Sac.

These *local* remedies can hardly be considered but as adjuvants; constitutional treatment in this variety of the disease is never to be omitted, and in general terms may be said to consist in the use of the light and bitter tonics, the administration of the preparations of iodine, and where a strumous diathesis is manifested, plain, nourishing regimen and exercise. MR. ABERNETHY'S plan of treatment in disorder of the digestive organs, will not escape the attention of the discriminating practitioner.

5th. *Obstruction of the Nasal Duct, either by a diseased condition of its lining membrane, or by the interposition of external substances.*—This duct is not always affected in inflammation of the Lachrymal Sac, and we are inclined to believe, that were the practice which we have here recommended diligently pursued, its occurrence would be still less frequent; the tardy application of proper measures too will sometimes insure a disease of the duct, while a more vigorous resort to the same means would operate a prevention.

The difficulty of treating with success the different affections of the mucous membrane of the Nasal Duct, has produced various methods for relief, and frequent modifications of the same plans. Before the time of HEISTER, compression over the Lachrymal Sac was resorted to, but as the application of this remedy left untouched the seat of disease, it soon fell into disrepute, and is deserving of this passing notice, only because it was once a practised remedy. Failing in this, the inventive faculty of physicians discovered another mean, by which they thought to obviate the difficulty, and the os unguis was subjected to the operations of boring and cauterization. Subsequent experience testified the uncertainty of this mode of proceeding, and it was found impossible in almost every case, to prevent the orifice from closing, notwithstanding the artifices used to keep open the perforation. To this end, WOOLHOUSE directed the frequent insertion of a metallic tube, and ST. YVES dilated with bits of wood cut into a wedge-like form, having first perforated the unguis with a trocar; he afterwards made use of linen tents dipped in cerate. LEMORRIERE sought an improvement upon this method by cutting out a portion of the bone with forceps which he invented for the purpose, dilating with bougies for some time, and then permitting the Fistula in the Sac to heal. These measures proved of no avail.

In 1712, the Duke of Savoy, who then laboured under Fistula, through fear, we are told, protested against this plan of boring the unguis, and ANEL who was his surgeon, invented the probes which bear his name. In this case, his success is said to have been perfect; but objections have

subsequently been made, and certainly not without reason. His manner of using them consisted in passing them through one or both Puncta into the Sac, and from thence into the Duct until they appeared within the nostril; if he succeeded in accomplishing this, he imagined the whole difficulty was at an end, trusting the after treatment to medicated injections;—where a fistulous orifice existed in the Sac, they were passed immediately into the Duct, after doing which the Fistula was healed as speedily as possible, and injections made with his syringe through the Puncta.

Independent of the great difficulty existing to the passage of the probes, (and particularly after their arrival within the Nasal Duct,) from their extreme tenuity and flexibility, impinging as they must do upon its unequally thickened sides, and thus meeting with an almost insurmountable barrier, other objections of still greater weight may be mentioned. The experience of PROFESSOR BEER authorises the assertion, that their frequent introduction produces atony of the Puncta and their Canals, and the effect of this condition of things may be gathered from what has already been said;—irritation, exalted even to inflammation, is also the frequent result, always difficult of cure and often productive of more serious consequences. Besides, we gain but little towards a perfect cure by the simple passage of the probe, admitting even the influence which injections may subsequently have. The only true indication is, to remove the *morbid organization* of the membrane of the Duct; the slightest reflection will satisfy us, that this can never be accomplished by the introduction

of the probe, and that in cases where much and extensive induration exists, the use of medicated solutions will oftentimes avail us but little.

The evils attendant upon the introduction of ANEL'S probes through the Puncta, gave rise to other methods of treatment, and many who bestowed particular attention upon this disease, were induced when no Fistula existed, to open the Sac. Whenever the Duct was found to be pervious, an attempt was always made to restore its lining membrane to a state of health;—the indication is correct, but the variety of measures adopted to fulfil it, prove the difficulty of its accomplishment. Bougies in some form or other, have been universally used. It would be productive of no real advantage to trace out the different modes adopted by physicians, particularly anterior to the present century; we will therefore not attempt the task, but confine our examinations to the outlines of one or two plans of treatment which seem now to be generally embraced.

