

**A new and easy method of curing the fistula lacrymalis : to which is added, a dissertation on the epiphora vera, or, true watery eye, and the xerophthalmia, or dry eye / by Jonathan Wathen ; also, an appendix, on the treatment of patients after the operation for the cataract, in which are shewn, the evils attendant on long confinement and continued bandages, and an opposite practice recommended, illustrated with cases, by Jonathan Wathen Phipps.**

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A NEW AND EASY  
METHOD OF CURING  
THE  
FISTULA LACRYMALIS:

THE SECOND EDITION,  
WITH CONSIDERABLE IMPROVEMENTS.

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TO WHICH IS ADDED,  
A DISSERTATION  
ON THE  
EPIPHORA VERA;  
OR, *TRUE WATERY EYE*:

AND THE  
ZEROPTHALMIA;  
OR, *DRY EYE*.

By JONATHAN WATHEN, *Surgeon, F. A. S.*

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ALSO,  
AN APPENDIX,  
On the TREATMENT of PATIENTS after the  
Operation for the CATARACT:  
IN WHICH ARE SHEWN,  
The Evils attendant on long Confinement and continued  
Bandages; and an opposite Practice recommended.

ILLUSTRATED WITH CASES.  
By JONATHAN WATHEN PHIPPS, *Surgeon.*

---

L O N D O N :  
PRINTED FOR C. DILLY, IN THE POULTRY.

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1792.

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ON THE  
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OF TRUE WYCKERLEY.

AND THE  
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AN APPENDIX  
ON THE TREATMENT OF CATARACTS, AFTER THE  
OPERATION OF THE CATARACT.

IN WHICH ARE CONTAINED  
THE BEST ATTENDANT ON LONG CONFINEMENT AND CONTINUED  
PAIN; AND AN APPROPRIATE FISTIC RECOMMENDED.

ILLUSTRATED WITH CASES.  
BY JONATHAN WATKINS, F.R.S.

LONDON:  
PRINTED FOR C. DIXON, IN THE HOLYAY.

1792.



*To JOHN HUNTER, Esq.*

AS an acknowledged judge  
of the subjects they contain, the  
following sheets are respectfully  
inscribed by

THE AUTHOR.

Pall-Mall,  
July 1, 1792.



INTRODUCTION  
TO JOHN HUNTER, ESQ.

A 2. an acknowledged judge  
of the subjects they contain, the  
following sheets are respectfully  
submitted to the public.  
THE AUTHOR.

ADVERTISEMENT.  
July 21. 1793.

THE Author of the following  
works, having received from  
Mr. Hunter, the following  
Testimonial of the value of his  
works, he now with propriety  
presents them to the public.

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## INTRODUCTION.

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IN the year 1781, I published an account of *a new Method* of applying a Tube, for curing the Fistula Lacrymalis, to which the following advertisement was prefixed:

### “ ADVERTISEMENT.

“ THE author of the following  
“ pages, having carefully perused what  
“ M. Heister had before said on the  
“ Treatment of the Fistula Lacrymalis,  
“ thinks he may with propriety call the



“ practice now recommended *a new*  
“ *Method* of cure for this disorder; for  
“ though Heister had long before intro-  
“ duced the use of the metal tube, yet  
“ the manner of placing it by him was  
“ so very different from that now pro-  
“ posed, and led to so very different a  
“ process, that hardly any two operations  
“ in surgery can be more distinct from  
“ one another. It is presumed, a confi-  
“ derable advantage must lie on the side  
“ of that which precludes the necessity  
“ of perforation. The direction of the  
“ tube through the lacrymal duct, in-  
“ stead of the os unguis, does this most  
“ effectually.

“ But experience will best determine  
“ how far this mode of cure is preferable  
“ to others, in that, or any other respect.  
“ One thing will not be denied, it is sim-  
“ ple and easy.”

Some years after the publication of this  
method, the third volume of Mr. Bell's  
System



System of Surgery made its appearance ;  
in which he says, “ It was proposed a  
“ *considerable time ago, by different pracli-*  
“ *tioners*, to obviate the uncertainty of this  
“ operation, by introducing a small canula  
“ of gold or silver, *either through the na-*  
“ *tural passage of the os unguis, or when*  
“ *this cannot be discovered*, thro’ an open-  
“ ing made with a trocar, or any other  
“ sharp instrument, and by leaving the  
“ canula, and healing the wound over it,  
“ thus to form a passage, which no dis-  
“ ease of the constitution can have any  
“ effect upon.”

Whoever will read this passage, must think himself authorised to conclude, that the period in which Heister recommended Platner’s method of perforating the os unguis, with the view of inserting a tube into it,—and that in which the very different method of introducing a tube into the natural duct, were one and the same; though more



than a century intervened between those processes.

Mr. Bell is not more incorrect in the preceding particular, than he is in what he says concerning the priority of practice. According to his account, the attempt to place a canula in the natural passage, was antecedent to that of perforating the os unguis ; whereas we learn, that the perforation of the os unguis was practised by Heister and others, full a century before the different method was first published by myself in 1781.

It is here necessary to be observed, that the natural ductus lacrymalis, is not only always found with ease in the dead, living, and even morbid subjects (unless obliterated by exostosis) but also, that a probe, tent, &c. &c. may with facility be introduced through it into the nose.

Indeed the experience of difficulty in the discovery of it, can have been complained



plained of by those only who are not accustomed to investigate this passage in the dead subject.

As I am fully satisfied, that inserting a tube, and leaving it in the natural passage, is attended with infinitely better success than any other method hitherto employed for curing the fistula lacrymalis,—less apology is necessary for the appropriation of this discovery to myself. Nevertheless, if Mr. Bell can produce the author who has described and published any such process, before the year 1781, he shall then find me as ready to resign this claim, as I am now solicitous to retain it.

In the fourth volume of his system, the subject of the fistula lacrymalis is resumed, and a tube recommended for its cure, as the invention of a Mr. Pellier, then resident at Edinburgh. It is composed of two cones, separated by a shoulder; which I consider as an attempt to improve on  
those



those first published by myself; but whether these be so or not, is immaterial, as they are intended for the same purpose, and to be placed like them in the natural passage. But in this instance again, there is no reference to the original author.

It is the result of my experience, with respect to the original tubes, in which I include the use of Mr. Pellier's improvements, that though they are greatly superior to all other inventions for curing the fistula lacrymalis, they are nevertheless defective in certain particulars, to which must be attributed their having failed in some cases: but these cases are so very few, in comparison with the much greater number wherein the success has been perfect and permanent, as by no means to invalidate the claim of superior efficacy to this method of curing the fistula lacrymalis.

The original tubes were of a conical form; and without a tip, cervix, or shoulder:



shoulder: they were consequently liable to shift their position, by rising too high in the sac, by getting above the duct, or by descending so low, that in a few cases they were discharged at the nose.

Another defect common to both tubes was, that their channels, like their external shape, were also of a conical figure; whereby the aperture of their inferior, was less than that of their superior extremity. This construction rendered them liable to an obstruction; because the upper portion of the tube would easily admit a fluid, too gross for its exit, at the smaller and inferior opening.

Neither of these tubes had that form, or variation of size, which was necessary for their exact adaptation to the shapes and diameters of the natural ducts, in different subjects and ages. Nor was there any apparatus by which those varieties could be measured, callibered, and exactly ascertained.

These



These particulars having for some time engaged my attention, I was soon convinced, that the only method by which the abovementioned defects of the former tubes could be remedied, was, by an exact admeasurement of the lacrymal canal in its natural state and position, in different ages: and by a conformation of the tube in all its parts, to those different dimensions.

Having accomplished my views in this respect, by a simple apparatus, which will be described in the sequel, I can now with confidence affirm, that almost every degree of the fistula lacrymalis is capable of being perfectly cured, by means more simple, less painful, more speedy, and less deforming, than any hitherto employed for that purpose.

I cannot avoid mentioning another instance of omission in Mr. Bell's system: In his account of the operation for extracting the cataract, he takes all his  
infor-



information from the before-mentioned Mr. Pellier, without once mentioning the Baron de Wensel's method, which he practised for more than twenty years in this capital, with the greatest success. Not only my Treatise on this operation, but that also of the present Baron, each containing a description nearly similar to that of his late father's method, were both published (the former at London\*, the latter at Paris†) prior to the fourth volume

\* A Dissertation on the Theory and Cure of the Cataract. By Jonathan Wathen, Surgeon. Printed for Cadell and Dilly, 1785.

† Chez P. J. Duplain Libraire, cour de Commerce rue de l'ancienne Comedie Françoise, 1786. This excellent Treatise of the present Baron de Wensel, has lately been translated into English by Mr. Ware (printed for Mr. Dilly, 1791) with Notes, chiefly collected during his connection with me. Mr. Ware says, page , "The knife" (of which there is a drawing) "I generally use" "is different from the Baron's." He then gives his reasons for the preference:—and he might at the same time have added, That this knife was,  
many



volume of Mr. Bell's system: yet neither of these, any more than the late Baron's practice, are so much as noticed in that publication. How it came to pass, that omissions of this character should occur in the compilation of a system, should be accounted for by its author.

One thing, however, may without hesitation be affirmed, that there is no professional man well acquainted with the late Baron de Wensel's mode and success in operating for the cataract, who will not give it a decided preference to that of Mr. Pellier's, as described by Mr. Bell.

As the insertion of a tube in the natural duct, is equally the foundation of this and my former publication, I have many years ago, constructed by the directions of Mr. Wathen; not from any preceding model, but from an exact measurement of the cornea, on which it was designed to operate.

thought



thought it rather better to consider it in the light of a Second Edition, than of a new performance; though from the considerable improvements and alterations in the tubes and apparatus for the cure of the fistula lacrymalis, it must differ widely from the former edition.



## REFERENCES TO THE PLATE.

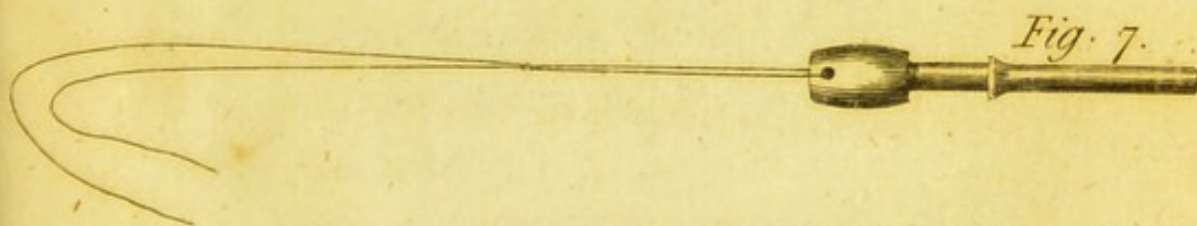
- 1 The Screw Stile.\*
- 2 The Tube, } separate.
- 3 The Tent, }
- 4 The Stile of the Tube.
- 5 The Stile of the Tent.
- 6 A String fixed to an aperture at the top of the Tube.
- 7 A String fixed to an aperture at the top of the Tent.
- 8 The Tube, Stile, and String, united for use.
- 9 The Tent, Stile, and String, united for use.

The above Tubes and Tents are those of the largest scale; there are two inferior sizes, the middlemost of which is that most generally suited to common cases.

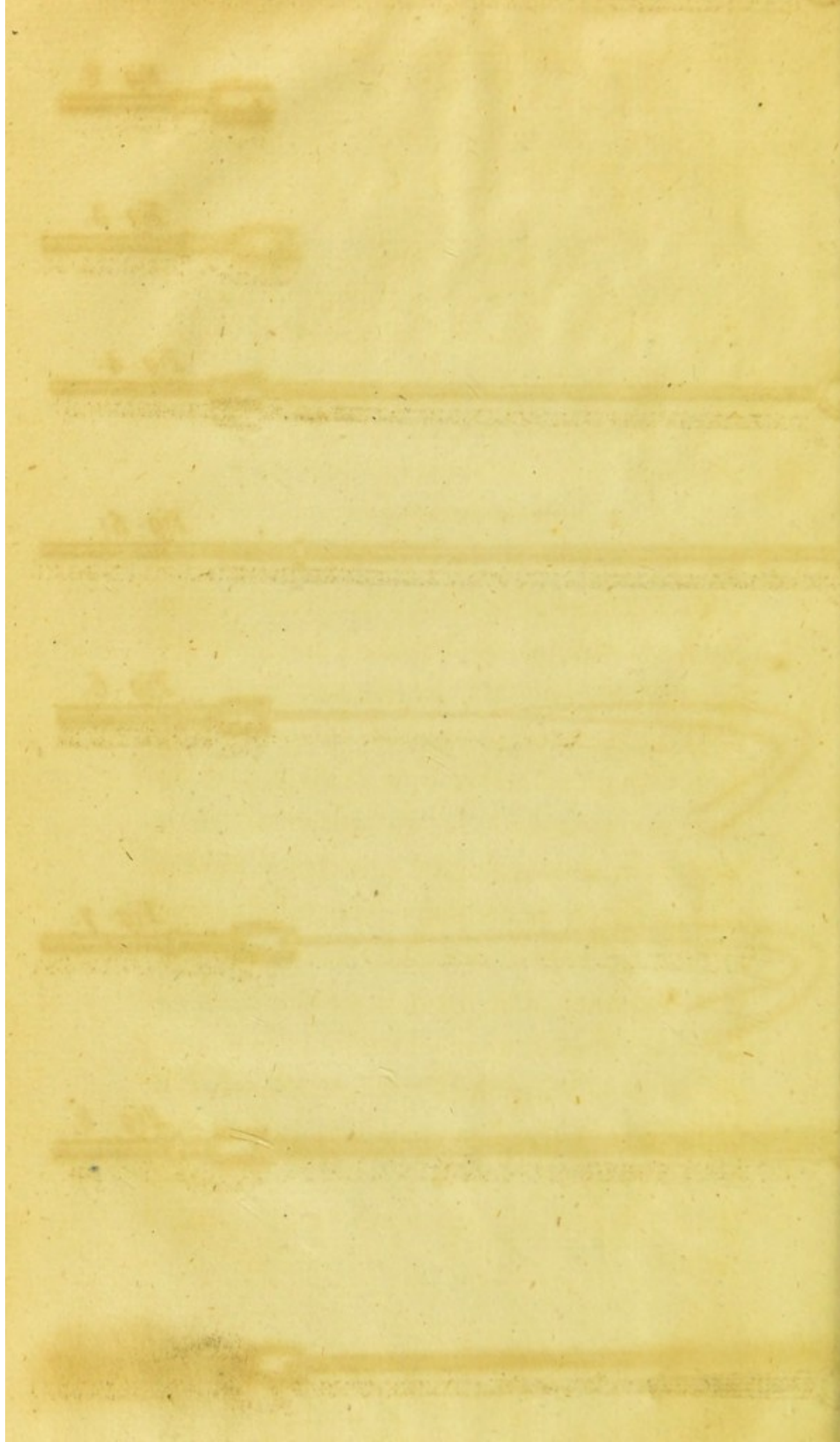
\* A small Forceps will sometimes answer the same end as the Screw Stile; especially if the head of the Tube or Tent stands high in the Sac.

*These Instruments are made &  
sold by Mr Saugny Pallatucci*

NATURAL







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NATURAL STATE  
OF THE  
LACRYMAL CANALICULI,  
SAC, AND DUCT.

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**A**S a true idea of the lacrymal canals is absolutely requisite, in order effectually to cure the fistula lacrymalis, I shall here describe each of their parts in such a manner only, and just so far, as shall be necessary to answer that end. The two canaliculi, or punctular tubes, whose external apertures or puncta, are visible, at the internal extremity of the cartilaginous cilia, in the great angle of the eye; after running horizontally about a quarter of an inch, open by two distinct orifices into the lacrymal sac, just above

B its



its middle or largest part. These serve to convey the secreted tears into the lacrymal sac; which office they perform by the laws of attraction common to all other capillary tubes, in conjunction with the oscillatory motions of the eye-lids.

The superior portion of the lacrymal canal, called the lacrymal sac, is rather of an oval form, as may be seen by the slightest inflation: that is, a little wider in its middle than at its upper extremity, which commences at the sutura transversalis, or junction of the nasal process of the maxillary bone with the os frontis; or than at its inferior extremity, where it is about to enter the bony circle; and where both its name and extent terminate. The sac is supported on the side next the nose by the os unguis, and the nasal process of the maxilla superior; but posteriorly, or next the globe of the eye, it has no other barrier, than the cellular membrane, conjunctiva, &c. In adults, it is generally about one half, at most three quarters of an inch in length; and  
the



the transverse breadth of its widest part is somewhat more than the eighth of an inch.—As the canaliculi enter somewhat higher than its middle; near one quarter of an inch remains above, and rather more than a quarter below their entrance. The sac contracts as it approaches the bony circle, in which the membranous duct is included. This circle is composed of the orbital and nasal processes of the maxilla superior, and a small portion of the os unguis, by which a kind of isthmus is formed, conveying it into the nose. This circle, and its included duct, are seldom more than half, or less than one quarter of an inch in length; but it is considerably less than that of the sac, especially at its commencement, which is rather narrower than any other part of the canal.

As soon as the duct emerges through this narrow passage, it is enlarged, and follows, or rather is expanded like the pituitary membrane, of which, though different in structure, it appears to be a continuation, with very slight marks of



separation ; determining the termination of the one, and the commencement of the other. It enters the nose by a large aperture, directly under the superior edge of the os spongiosum inferius. Thus the sac, &c. above, and the opening of the duct below, resemble two unequal funnels, conjoined by a narrow, short, and common cervix.

The termination of the lacrymal duct in the nose, is generally supposed to be similar to that of the ureter's in the bladder ; whose apertures being less than their tubes, and of a valvular structure, effectually prevent the regurgitation of the contents of that part. But the reason for such an organization in the ureter, has no existence in the lacrymal duct. The lacrymal fluids are, on the contrary, never intended to be retained, but to be diffused ; and immediately mixed with other secretions of the nose, mouth, &c. The aperture, therefore, of the lacrymal duct into the nose, is the very reverse of that of the ureter into the bladder. I  
suppose



suppose this mistake to have arisen from too cursory a view of these parts ; and from not washing away the fordes adhering to them in articulo mortis. The membrane lining the bony circle which is a continuation of the sac, is in its natural state very thin, and less vascular than the membrana pituitaria ; so that the duct in a recent subject, will admit nearly as large a stile as the bony circle when divested of it.

The canaliculi or punctular tubes, are generally said to enter the sac by one opening, formed by their conjunction ; whereas they so constantly have two distinct apertures, that a variation in this respect, may be considered as a very rare phenomenon. Here, as in many other instances, a provision is made for the preservation of the œconomy of this part ; for should accident or disease render one of these tubes useless, the functions of the part may yet be performed by the other. The canaliculi are also represented as entering the very uppermost portion instead of the middle of the lacrymal



fac. The upper extremity of the sac is also usually depicted, to be as round and large as a pea, with a long contorted tube dangling from it.

These misrepresentations have probably arisen from the separation of the lacrymal canal, from its natural attachments; by which its relative situation and original conformation are so much deranged and mutilated, as to serve only to mislead and to confound the ideas of the practitioner.