The practice recommended by PROFESSOR BEER consists in removing as far as possible, whatever disease may exist in the Lachrymal Canals or Sac, before he commenced his operations upon the Nasal Duct; this end attained, he had recourse to catgut of greater or less size, according to the extent of the passage through the Duct, which is drawn through the nostril and smeared with medicated unguents; he makes use of red precipitate, assisted by injections of corrosive sublimate. The little coil of catgut is attached by means of adhesive strips to the forehead, as a matter of convenience. At each successive dressing, a fresh portion is drawn into the Nasal Duct, and as its lining membrane is

gradually reduced to a healthier state, and the passage becomes more free, a larger piece of catgut is used until it is thought adviseable to suspend it altogether. It may be proper to remark, that when it was found difficult or rather impossible to pass the catgut into the nostril, he advised the frequent introduction of small probes, exerting at the same time some little force, until the Duct became sufficiently pervious ;—by this means, success very generally attended his endeavors.

The length of time always required to complete a cure by the foregoing method, constitutes but a small objection to its adoption ; fresh irritation is apt to be communicated to the Sac and Lachrymal Canals, and affections of these parts as already explained, may probably ensue.

After procuring a passage through the Nasal Duct, Mr. Ware made use of the nail-headed style, an instrument of his own invention, and relates astonishing effects from its application ; contrary to his original expectation, the tears were soon observed to pass through the Duct, even while the style was still worn. Its application being rendered easier than the mode of treatment with catgut, it has received a decided preference. It is true, that Mr. Travers has oppposed, by the authority of his name, the practice of its remaining permanently in the Duct ; but as he has offered as a substitute a plan of treatment differing but little from that long since proposed by Anel, and as we have already mentioned objections to this, which we think will apply with equal force to that of Mr. Travers, we may well be excused from following it out in detail, or adopting his views.

The length of time which patients are compelled to wear the style, and the frequent recurrence of the disease after it has been abandoned, authorizes the belief that MR. WARE and his advocates had not succeeded so well as they imagined. Its *modus operandi* cannot be explained but upon the principle of pressure, and long continued pressure is known to be frequently productive of ulceration; this ulceration then, or wearing away (if the term be allowable,) is the only means by which the Duct is rendered more and more pervious, and when the irritating agent is removed, and the ulceration thus impeded, it can create but little surprize, that the condition of the parts for the removal of which we had recourse to the style, should sometimes recur. The true indication in fact, has not been fulfilled,—the style has not changed the *morbid condition* of the lining membrane of the Duct.

The difficulty of keeping this passage permanently pervious, after dilatation by bougies variously modified had been suspended, induced surgeons to adopt the plan of inserting a tube or canula into the Duct, and then healing the fistulous orifice in the Sac;—where they had perforated the unguis, the tubes were inserted into this artificial opening. This plan could not answer for two reasons; first, it only added to the irritation already too intense; and secondly, it was found impracticable to retain the tubes in their unnatural situation; in this latter case, the true reason was entirely overlooked, and it was vainly imagined, that a tube of different form might be constructed to answer the purpose. The inventive genius of PELLIER thought it had attained the desired end, by submitting to

the consideration of the profession, tubes with two projecting edges, and it was supposed that granulations shooting up into the space between them, would effectually retain them in their position. Neither of these methods met with the anticipated success. A case occurred in France some years since, which ought forever to demonstrate the absurdity of this measure; a female had been operated upon for obstruction in the Nasal Duct, and the canula had been allowed to remain in,—three years after it was found to have ulcerated through the floor of the nostril and appeared in the mouth! The case was reported to the Royal Academy by M. J. CLOQUET, in December, 1826.

It has hitherto been our practice to resort to the mode recommended by MR. WARE, in obstructions of the Nasal Duct; and when symptoms manifesting an obstruction indubitably existed, and were found not to yield during the treatment more particularly aimed at the disease of the Sac, we have not hesitated to advise an early opening into this organ, in preference to the plan of probing and injecting through the puncta. Inflammation of the Duct is unquestionably sometimes relieved by applications made immediately to the Sac, after its incision, or mediately through the absorbing power possessed by the Puncta; even chronic phlogosis is susceptible of melioration in this way.—But in this case, the tears have rarely failed to find a passage into the nostril until some time has elapsed; Fistula of the Sac does not immediately happen, and but little indication exists for early probing the Nasal Canal. We believed MR. WARE'S treatment the best, and therefore adopted it, aware however, of the objections which we have

raised against its employment; we adopted it as the least of two evils, esteeming the plan of PROFESSOR BEER as entitled to the next place in our consideration.