The above account of the membranous and bony parts of the *viæ lacrymales*, is founded on a series of experiments and observations, made long since by myself: and these have lately been confirmed, by a number of preparations executed for me by my ingenious anatomical friend, Mr. Coleman, Surgeon, in Fenchurch-street. These preparations, in which every part is preserved in its natural situation, clearly demonstrate all that is asserted in the above account of the *viæ lacrymales*. I would not, however, be understood to imply,



imply, that there are no varieties in their conformation. The bony isthmus, for instance, is sometimes naturally so very strait, as scarcely to admit the smallest probe to pass through it: and in some few cases the lacrymal sac has been found complicated, and even double. One of the preparations just mentioned, has a double sac; the largest merely a blind bag, into which the tears were first deposited. It has, however, a lateral aperture near its top, through which, when the former was full, the tears escaped into the other parallel with it, and communicating with the lacrymal duct.

Cautious of being misled by variations of this kind, I have taken the above-mentioned measurements from a considerable number of adult subjects; with the majority of which I have found them in general so much to agree, that I hesitate not to recommend them as a standard, to be depended on in practice.



*Morbid State of the Canaliculi, and of the  
Lacrymal Sac and Duct.*

THE action of the capillary tubes may be impeded or destroyed by collapse, ulceration, or obliteration. The lacrymal sac may be compressed by external tumours, or obstructed by fungus within its cavity, &c. In all these cases the tears are not admitted into the lacrymal sac.

As the beginning of the lacrymal duct is narrow, and confined within a bony circle, it is consequently more liable to obstruction than any other part of the lacrymal canal. In this case also, the tears no longer descend into the nose, but are retained in the lacrymal sac, which they distend more or less, according to the complete or partial obstruction of the duct. The degree of this obstruction may be ascertained by compressing the sac, when its contents will either descend into the nose, or return through the punctular tubes into the eye.

But



But in case the obstruction of the duct is complete, and of some duration, the sac, which is the only dilatable part of the canal, is consequently always filled, and preternaturally distended, first, by the tears only; and in length of time by other and less simple fluids.

In all the circumstances of the *viæ lacrymales*, above recited, the tears flow over the eye, and down the cheek; producing a weeping eye, of a peculiar species, which, that it may be distinguished from another hereafter described, I shall call *Epiphora Spuria*.

The usual effects of a long and continued obstruction of the duct, are inflammation, suppuration, and an eruption of the contents of the sac; sometimes laterally into the cellular membrane, or outwardly through the teguments, or in both directions; so as not only to occasion a partial or total destruction of the sac, but even that of the thin bones, by which it is partly supported. These changes,



changes, induced by disease, tho' scarcely capable of being exactly described, require a minute attention ; for by that alone can they be ascertained, and frequently restored to their lost action, or to their natural state. The inferior portion of the lacrymal canal, which I have hitherto distinguished by the appellation of duct, being surrounded by bone, is incapable of dilatation. Whatever alteration it therefore sustains, must take place inwardly, and occasion an obstruction, more or less formidable, in proportion to its magnitude.

In some few venereal and scrophulous habits, the solid bones forming this circle have been found carious ; and in others so exostosed, as entirely to annihilate, not only the membranous lining, but even the bony canal itself.

This case excepted, which is not very common, the specific circumstances, and varieties of obstruction in the duct, do  
not



not require accurate discrimination ; since one and the same method of cure is equally adapted to all of them.

*Apparatus for the Cure of the Fistula  
Lacrymalis.*

1. Anel's probes and syringe, with capillary pipes, both strait and curved, the whole formed of silver.

2. A cylindrical glass tube, six or eight inches long, with a stop-cock near its lower extremity, and several sizes of capillary pipes. These last, with the other furniture of this tube, must be formed of steel.

Steel bristles, small enough to pass and clear the pipes of the syringe and cylinder. To these must be added, small silver stillets, three quarters of an inch in length, to stop the upper punctum ; when  
either



either of the former instruments are used. \*

3. Three silver probes, with round bulbous extremities, of the following caliber. Largest, 1-8th 1-4th; middle, 1-8th; least, 3-4ths of 1-8th: to which may be added another only 1-half of 1-8th in caliber for children's, and other ducts of uncommon narrowness.

4. Three tubes made of gold, silver, or lead, divided into three portions — cup, cervix, and cone.

The cups have a small hole near their margin, and an open slit extended nearly through their whole length. From the termination of the cup, the remaining portion of the tube is perfectly cylindrical.

\* No apparatus of silver can be used with quicksilver, which instantly amalgamates, and renders it useless.—It is for this reason that all the furniture, pipes, &c. of the glass tubes are of steel; and that the syringe and its pipes must be all of silver, as nothing but simple aqueous fluids are made use of by them.

within,



within ; and would also have the same form on its outside, was it not for the shoulder, which gives it the appearance of a cone. The reasons for this external construction will hereafter be mentioned. The little space between the cup and cone is called cervix.

*Dimensions of the Tubes—largest size.*

Aperture of the cup	1-8th	3-4ths diameter
Length	2-8ths	
of cervix	1-8th	1-half
of cone	4-8ths	1-half
Caliber of shoulder	1-8th	1-fourth
cervix and		
lower end of cone	1-8th	

The whole length of this tube is exactly one inch.

*Dimensions of the middle-sized Tube.*

Aperture of the cup	1-8th	1-half diameter
Length	1-8th	3-4ths
of cervix	1-8th	1-4th
of cone	4-8ths	1-4th
Caliber of shoulder	1-8th	
cervix and		
lower end of cone	3-4ths of	1-8th

The whole length of this tube is exactly 7-8ths  $\frac{1}{4}$ .

*Dimensions*



*Dimensions of the least Tube.*

Aperture of the cup 1-8th 1-4th

Length 1-8th 1-half

of cervix 1-8th

of cone 4-8ths

Caliber of shoulder 3-4ths of 1-8th

cervix and

lower end of cone 1-half of 1-8th

The whole length of this tube is 6-8ths 1-half

The bore of these tubes is a perfect cylinder, from the cup to their ends.

It will be proper to have a still smaller size than the last, but of the same length, in readiness, for the ducts of children, &c.

5. Three stiles of the length of a common probe, with little rings at their upper ends: These stiles are to fit exactly the several tubes, so that when put into them, they may give the roundness of a probe to the end of each. They are also furnished with a button, fitted to each cup, and so well polished, that no adhesion can possibly take place between them.

6. One



6. One steel stile of the same length with those last mentioned, furnished with a small pyramidal male screw at its inferior extremity, correspondent to the female turns in the upper end of the tubes just mentioned.

7. Three hollow tents, with oval heads, formed of the same materials as the tubes: The heads are a little scooped on their insides, to increase their cavities, and have each a slit and perforation penetrating into them. The caliber of the widest part of the oval is in the largest tent 1-8th 3-4ths. The cervix, from head to shoulder, 2-8ths in length, and its cone eight-8ths; so that the whole length is 10-8ths. They are in every other respect exactly similar to the first tube; and to the two inferior ones—observing in their construction the same proportions in all the points above-mentioned.

Were it not for the shoulders appended to the tents, as well as the tubes, they would be apt to rise higher in the sac  
than



than would be convenient ; and the reason why the cervix of the tents and their hollow stiles are longer than those of the tubes is, that their rising a little is often eligible ; yet their dependant canulæ must have length enough to reach beyond the bony isthmus into the nose.

It will be proper to have a still smaller size than the last, but of the same length, in readiness, for children, &c.

When these tubes, or tents, are formed of gold or silver, it is necessary to leave one or two turns of a female screw in the top of their cup, or cylinder, or head ; but this will not be required when they are composed of lead.

The preceding particulars, to which may be added a common bleeding lancet, constitutes the whole apparatus for curing the Fistula Lacrymalis.

By the probes which are calibered and graduated, the place and degree of the  
obstruc-



obstruction may be precisely ascertained; and when the probe has passed it, the caliber of its button determines that of the tube or tent; the shoulders of which are exactly conformable to its correspondent probe.

*Cure of the Fistula Lacrymalis.*

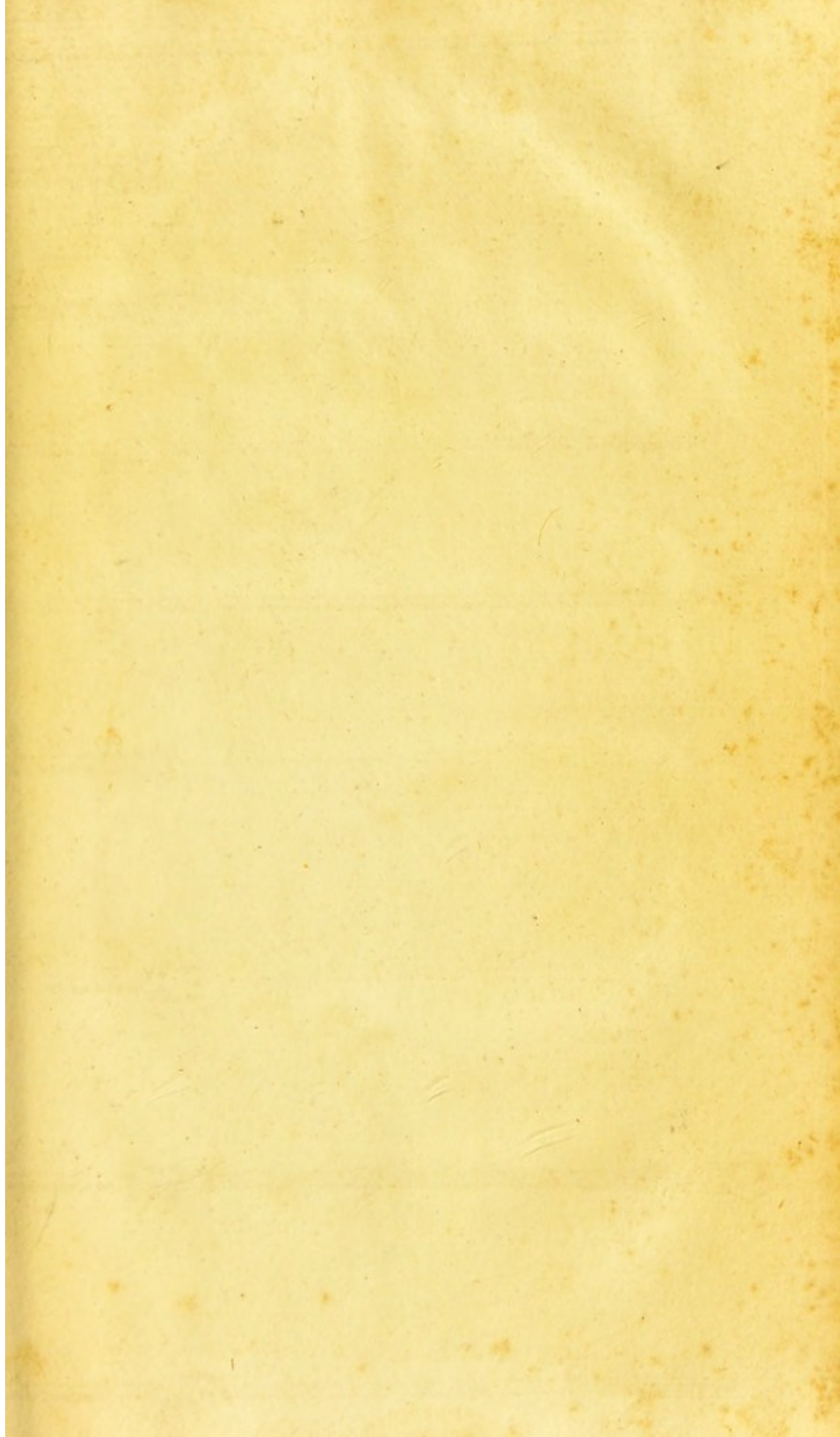
I SHALL not here enquire whether the term *Fistula Lacrymalis* be proper in all the different circumstances to which it has been long applied: The impropriety of established names appear to me of little consequence, if the subjects implied by them are properly understood. I shall, therefore, after adverting to a circumstance or two, which does not strictly belong to the subject, not only continue, but include under that appellation, every antecedent or concomitant symptom of this disorder; from the slightest obstruction in the lacrymal duct, to an abscess of the lacrymal sac, carious bones, &c. And however complicate and different from each other these effects on the



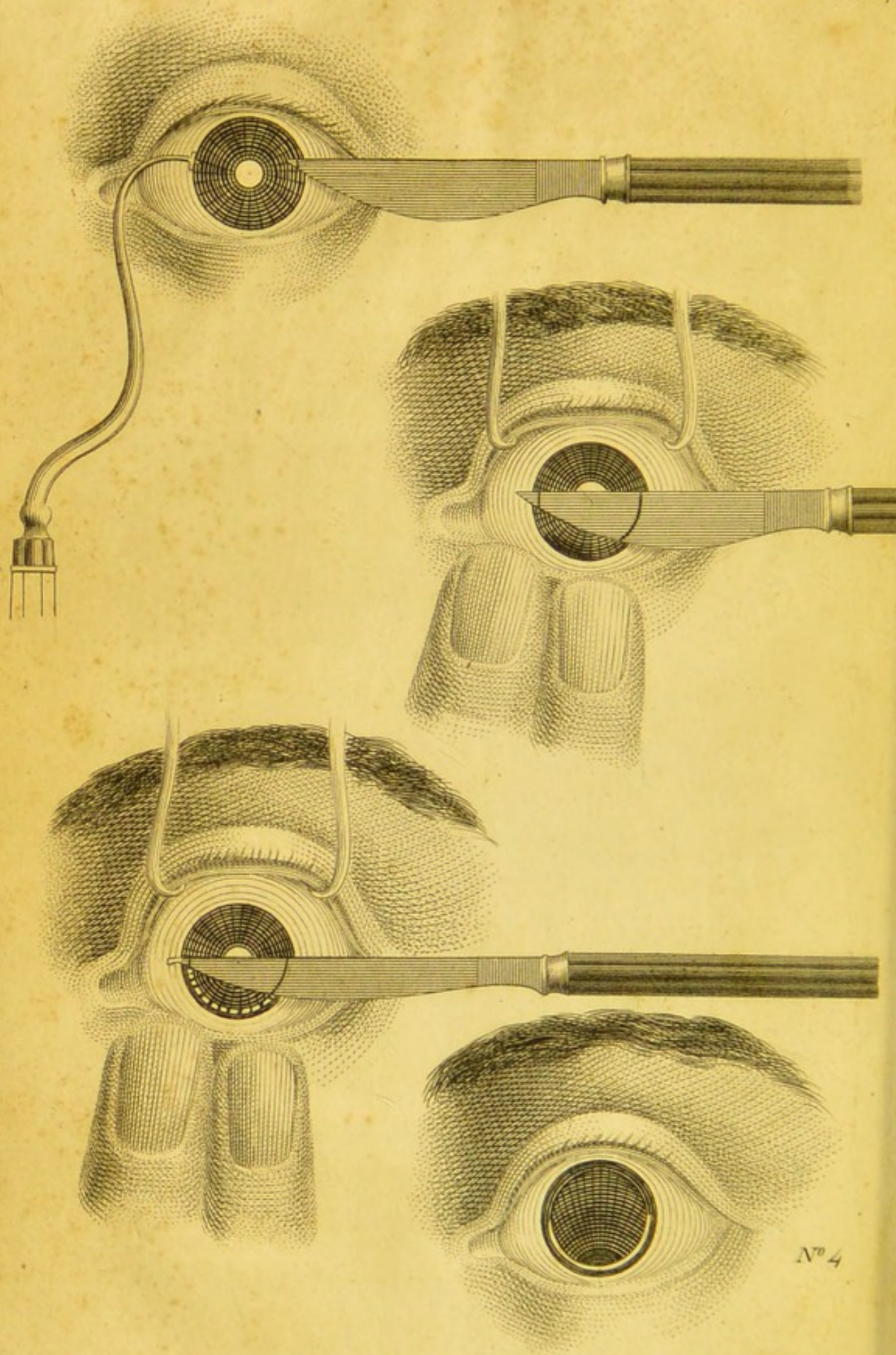
*viæ lacrymales* may be,—I impute them all to one and the same original cause, viz. a swelling, or enlargement, of the membrane lining the bony canal ; whose natural and morbid state has been already described.

The Epiphora, or watery eye, which precedes and accompanies every stage of the fistula lacrymalis, ought not to be considered as a disease, but rather an effect, or secondary complaint, arising from an obstruction of the lacrymal duct, which no longer admits the descent of the tears into the nose ; so that they must fill the eye, and fall over the cheek. And as this effect can never be removed but by curing the disease which caused it, there is surely the greatest reason for distinguishing this from another species of the weeping eye, which originates in the secretory organ of the tears, constituting a real, troublesome, and sometimes dangerous disorder. It is on this account I have called the former Epiphora Spuria ; and that I denominate the latter Epiphora











ra Vera. The first is included in the present subject; but the last named being of a very different nature, both in its origin and effects, I shall defer what I have further to say on it, to the end of this Dissertation; in which some pages will be devoted to its consideration.

If the Epiphora be caused by a relaxation of the punctular tubes, tonic collyria of the cold infusion of bark, &c. will frequently prove useful, and restore their lost action. If these tubes are compressed by hordeola, encysted or vesicular tumours, &c. their removal will effect the cure. If obstructed or collapsed, the passing Anel's probes a few times, will be effectual. These are some of the means which may be used with propriety when the epiphora is occasioned by a defect in the punctular tubes: but this I have seldom known to happen, except from external injuries; as burns, wounds, &c. An obstruction in the lacrymal duct is, however, much more frequently the cause of that epiphora, which, for distinction's



fake I have denominated *Spuria*, than any imperfection of the *canaliculi* themselves. This obstruction may be partial, admitting some of the tears to descend, whilst others run over the eye. In this incipient state, the *sac* is not distended, nor will tears regurgitate through the *puncta* on its compression, because they yet continue to pass on such an impulsion, downwards into the nose.

When this obstruction is in a more advanced state, the *sac* becomes distended; and if pressed by the finger, its contents will at one time be expelled into the eye, and at another into the *ductus ad nasum*. Hitherto the tears retained in the *sac*, or pressed into the eye, appear pure, and unchanged: but as the *sac* is seldom or ever perfectly cleared of its contents, the remainder becomes acrid and irritating; the first effect of which is a gelatinous fluid, mixing itself with the tears, very perceptibly when forced with them into the eye. After some uncertain time, a small degree of inflammation in the *sac*

com-



commences ; indicated by the additional appearance of a purulent matter, uniting itself with the former fluids, and predominating in proportion to its cause.

All these stages of obstruction (as the name is continued) may not improperly be called Incipient Fistulæ ; and as such admit the following expedients for removing their cause : and the more especially, as they have in some few instances accomplished it, in the most effectual manner.

It is now eighty years since Mr. Anel, a celebrated French surgeon, recommended a method of forcing the obstruction in the lacrymal duct, by syringing a liquor into it, through the punctular tubes. Nor has there been an interval between that period and the present time, in which M. Anel's plan has not been followed, both by regular and empirical practitioners, with different success. Those who have occasionally succeeded, speak in its favour : by others, who have not been so

C 3

fortunate,



fortunate, it has been discarded, and sometimes reprobated. I have at different times, within the space of thirty years, been its advocate and opponent. Upon the whole, I am certain it does sometimes answer : but if any one presumes on its frequent success, he will be much disappointed. I have, nevertheless, for some time past, made more use of Mr. Anel's syringe than at any former period ; not so much indeed with the expectation of its removing the obstruction, as with the view of ascertaining whether the lacrymal duct be obstructed or not. If there be no obstruction, the liquor will flow directly into the nose and throat of the patient ; but it will otherwise regurgitate through the upper punctum into the eye. As the ascertainment of the obstruction determines the subsequent practice, it will not be improper to repeat the former process. But as this is always done by the lower punctum, it is absolutely necessary to prevent the reflux of the liquor, without which it can act with little or no force on the obstruction. This effect cannot,



cannot, however, be obtained by any external pressure, however accurately applied; nor is there any method of doing it effectually, but by stopping the upper punctum with a silver bristle, which will answer that purpose. By this means the impulsive force of the injection will terminate on the obstruction, and have all possible chance of removing it. Three or four syringes, filled and emptied, one after another, every, or every other day, for a week or eight days, is a sufficient trial; when, if it does not succeed, it ought to be relinquished as ineffectual.