Since commencing this essay, our investigations and reflections have been turned more minutely to this branch of the subject, and we have been led to think, perhaps vainly, that a course might be developed which would, to say the least, be liable to fewer objections than any other which has hitherto been suggested. This method of treatment is not original with me; I can only claim the merit (if any exists) of adapting views intended for a different purpose, to the disease in question. I do not come before the committee upon the recommendation even of a single experiment, simply, because no case has occurred to me since the idea suggested itself to my mind; but I have some confidence in the opinion that the course about to be detailed is not a chimera, and should subsequent experiment demonstrate its applicability, I shall feel no small satisfaction in having added something towards the alleviation of human ills.

Two years ago the treatise of THEODORE DUCAMP, "*Des Retentions d'urine causés par le Rétrécissement de l'urètre*,"* fell into my hands, which I need not say to

* I was so forcibly struck with the superiority of DUCAMP's mode of treating strictures of the urethra, and believing that the development of a more energetic practice than that afforded by the use of the simple bougie where the armed bougie was objected to, was still a desideratum with the profession, I prepared a translation from the original work. I repaired to Baltimore for the purpose of obtaining recommendations from the Professors of that School, and should have gone further north; but on my arrival in Baltimore, I understood from PROFESSOR SMITH, that the work had been already translated. This, together with other circumstances, frustrated my design;—the manuscript is still in my possession.

those who have perused it, was read with no small degree of interest; and it is from the masterly manner in which he treats the thickenings and strictures formed along the track of the urethra, that I have conceived the idea of adopting a similar practice to the diseased states of the lining membrane of the Nasal Duct. I am still further encouraged in the idea, by having seen it stated by M. GESNOUL, Surgeon of the Hotel Dieu at Lyons, that he had successfully treated several cases by means of "caustic introduced through the inferior orifice of the Nasal Canal."

As the situation of the two canals is so totally dissimilar, the one being long and susceptible of great dilatation in comparison with the other, *all* the instruments employed by DUCAMP will not be required, and modifications of those which we design to use, will become necessary. It will also be impossible for me to give an *exact* description of the requisite instruments, because I am not thoroughly acquainted with the true diameter (if any difference exists) of all the parts of the Canal; I have however, made a partial examination, and should have prosecuted the subject to its completion, had not a melancholy domestic occurrence suspended my operations. The difficulty of procuring a subject, will not now allow me to recommence them in time.

The Nasal Duct may become obstructed in several different ways, viz: by chronic inflammation, by a still greater thickening of a part or the whole of its lining membrane, by the existence of one or more indurations or strictures along its track, and by an adhesion in one or more places of its opposite walls;—all these conditions are the immedi-

ate products of inflammation, and the inflammation itself the consequence of the various causes heretofore mentioned. From long continued phlogosis, the mucous membrane in all the organs is rendered susceptible of a morbid organization, which has been expressed by the term 'thickening,' or induration; and upon the cessation of the active form of inflammation, and when its chronic character is about being developed, it seems often to recede to one point, producing *there* an induration which has received the more appropriate appellation perhaps, of stricture. Adhesion of opposite surfaces, for mechanical as well as physiological reasons, is not very often induced.

The agent by which I conceive it possible *effectually* to remove the diseases of the Nasal Canal, is the nitrate of silver, and its operation is by no means limited to its escharotic quality. Experience has abundantly shown us, that it possesses in a surprising degree, the property of so modifying the morbid vitality engendered in diseased tissues, as ultimately to produce their restoration to health; and one need only refer to MR. HIGGINBOTTOM'S essay on the use of this substance, to be convinced of its inestimable value. In painful, irritable ulcers, fungous growths, &c., its use has been long known, and we cannot for a moment suppose that its beneficial effects are solely dependent upon its character as a caustic; even in ophthalmia, not strictly chronic, I have often resorted to a weak solution of it with the happiest success. The manner of employing it in the disease under consideration, presents the only difficulty;—we hope we shall be instrumental in its removal.

When chronic inflammation merely exists throughout the

entire membrane of the Duct, obstruction, as has been observed, does not immediately supervene; in this instance, injections with the nitrate of silver may be used with advantage. But when obstruction does take place, it results from thick mucus blocking up the passage in some portion of its track, the secretion being furnished by the phlogosed membrane itself, and it may be too, by the still diseased Sac. The passage may be rendered pervious by means of probes adapted to its existing calibre, afterwards resorting to the caustic solution several times in the course of the day, preceding its use by injections of lukewarm water and Castile soap. When the Sac is simultaneously affected, the same remedies may be employed, in conjunction with others already recommended in blennorrhœa of this organ.

In circumscribed induration or stricture of the Duct, the leading object to be kept in view, is so to direct the application of the nitrate of silver, as to touch only that point where the stricture is situated. We are not it is true, as in stricture of the urethra, liable to produce a false passage or hemorrhage, by using either the simple or the armed bougie; but it is, to say the least, wholly unnecessary to cauterize the healthy portion of the Nasal Canal if it can be avoided, and wherever this is the case, an eschar must ensue, preceded by more or less inflammation. This inconvenience, it seems to me, may be obviated. The Nasal Duct varies in different individuals, being from an inch and an eighth to an inch and a quarter in length, and its diameter will be found to be from two-twelfths to two-tenths of an inch in adults, in its healthy condition; in disease,

its calibre will of course be altered in different degrees, and the size of our instruments must be lessened in accordance. A description therefore, of their application in any one case will be sufficient, the practitioner varying them according to circumstances.

Before commencing a description of their application, let us state the indications to be fulfilled; and these are, first to destroy the stricture, together with the "morbid disposition of the parts forming it," and then to produce a firm and durable cicatrix, reducing it to a perfect level with the remaining portion of the Canal.

In pursuing these indications, the primary object to be attained, will be to find the depth of the stricture from the fistulous orifice in the Sac, (or from the opening artificially made,) its form and situation upon either side, or upon the anterior or posterior wall of the Nasal Canal, and its exact extent. To accomplish the first requisition, all that can be necessary will be to resort to admeasurements with bougies of proper diameter, on which are marked the divisions of an inch (*fig.* 1) in lines or twelfths, say to the extent of two or three inches. The introduction of a bougie of this description, will, when it impinges upon the stricture and is thus arrested in its progress, indicate the depth at which the opposing body is located. If that portion of the canal which is above the stricture be healthy, we may readily succeed in passing a bougie equal to the diameter of the Duct as already given; if otherwise, the difference between the diameter of the one which we are enabled to pass, and the true diameter of the Duct, will clearly indicate the degree of thickening it has undergone;—a condition of things to be considered in another place.

We will at present, for the sake of perspicuity, describe the mode of treatment required where the stricture is the only diseased point in the Duct. Having ascertained the depth at which the stricture is placed, our next inquiries will be directed to its form and situation, and this information is to be derived from taking its impression in relief; to obtain this, the following method must be pursued, and I shall describe it by taking an extract from my translation of DUCAMP'S work, only premising that the size of the instruments necessary to be adopted, must conform to the existing calibre of the Duct. Extracts from the same source will be made whenever they may answer my purpose, changing their phraseology according to circumstances.

To obtain the form of the stricture then, and the situation of its opening, "I use the following instrument which I name the exploring sound; I have sounds (or very small catheters will answer our purpose,) opened at both their ends, upon which the divisions of an inch are marked; the anterior opening of these catheters ought to be about half the size of the other: I take a piece of silk used in the formation of tapestry, which I tie into several knots, and after immersing them in melted wax, I round off this wax as may be seen represented in (fig. 2.) By means of a small thread, I pass this wax into the catheter, causing it to enter through the largest orifice; having reached the other opening, the roll formed by the knots charged with wax is retained, while the silk passes out, and forms at the extremity of the catheter a very fine and strong soft brush, (fig. 3.) Further, I pass the silk through four small holes

placed near the extremity of the catheter, again unite them by tying them together, and afterwards separate them in the form of a pencil, (fig. 4.) This pencil is immersed in a mixture made with equal parts of yellow wax, diachylon, shoemaker's pitch and resin ; I employ a quantity sufficiently large, that when made round, it may equal the size of the catheter : after this wax mould has become cool, I press or work it between my fingers, and then roll it upon a polished surface.

This kind of bougie appended to the catheter, I cut off about a line from the extremity of the latter, and round the wax into a shape similar to the end of a sound or catheter, (fig. 5.) Having made these arrangements, the wax mould being incorporated with the threads of silk, forms with them a body which cannot be detached. One of these catheters may be conveyed into the Duct ; having reached the stricture, the instrument is there permitted to remain for a few moments, in order that the wax may have time sufficient to become warm and soft, after which the catheter is pushed forward ; the wax being then pressed in between the catheter and the stricture, fills all the anfractuosities of the latter, penetrates into its opening, and moulds itself, in a word, into the various forms which it presents, (fig. 6.) The catheter is withdrawn with precaution, and I find upon its extremity, the form of the stricture, (fig. 7.) If the stem of wax, *ee*, (fig. 7,) which has passed into the stricture, is situated in the centre of the mould which terminates the catheter, I know that the projecting parts which form the obstacle are disposed equally around its orifice, and that it is necessary to cauterize the latter throughout its

whole circumference." If however, the stem is found to be situated on the right side of the mould, we are assured that the projecting body is located on the left of the Canal, and vice versa ; if it be placed anteriorly, the projecting portion forming the stricture must be on the posterior wall of the Duct, and when the contrary, on its anterior wall.