The next and most rational attempt to remove this obstruction, since the time of Mr. Anel, was made by Mr. Blizard, and published about twelve years ago in the Philosophical Transactions. He filled the lacrymal sac with quicksilver; by the fluxility and gravity of which, he concluded the obstruction might be overcome: — nor was he mistaken; for on the third or fourth time of trial, the



quicksilver passed freely into the nose, and the patient was cured.

The glass tube which I prefer for this purpose, is about eight inches in length, and near half an inch in diameter, furnished with a stop-cock just above its lower end, steel ferril, pipes, &c. This tube should always contain its necessary quantity of quicksilver, secured by a cork, so as to be in continual readiness for immediate use.

I sometimes use the above machine in lieu of Anel's syringe, by way of test: and indeed should always do it in preference to that instrument, were it not that, when there is no obstruction in the lacrymal duct, the quicksilver flows so freely into the nose and fauces, as to occasion a troublesome irritation in those parts: and even a sudden and alarming cough in some persons. As a mean of overcoming a very slight obstruction in the lacrymal duct, the method just described has, for a certainty, greatly the advantage over  
Mr.



Mr. Anel's; and indeed every other yet designed for that purpose.

The quicksilver thus introduced, and by which the sac is immediately filled, must, so long as it continues in that situation, bear down, and act with continued pressure on the obstructed duct, upon which it directly lies. Besides, this operation is performed with great ease and certainty in its first application; which is precarious with the syringe after numerous repetitions.

I have before observed, That the pipes for Anel's syringe, and for the tube, should some of them be strait, and others bent a little near their ends. The preference of the one to the other must be determined by the choice and convenience of the surgeon.

I use those which are strait, not only as their opposition to the impelled fluid is less in this form, but as they are more readily introduced, especially if the head be a little inclined to the opposite side at  
the



the time of introduction ; for then the pipe and the punctular tube form a direct line with each other. Whichever of these methods be used, and however successful it proves, it should not be immediately relinquished, but occasionally repeated, in order to prevent a return of the obstruction, which sometimes will happen. It is requisite in this operation, as well as that of the syringe, when used with a view of cure, to stop the upper punctum with a silver bristle, for the reasons already assigned.

Having mentioned the two preceding processes as of use, in sometimes removing recent obstructions of the lacrymal duct, with some degree of approbation, I shall conclude it by an observation, That all Mr. Anel's other schemes ; such as passing a miniature probe, by the puncta, into the lacrymal sac, and, through its duct, into the nose \*, &c. ; M. La Foret's also, especially

\* Though it be not impossible thus to pass the miniature probe into the lacrymal sac, and through  
the



especially that of first passing a probe, and afterwards inserting a metal tube from below, upward by the nose, through the duct, into the sac, and then syringing a liquor by this tube into the sac; — I say, these and many other methods, of a similar kind, are not worthy either of imitation or recital; because they are not only very troublesome and painful in their execution, but in their nature injurious, and incapable of producing the intended success. Nor are these sentiments peculiar to myself: for the late Mr. Samuel Sharp, who lived at the time of their publication, and who then paid the greatest attention to the practice which they recommended, was of the same opinion.

the duct, it is, however, not only very difficult to perform, but more likely from the necessary smallness of the probe to prick and wound the sides of the sac and duct, than to pass centrally through them: And, indeed, was so small an instrument occasionally thus introduced into the nose, without injuring the lacrymal canal, — that would by itself afford little or no prospect of curing the obstruction; and the only use then of it would be to open the stricture so, that the quicksilver might afterwards preserve it in that state.

I have



I have frequently recommended frictions of the unguentum mercuriale, citrinum melioratum, precipitatum album, ad lipitudinem; and of Dawson's ointment, &c. into the great angle of the eye in these incipient fistulæ; and sometimes with apparent success: but I attribute the benefit received from their use, more to the friction, by which the retained fluids are forced downwards, and thus overcoming the obstruction in the duct; than to any specific efficacy in the medicines themselves.

Though none of the abovementioned methods should succeed, the disorder may nevertheless continue for years, perhaps for life, in a state of bearable mediocrity; and the patient may experience no other inconvenience than the necessity of pressing out the contents of the sac, and of frequently wiping the eye. When the sac is inflamed to a certain degree, its contents can no longer be passed out through the puncta; but will be retained, and cause a hard, inflammatory, painful tumour



tumour in the great angle of the eye. This will suppurate sooner or later ; and if not prevented by incision, will break of itself, attended with all the symptoms and circumstances of a common abscess in any other part of the body.

If after the eruption of the tumour the disorder be left to itself, the pain ceases, the swelling subsides, the wound heals, and the corner of the eye returns to its usual appearance.

It may continue in this quiet state for a longer or shorter space of time ; but it is by no means secure from a relapse into its former state of inflammation ; and it is chiefly owing to the frequent return of this swelling, abscess, &c. that the patient is urged to seek a radical cure. Some indeed apply for relief in the more early stages of the disease : and it is to procrastination alone we must attribute that variety of changes, so different from each other, which both the sac and duct undergo. The sac is sometimes partially, at other times entirely destroyed, or filled  
with



with fungous granulations. Sometimes, not only the thin bones in its vicinity, but the more solid ones also, including the duct, are rendered carious. In many of these variations, especially the last mentioned, this disorder is always accompanied with an inveterate ulcer in the inner canthus. \*

When

\* That Nature should ever be capable of curing a disorder in this state, would be incredible, if the singularity were not confirmed by some undeniable facts. — I this day, May 18, 1791, saw a lady, aged 61, who had a fistula lacrymalis for many years. It formerly broke, subsided, and healed repeatedly : but within the last two years the ulcer in the great angle became inveterate, extending its effects to the eye itself, in the form of an inflammation ; which yielded to the usual method of treatment. The ulcer in the corner of the eye continued as before ; and was never dressed otherwise than superficially, notwithstanding the bones were known to be carious ; nor were any means ever tried to open the natural passage, or form an artificial one, through the os unguis. Nevertheless, in a few months after the inflammation had subsided, the obstructed duct became pervious, the tears resumed their natural course, and the ulcer, notwithstanding



When the disorder arrives at the state above described, there is nothing, however severe or painful, but the patient willingly submits to for relief. The actual and potential cautery have been used for ages past for this purpose: they were prescribed by Celsus, — nor were they relinquished by Cheselden. But these methods, terrible as they were in themselves, never yet made a single cure of the fistula lacrymalis, otherwise than by a total destruction of the lacrymal canal; the anatomy and physiology of which, those practitioners were unacquainted with. I have, in my younger days, seen and examined several patients who had been thus managed by Mr. Cheselden; and every one of them had a deformed cicatrix, and a watery eye.

There have been since that period considerable improvements in several branches

standing the caries, healed, and became perfectly sound, though not without considerable deformity. I have seen several other instances of the same kind.

of



of surgery ; but in none have they been greater than in the theory at least, for treating the fistula lacrymalis.

Every practitioner now endeavours to regain or restore the natural passage of the tears into the nose ; or, when that cannot be obtained, to make an artificial one through the os unguis.

Neither of these methods, however well designed, have hitherto been attended with certain success. The first has afforded little security against a relapse ; and the second, even when a tube is passed thro' the os unguis, as recommended by Mr. Heister, is scarcely ever effectual. The restoration of the natural duct, afforded the only rational prospect of success : but as every attempt of this kind had yet been attended with great uncertainty, not a single resource remained but the insertion of an artificial tube, or lining, within the natural duct ; the solid sides of which, and its large canal, might be sufficient to resist every future tendency of the constitution



tution to compress it, or again obstruct the passage of the tears into the nose.

More than ten years have now elapsed since the first publication of such a method: and that interval of time has served, not only to confirm and establish its utility, but it has also afforded many opportunities for observation and improvement; especially in the shape and conformation of the tubes. These are now more accurately adjusted to the different sizes of the lacrymal duct, in different ages and persons, than those first recommended: nor are they less applicable in all the variations and changes which are effected by disease on the lacrymal sac and duct.

*First Stage of the Disease for Operation.*

THE first, and indeed the most eligible stage of the Fistula Lacrymalis requiring the operation, is when the obstruction of the duct is so entire, that what is retained in the sac can no longer

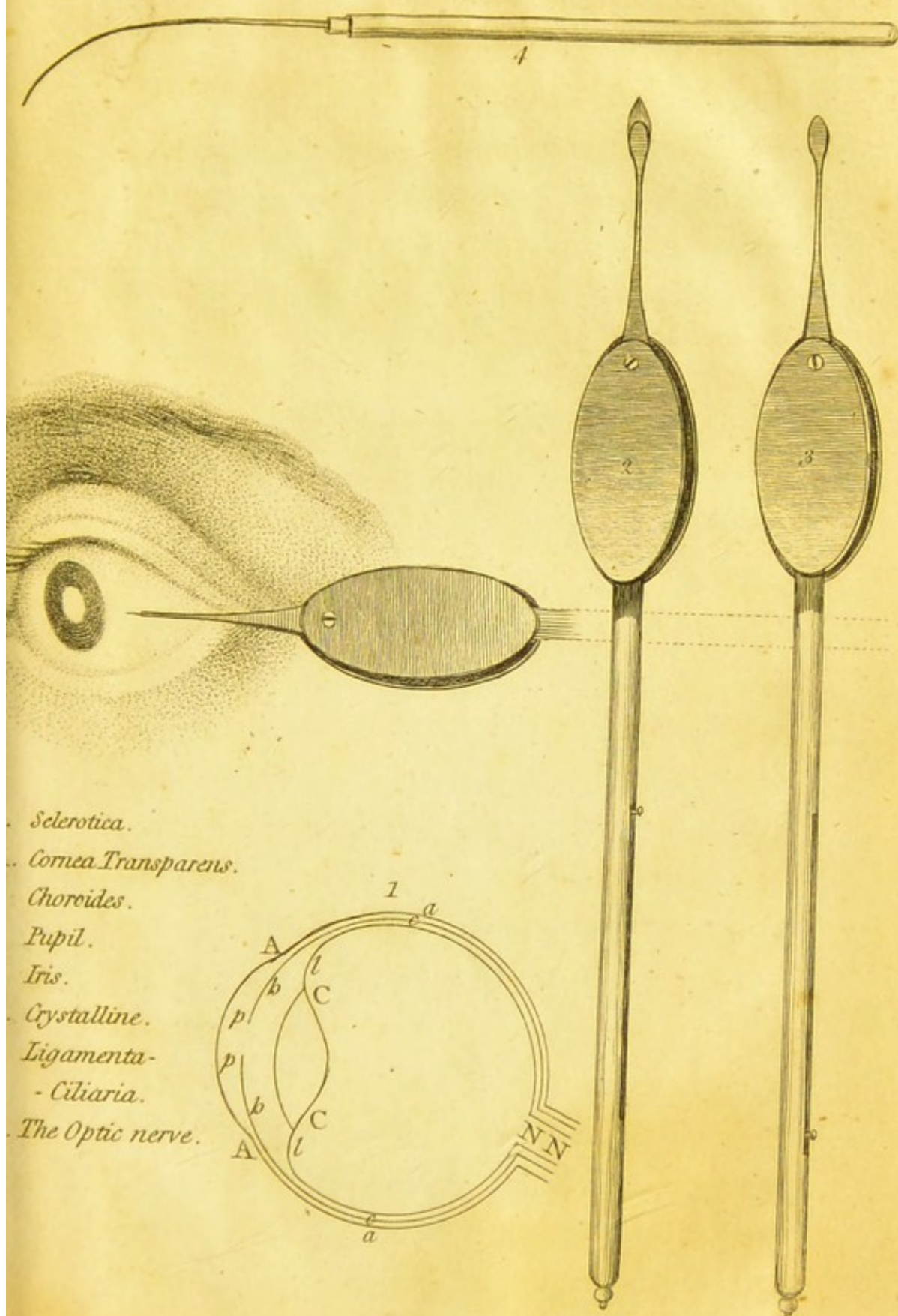


be pressed downward into the nose, or upward, through the puncta lacrymalia, into the eye. The sac is of consequence distended, and is or will soon become inflamed and painful; but as it has not yet sustained any material morbid change, it will recover its natural state almost as soon as its contents are discharged by a proper incision. If this aperture be made with a common lancet only, it will be attended with little more pain than that of bleeding with the same instrument.

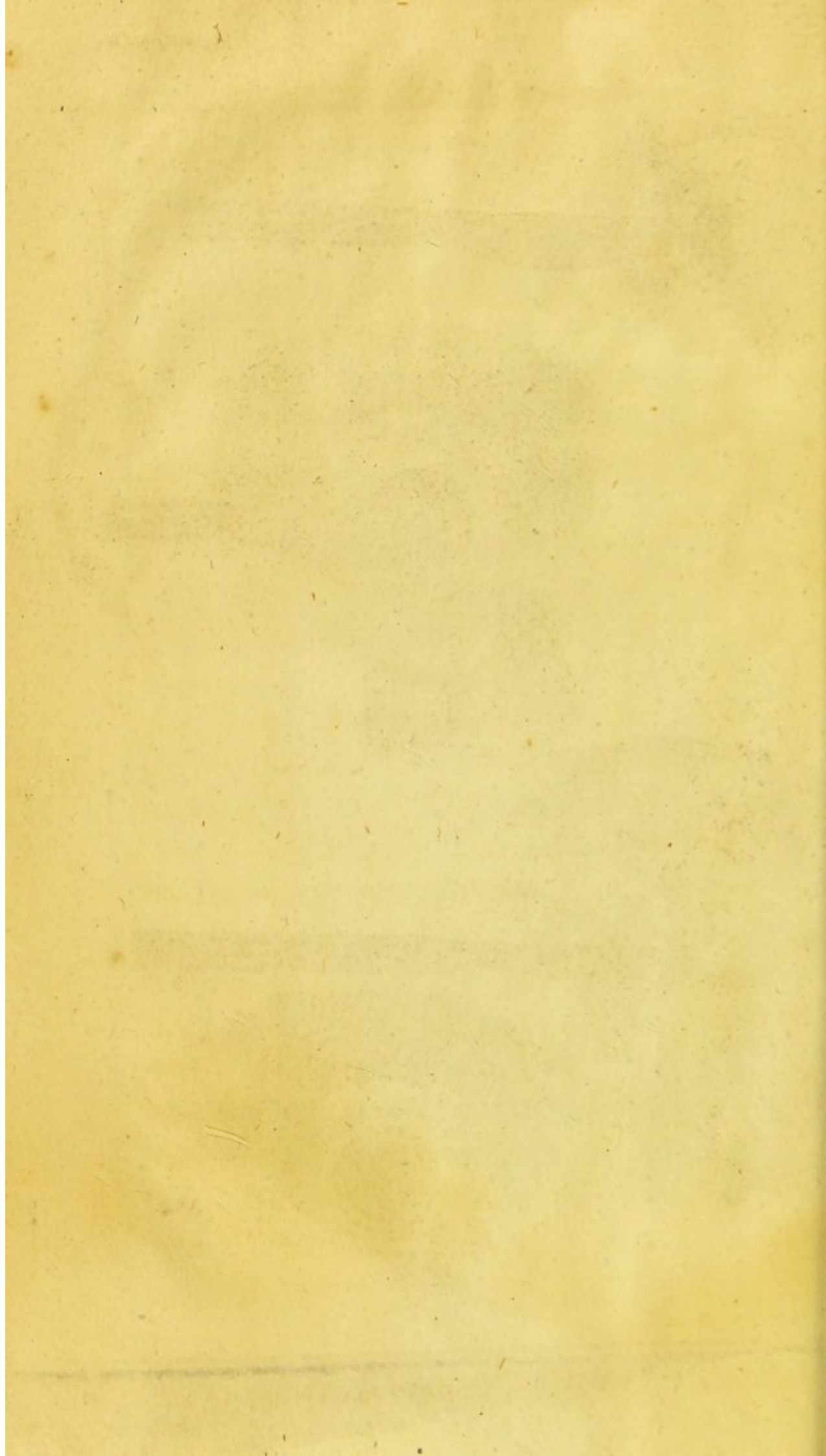
This incision must penetrate, and take in as much of the length of the sac as possible; that is, nearly from its commencement above, to its termination at the bony circle. The distension of the sac will, by its appearance, prevent any error in making this incision; but, indeed, were there no such guide, its situation is so uniformly the same, that nothing but extreme ignorance can mistake its course.

The











The opening into the sac being thus effected, a probe of the second size, if the patient be an adult, must be introduced through it into the sac, and downwards into the duct, till it arrives at the obstruction, which will in some degree resist its further progress.

In order to introduce the probe with facility, the patient should sit in a chair, with his head nearly erect, the operator standing directly before him; and after it has entered the incision, the probe should be raised nearly to a perpendicular, and then it should be pressed downwards, and a little obliquely backwards, so that its stile may touch the inner termination of the eye-brow, whilst it advances towards, and even until it reaches the stricture. Though this direction is perhaps as clear as words can make it, the operation is, after all, much more easily performed than described. This obstruction is found almost without exception, to be in the upper, or narrowest part of the bony circle before mentioned. By examining the



scale on the probe whilst in this situation, viz. on the obstruction, its bulbous end will be found to have descended about a quarter of an inch below the inferior part of the incision. The extremity of this probe, which is 1-8th of an inch in its caliber, must now be gently forced thro' the stricture, which is seldom more than 1-8th of an inch in length.

There are three sizes of these probes; if, therefore, that which is first used meets too much or too little resistance, recourse must be had either to the largest or the least, and *vice versa*, as circumstances shall determine. Whilst the probe is yet below the stricture, and just before its retraction through it, the scale on the probe must be again inspected, and compared with its former measurement, taken whilst its bulb rested on the stricture. By this means, the length of the obstacle will also be accurately ascertained.

As soon as the stricture is passed, all below it is open and free, as is the large  
cavity



cavity of the nose ; in which the head or bulb of the probe may be moved without restraint.

The situation, the length, and the degree of obstruction, being thus not only ascertained but overcome also, the probe must be withdrawn, and a tube inserted in the same manner into the lacrymal sac and duct.

The proper length of the tube is determined by the scale of measurement, and its size by the calibered extremity of the probe ; to which the shoulder of the proper tube must exactly correspond. Each of these tubes, previously prepared and connected to its proper stile, by means of a thread passed through a hole in the edge of the cup, and continued to the ring at the upper end of the stile, are fastened thereby so tightly together, that they form, as it were, one compact body, capable of being introduced into and thro' the lacrymal duct, as completely and easily as the probe which had just pre-



ceded it. This process must be continued in likewise, till the shoulder of the probe has passed the stricture in the duct, with a resistance similar to that experienced by the extremity of the calibered probe ; to which, as before observed, that shoulder exactly corresponds. We must here recollect the length of each tube, as described in the apparatus, and that its proper stile is also graduated a full inch above its tube ; so that when the stile and tube united, are passed into the lacrymal canal, and its scale inspected and compared with that of the probe in the same situation, we shall thereby be assured with the utmost certainty when it is accurately placed.