By following the plan just described, we obtain a certain knowledge of the situation of the stricture and its opening, and in order to know how far down we are to direct the caustic, it will become necessary for us to make ourselves acquainted with the extent of the opposing body. "For this purpose therefore, I employ bougies (very fine) of gum elastic, which I cover with wax, in order to receive the impression, in the following manner : a few threads of raw silk are selected and immersed in melted wax ; this silk charged with wax is wound around the bougie, which is then rolled between two polished bodies ; a bougie thus prepared, I introduce into the Canal, where it is permitted to remain for a few moments, and when I withdraw it, a groove is impressed upon it, the extent of which indicates that of the stricture," (fig. 8.) When the orifice of the stricture is situated in the centre of the Duct, there can be but little if any difficulty in introducing the catheter, provided we have one small enough to pass through it, and its size must be measured by that of the stem upon the wax mould ; if however, the opening be not in the centre, some inconvenience may arise, but which may be obviated by an instrument, called from the office which it performs, the conductor. This too, is a catheter of proper dimensions, with a small projection at its extremity, the use of which is

to throw its anterior opening upon either side of the Duct, (fig. 9.) Upon this instrument the divisions of an inch may be marked, and having previously ascertained the depth of the stricture from the opening in the Sac, we know how far it must be introduced in order to reach it; we are also acquainted with the situation of its orifice, and if this be located anteriorly, the catheter must be introduced with its projection against the posterior wall of the Duct, and vice versa; the same rule must be observed when the opening in the stricture is on either side. Being acquainted with these facts, and introducing the conductor in conformity with them, its orifice must necessarily be situated over that of the stricture, and it then only remains for us to carry the small waxed bougie through this conductor immediately into it, (fig. 10.) This operation informs us to what extent the caustic is to be applied, and the manner of its application may be thus described.

The instruments used for this purpose by DUCAMP when operating upon the urethra, are somewhat complicated; we shall adopt the principle and discard the complications. A cylinder of platina, five lines in length and half a line in diameter, (by possessing several of these instruments however, of different proportions, the chance of success will be increased) is to be attached to a gum elastic tube or silver canula of the same thickness, and four or five inches in length, on which the divisions of an inch into lines may be inscribed. At the distance of a line from the anterior extremity of the platina cylinder, a deep groove is to be made two lines in length and a quarter of a line in breadth; into this groove small bits of caustic are to be laid, and af-

terwards fused, by directing the blaze of a blow pipe underneath the cylinder. We have an instrument then as represented in (fig. 11.)

Should the opening in the stricture be situated in the centre of the Canal, we may carry a gum elastic tube or canula down upon it, for the purpose of shielding the healthy portion of the Duct from the action of the caustic, through which the instrument charged with the nitrate of silver may be introduced;—its introduction will also be rendered easier, by adopting this method. With whatever little resistance the port-caustic (as DUCAMP calls it) may pass into the stricture, we know that it has arrived there from our previous knowledge of its depth; and from having also ascertained its extent and situation, we are at once aware how far the port-caustic is to be introduced, and whether it may be necessary to direct the caustic on all sides of the Duct. If however, the obstruction be situated upon any one side of this Canal, by using the conductor, (fig. 9) and so directing it as to place its orifice over that of the stricture, we can, without difficulty, introduce the port-caustic, and direct its application upon that point of the obstacle alone which we design to touch; fig. 10 will sufficiently illustrate our meaning. It may probably become necessary to apply the caustic every three or four days, and by occasionally taking an impression with the wax mould, we are made sensible how far the stricture has been reduced.

I am well aware that cases may frequently occur, where the difficulty would be exceedingly great in introducing the port-caustic or even a catheter of smaller dimensions;

but knowing as we do, the situation of the opening in the stricture, and being enabled to carry an instrument immediately into it by means either of the strait or the projecting conductor, there can be no impropriety in resorting to force in accomplishing our object; and having succeeded in this, we may afterwards make use of the port-caustic as directed. In applying this forced catheterism, it is probable that we might not succeed with a bougie, on account of its pliability; a metallic probe of proper dimensions will no doubt answer the purpose.