The following are the circumstances of the tube's situation : — When it has been properly introduced, the cone and its shoulder are lodged within the nose, and under the os spongiosum inferius ; the cervix lies within the bony circle ; the cup occupies the inferior portion of the lacrymal sac, which, by its width, will  
prevent



prevent a collapse of its sides, and thus hinder the possibility of a future obstruction in that portion of the lacrymal canal. As every part of the tube below the funnel is perfectly cylindrical within, there is nothing which can be admitted into its upper aperture, but what will be permitted to pass freely through its lower opening, into the nose: so that there is no probability that it should ever be blocked up by the lodgment of extraneous matter.

From the make and position of the tubes, it is next to an impossibility that they should slip their situation; except by the mechanical means to be hereafter described.

The stile and its tube are as yet connected by the double thread; one of which being cut, it may be gently and safely pulled away, either before or after its stile is withdrawn, without disturbing the tube; the button of which is so polished, that there is no possibility of adhe-



sion to the cup in which it lies, and to which it is adapted.

If there be any doubt respecting the accuracy of the situation, or make of the tube, the string had better be left, and fastened for a few days to the forehead, by means of a little piece of simple black plaster.

In the first stage of the fistula lacrymalis, the whole of the above-mentioned process may be executed at one and the same time, in the space of a few minutes.

It may be some satisfaction, and it may be also of some use, to inject some tepid water by the external wound into the nose; not only as a proof of the perviousness of the tube, but also to wash away any particle of blood which might have occupied it. A little lint may be applied to the wound, and covered with a small black patch; which will in general heal in three or four days, leaving little or no vestige of an operation.

*Second*



*Second Stage of the Fistula Lacrymalis  
requiring the Operation.*

THE second stage of the fistula lacrymalis, is that wherein the contents of the sac are more gross, acrid, and impure, than in the former. When these have been retained in this state for some time, they occasion irritation, inflammation, pain, swelling, suppuration, and at last a rupture of the sac; by which its contents are discharged through the integuments, in or near the inner canthus of the eye.

The suppuration and eruption in this instance, resemble those of every other abscess; and, like those in the first stage of the fistula lacrymalis, urge the necessity of an operation, and with a prospect of success equally certain.

If the external opening made by nature be tolerably large, and directly over the sac, it must be well kept open for a few days, or until the swelling subsides, with small dossils of lint, &c. after which the  
tube



tube may be inserted, as before described. But if this aperture be neither large enough, nor properly situated, which it seldom is, — an incision must then be made with a lancet, exactly conformable to the course of the sac, without any regard to the former orifice. As the external wound is in this case more complicate than in the former, it will be proper to keep it open by dressings, for some days, that the swelling of the sac and teguments may subside. Immediately after this has taken place, the state of the sac must be examined; and if found to have sustained little or no alteration in its structure, or capacity, excepting that occasioned by the rupture of its coats, — the graduated calibered probe may be introduced, and followed by the tube, according to the directions I have given for the first stage of this disorder.

But if the sac be much damaged, and altered in its texture, then one of the tents, already described, will be preferable



able to the tube : — of which more will be said in the ensuing state of the fistula lacrymalis.

*Third Stage of the Fistula Lacrymalis.*

THE third stage of the fistula lacrymalis requiring the aperture, is that wherein the pain, swelling, inflammation, and suppuration, has been frequently repeated; leaving a thickness and deformity in the great angle of the eye. In this state the sac is more or less obliterated, or its place filled up with adventitious flesh, either cicatrized, or attended by an occasional; and sometimes by an inveterate and permanent ulcer.

If the same process only, which we have recommended in the two foregoing states, were practised in this, the cure would necessarily be incomplete; for tho' the original cause or obstruction in the duct would be removed, yet the sac would remain imperfect; and the tears, having no conveyance from the eye to the tube,  
must



must ever after run over the cilia, and produce an incurable Epiphora Spuria.

This state presents two objects to the attention : the removal of the obstruction in the duct, — and the renovation of the sac. The first has already been fully described ; the latter remains to be considered. I must here refer the reader to that part of the apparatus ( page 15 ) wherein he will find some hollow tents, constructed purposely for this state of the fistula lacrymalis.

I have before observed, that the sac is in its natural state from one half to three quarters of an inch in length, and the transverse of its widest part just below the entrance of the canaliculi, little more than one eighth.

The first thing to be done here, as in the former stages, is to make an incision, thro' the tumour, ulcer, &c. into, or rather agreeably to, the natural course of the sac, of full half an inch in length, and quite down to the bones ; which  
were



were once its support. The graduated calibred probe is then, with that caution which I have urged in the other instances, to be passed into the nose; and, lastly, the tent is to be inserted in the same direction and manner as the tube lately described; so that its stile or canula may lie in the duct, and its oblong head in the situation of the sac. To the pressure of this head the fungus, &c. will soon yield, and admit of its continuance there as long as shall be required, with ease to the patient.

The thread, the use of which is to extract the tent, if necessary, must be left out of the wound, and fastened above the eye-brow with a piece of black plaster, as before directed, in the application of the tubes.

It will be proper to syringe some tepid water through the tent every time the wound is dressed, till the gross discharge abates; soon after which the tears find a free passage through it into the nose.

The



The integuments always show a disposition to heal as soon as ever the tears resume their course. At this time the thread may be removed, and the wound permitted to heal over the tent ; but this cure is not to be effected in so short a space of time as it is in the former stages of this disease.

*Fourth Stage of the Fistula Lacrymalis.*

THE fourth and worst stage of this disease is, when the sac is ruptured, and its contents diffused in the cellular membrane, with or without any external aperture. In this case the retained fluids, augmented by the tears, insinuate themselves where they find the least resistance ; sometimes between the eye and its orbit, or under the skin above, over, and below, the lacrymal sac ; the former causing the eye to project forwards ; the latter, a large, extensive, uninflamed, and external tumour, or both together.

I have



I have seen several instances of this kind, of many years standing, attended with little pain, or defect of sight; but with great deformity.

When opened by incision, a large quantity of pus and lacrymal fluid is discharged; and the swelling subsides in a few days. On passing a probe into the lacrymal duct, an obstruction, similar in nature and situation to that experienced in the former stages, is discovered. It is, however, frequently attended with caries of the surrounding bones.

When this complaint arises from a scrophulous or venereal habit, an exostosis of the maxillary bones has been found not only to shut, but even annihilate the bony duct itself: in which case no probe can possibly be passed into the nose. Happily, this last circumstance seldom occurs, tho' when it does, it ought not to be considered of so desperate a nature as to exclude all hopes of a tolerable, if not perfect



fect cure. But of this we shall speak hereafter.

The plan of treatment in this fourth state, must differ in some degree from both the others ; without which difference, even after the insertion of a hollow tent, the cure would not be effectual.

In this case, an aperture much larger than usual, and in different directions, agreeable to the sinusses, should be made into the absceded parts, and sedulously preserved open, until the receptacles formed in the cellular membrane by the deposited fluids, especially those within the orbit, have time to contract and unite. Unless this union be effected, at least in all those sinusses which are situated below the level of the sac, or its substituted tent, it is impossible to obtain success ; for the fluids with which they will still continue to be filled, must also lie as much below the level of any hollow instrument as the sac in which it is to be placed, and thus render the canula useless.

During



During this time, one of the calibred probes should be daily passed through the ductus ad nasum, at the time of dressing the wound.

By persevering in this method for some time, the separated parts will contract, approach, and at length unite, leaving a space, or hollow, scarcely more than the size of the natural sac. At this period, one of the tents may be inserted into the lacrymal canal; the hollow head of which will accommodate itself to the place in which it lies, and perform the office of a sac. Its dependant canula occupies the duct; and both together will convey the tears into the nose: after which the skin will heal over it, with more or less deformity, according to the degree of the former disease.

To complete the cure of this species, a considerable time is required; but as these means will prove successful in the end, they are well worth the attention of the surgeon, and the submission of the patient.



The case of exostosis is uncommon, and does not properly come under either of the four states which I have assigned to the fistula lacrymalis.

I shall nevertheless recommend a mode of treatment, which I have in several instances found successful, in my own practice.

Apply a drill, of a small size, through the external wound, in such a direction, that when worked it may make a passage through the ossified part, precisely in the course of the natural duct. Repeat this process by a larger instrument of the same kind, till the perforation is as large, or rather larger, than the original and obliterated passage. The operator will know for a certainty when the perforator has performed its office, and made its way into the nose, by the removal of all resistance to the point of the instrument.

The aperture through the exostosis, if very large (that is, 1-8th and a half diameter, at least) may perhaps answer the end ;



end; but if there be any doubt with respect to its sufficiency in conveying the tears for the future into the nose, insert either a tube or a tent, as shall be judged most expedient; by which that effect will be most assuredly obtained, and continued during life.

*Conclusion.*

HAVING now completed the account of the plan, and method which I have for a considerable time practised, with peculiar success, in different states of the fistula lacrymalis,—I have only to add a few remarks on the accidents which may possibly arise at, soon, or a long time after the execution of those processes.

It is possible, though very rarely so, that the bony circle containing the duct, may be so very narrow, even in adults, as scarcely to admit the smallest probe; the inserted tube therefore must, in such a case, be proportionably diminished: but as in this instance it would be almost as liable to be obstructed by the smallest



feculency as the natural duct itself, it will be adviseable to pass a drill for its enlargement, by which it will permit a larger tube, and thereby insure the permanency of the cure.