By proceeding in the way we have advised, we shall, by a few applications of the caustic, not only destroy the stricture, but we shall have changed the morbid vitality of the diseased point. It is probable that the treatment might end here; that the opening in the Sac might be allowed to heal, and that no recurrence of the disease might happen. Should however experience dictate to us the necessity of subsequent dilatation, it may easily be accomplished by bougies adapted to the calibre of the Duct. To prevent unnecessary irritation upon the healthy parts of the urethra, DUCAMP uses an instrument which he calls the bellied bougie. Such an one in form would well fulfil the intention we have in view, (fig. 12.) The bellied portion of the bougie must be made to answer in size to the natural diamater of the Duct, (say two lines) while the remainder of the instrument would be a line or even less in diameter. The belly is to be placed within the strictured point, or rather where it once was; it here *exactly* fills the Duct, sustaining the proper degree of dilatation, while its remaining portions are untouched by any other part of the bougie.

These dilators may be made of metal, and need only be worn for an hour or two daily.

Thickening of the whole lining membrane of the Duct, is frequently one of the complications against which we are called to contend, and its degree may be estimated from the difference between the size of any probe we may be able to introduce, and the healthy calibre of the Canal. In this case, our operations with the nitrate of silver will be directed against different portions of the diseased membrane, at different times, using a straight conductor to shield that part of it which it may be unnecessary again to cauterize. This method may possibly be somewhat tedious; if so, we can easily construct a port-caustic, having its groove the whole length of the Duct, and thus apply the caustic at one operation to every part of its membrane. Before every application of the caustic, injections of warm water may be used for the purpose of washing out the detached eschars; or if this be not sufficient, they may be carried into the nostril by means of a probe.

In cases where the opposite walls of the Duct have adhered, PROFESSOR BEER perforates the obstacle with a sharp pointed probe, provided it be situated near the nasal extremity of the Duct; he then resorts to dilatation and the use of the catgut. Should the Duct be impervious throughout a larger portion or the whole of its extent, the question has been asked, what is now to be done? Two methods I believe have been pursued; either to pierce the unguis, and thus obtain a new passage for the tears, or entirely to destroy the Sac; against the first of these modes I have protested in another place, and I can hardly believe that

the last will ever become necessary. If the Duct can be opened by a sharp probe, when the adhesion is located near its extremity, I can see no reason why we should not adopt a similar practice, whenever it occupies its entire length. There can be no difficulty in properly directing the probe or bistonry, and if the obstruction does not extend throughout the whole Duct, the operation may possibly be facilitated by using a conductor through which the probe may be passed. Having forced a passage, we may dilate it for a fews days and then apply the caustic.

It can hardly be said that I have done more than present the outlines of a plan which I believe to be practicable. If it be found so, the advantages it possesses over every other will be two-fold; the disease will be remedied in much less time, and no danger of a relapse need be apprehended. Experiments hereafter to be made, will no doubt suggest modifications in the instruments, whereby they may be better adapted to the parts on which we are to operate; they may indeed lead to the invention of new ones, and certainly establish the proper dimension of those which we may find useful. It is probable too, that instruments made entirely of silver may be preferable.

In conjunction with the mechanical part of the treatment here recommended, measures adapted to the deranged condition of the system, as advised on another page, are not to be overlooked; it is unnecessary to repeat them here, except so far as to reiterate the confidence I feel in the administration of the preparations of iodine. I believe that these chronic derangements of the Nasal Duct are nine times in ten complicated with a scrofulous diathesis, and in

other scrofulous diseases, I have repeatedly used this remedy with success.

Much has been said by the old writers upon this disease, about caries of the bones, and something by the moderns. This complication however, is exceedingly infrequent, and when it does occur, our exertions should be directed as far as possible to the preservation of the natural passage into the nostril. As local measures, the mineral acids and metallic astringents are advised, and Dr. Nicol highly extols the use of nitrate of silver. When it is the result of constitutional disease, as in the case under consideration it most frequently is, internal remedies will be demanded, and they are such as will depend in every case upon the peculiar condition of the system.

Cases have been related in which the disease we have investigated, has been induced by external substances; as for instance, by a polypus blocking up the nasal extremity of the Duct. The removal of the obstruction will generally be all that is required.

Note by the Printer.—Not having the *signs* used to express the quantities of medicines, as generally designated in medical recipes, we have been compelled to resort in this Essay to *words.*