Such in general is the state of the duct in children, that the shoulder for these should be 3-4ths of an eighth, and the cylinder only 1-half of an eighth: and the length of the whole tube 6-8ths and 1-half of an eighth. Now it ought to be remembered, that as every part of the body increases by growth to maturity, a tube in every respect proper for this age, will be too small and short when the subject becomes an adult. As long, and consequently as large a tube as the immaturity of the subject will admit, should be inserted in such subjects.

Without this provision, and perhaps with it, the tube will descend, ascend, or be obstructed.

In either of these cases, the disease will generally return, and require a repetition  
of



of the former operation ; though I have frequently found, when a tube or tent has continued for some time in the nasal duct, there has been no return of the obstruction after its extraction. The re-application of the tube or tent is, however, a *certain* security ; not otherwise to be obtained.

In order to render this second process complete, the first tube, if not discharged of itself, must be pushed downward into the nose by one of the probes ; or extracted by the screw-stile, No. 5, page 14, which (if the tube or tent be of gold or silver) will find its female receiver in their upper portion, to which it fastens itself, and instantly retracts the tube, &c.

If the tube be formed of lead, which is really better, and more useful than either of the others, the screw-stile will enter at once into their softer texture, and as readily perform the same office, with equal certainty, as if they had a female screw. After this is done, a larger



tube, adapted to the increased growth of the parts, must be inserted, as before directed; which will substantiate the cure, and require no other change during life.

I am conscious that no objection whatever can lie against this method of curing the fistula lacrymalis, but the apprehension of a foreign body being left in the lacrymal sac and duct: but this is at once set aside, by the certainty that if any accident or cause whatever should render its removal desirable, this removal may be effected with very trifling pain, at the request of the patient, or at the pleasure of his surgeon.

EPIPHORA



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ON THE  
EPIPHORA VERA;  
OR, *TRUE WATERY EYE*:

AND THE  
ZEROPTHALMIA;  
OR, *DRY EYE*.

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## EPIPHORA.

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**T**HERE is scarcely any single subject in pathology, capable of being treated so simply and distinctly, as not to involve some other with it.

It was my intention to have confined myself intirely to the Fistula Lacrymalis; but in tracing this disorder to its immediate source, which is always an obstruction in the nasal duct, the Epiphora, or watery eye, constantly presents itself as its antecedent and concomitant. But as this species of the weeping eye is in reality no disease of itself, and arises only from the obstruction just mentioned, impeding the descent of the tears into the nose, I have already given it the appellation of Epiphora Spuria. There is, however,  
another



another disorder, very different in its origin and effects, bearing the same name, which I shall now make the subject of discussion ; and with the view of distinguishing it from the former, I shall call it the *Epiphora Vera* : inasmuch as it is a real disease of the secretory organ of the tears, and demands a very different treatment from the former, or *Epiphora Spuria*, I first premise the following observations :

The tears, properly so called, are secreted by the glandula innominata, and are essentially simple and mild in their natural state ; — but it is equally true with respect to them, as in every other secretion, that they acquire a tenuity and sharpness in proportion to their excess.

It is by some supposed, that the eye itself furnishes a considerable portion of the tears, by which it is humected, from a transudation of the aqueous humour thro' the lucid and opaque cornea, or by a secretion between their lamina, exuding  
over



over the surface of the eye. As it has been affirmed that the transudation becomes visible, on wiping the cornea of a living animal, I shall not here detail the deceptions to which this experiment is liable, but merely give my own sentiments on the subject, as they arise from the structure of the cornea itself, and from the accidents to which that membrane is exposed.

The substance of the cornea is perhaps more compact than any other in the human composition, the bones only excepted. Its vessels can scarcely be called sanguineous; nor is it much more sensible than the bones themselves: they are not therefore apparently formed for the purpose of secretion.

When particles of steel, or other bodies, have by accident insinuated themselves into the cornea, they sometimes require repeated applications of a pointed instrument for their removal. During this process the cornea is intently looked at for  
a con-



a considerable time together ; yet even then, I never saw any thing like a transudation in all those instances, tho' they have been very numerous.

The anterior part of the eye, not excepting the cornea, is covered by the conjunctiva. This membrane is furnished with vessels of every kind, and consequently capable of the secretory functions ; and there is no doubt but it does secrete a sufficient quantity of fine gelatinous fluid for defending the eye, not only against the air, &c. but against the perpetual action of the more thin and aqueous tears themselves ; in like manner, and for the same reasons, that the bladder, ureters, &c. are furnished with a similar apparatus for their defence against the urine, &c.

Any stimulus applied to the eye excites the action of the lacrymal gland, and instantly augments its secretion, which will be kept up as long as the cause continues, or till its function is destroyed by maceration, irritation, or inflammation : an effect



fect common to all other of the secretory organs in a similar state.

A little and constant stimulus may continue for years, without causing any such change as to destroy the lacrymal function; and therefore 'tis no uncommon thing for some to have a perpetually weeping eye; which, though very troublesome, will never essentially injure the sight. On the contrary, when the lacrymal gland, or source of the tears, has from any of the causes hereafter recited, been partially or entirely destroyed, the eye is thenceforward either partially or entirely deprived of tears, and will in a similar proportion have more, less, or nothing left, to cover it from the external air, &c. but the ordinary secretions of the conjunctiva. This state of the eye is attended with much more serious and fatal effects than what usually result from the *Epiphora Vera*, and constitutes the disease which bears the appellation of *Zerophthalmia Oculi Siccus*, or dry eye; which will be presently described.

Some



Some of the principal causes of the Epiphora Vera are, a simple relaxation, or particular weakness of the lacrymal gland, conjunctiva, &c.

The passions operating with great force, and for a long continuance, on the secretory organ of the tears.

Sharp winds, excessive light, dusty travelling, particles of steel, sand, &c. lodging in, or adhering to any part of the eye.

Excessive snuff-taking, coryza, or any other continued stimulus of the pituitary membrane, with which the lacrymal gland never fails to sympathize.

#### *Cure.*

IN simple relaxations of the secretory organs, collyria of alum, vitriol, zinc, bark, brandy, vinegar, &c. adapted to the sensibility of the parts. Compresses wetted with arquebuse water, spirits of wine, &c. with or without camphor, laid and left over the eyes, head, temples, &c. at night going to rest; and slightly washing the same parts with them several times  
in



in the day, are very useful and efficacious in this disorder. When the epiphora is caused by cold winds, dust, &c. the cure chiefly depends on removing the cause as soon as possible, after which the complaint generally ceases, and the eye recovers its native strength; but if delayed, inflammations of the worst kind may ensue. Foreign particles must therefore be immediately extracted, and the whole eye well washed, by means of an eye-tumbler, in tepid water; and these washings should be continued for some minutes, or till the smart occasioned by the water entirely ceases: after this, a small drop of the *tinctura thebaica* must be insinuated into the eye. This process is to be repeated three or four times a day, till the irritation be removed: after which, cold water may, in like manner, be applied with success, and the tincture omitted. By these means the eye will in general be quickly restored to health.

The eye-tumbler not only holds a larger quantity than the common eye-cup,



cup, but has this advantage, that it never acts as an air-pump, which the other frequently does; to the great injury of the eye.

An epiphora occasioned by a stimulus of the pituitary membrane, from excessive snuff-taking, demands a removal of its cause; but this should be done gradually, lest the sudden cessation of so profuse a discharge, always attendant on this habit, should prove detrimental to the constitution.

The stimulus arising from coryza, commonly called a cold in the head, has often produced the worst and most dangerous epiphora. Opium here, as in many other disorders in the eye and elsewhere, will prove of the greatest importance. If small doses of this medicine be exhibited internally, three or four times a day, at proper intervals, the irritation will soon be abated, the flux from the eye gradually cease, and the Epiphora cured. A small quantity of the tinctura thebaica mixed  
with



with water, and snuffed up the nose also, will add much to the efficacy of this plan. I am fully convinced, by repeated experience, that many eyes have been thus preserved by this medicine. It must be acknowledged, however, that some other causes of the Epiphora might have been assigned, as well as different methods for its treatment; but those above recited, appear to me sufficient for the present design, which is that of distinguishing one cause of the Epiphora from another, and for treating them accordingly,



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## Z E R O P T H A L M I A.

**T**HIS disorder is of an opposite nature and character to the former: *that* was an excess, *this* a defect of humidity. But however distant and different they are in reality and effect, there is still some kind of affinity between them, the latter being sometimes, perhaps most commonly, the consequence of the former. I have before observed, that the conjunctiva secretes a fluid, *sui generis*, for the defence of the eye, not only against the wind, &c. but also against the tears themselves, with which it is constantly washed and humected. When an Epiphora has been profuse, acrid, and of long continuance, and the eye itself, of consequence, as constantly immersed and macerated by those fluids, it is probable, nay



it is almost impossible, but that the conjunctiva must be relaxed, thickened, its secretory powers altered, and its secretion vitiated. Nor is this a mere speculation; for the conjunctiva is often, in such cases, so loose and flabby, as to intervene between the lids when shut. When such an Epiphora ceases, which it does sometimes slowly, at others very suddenly, either from inflammation, or from the loss of the tone of the lacrymal gland and its power of secretion, then a sudden and striking alteration takes place: the eye, which was before inundated by tears, now becomes stiff and dry for want of them; and feels as if incommoded with dust, &c. It loses its former lustre, appears dull, looks more red, and does not see so well as before.

All these effects may be accounted for, by the loss of the lacrymal, and the state of the conjunctival secretion, whether vitiated or not.

But as the above description respects the extreme or ultimum of these disorders,



ders, it must not be inferred there are no intermediate states, variations, or complications, where the one or the other is more or less prevalent; and by which the indications for a proper treatment are proportionally obscured.

I shall therefore limit the process of cure to this disorder, when in its confirmed state, or where the moisture which remains is of a thicker consistence, and much less in quantity than the natural tears; covering the eye with a thin varnish, causing objects to appear as through a cloud. But as there is another appearance, somewhat different from that just mentioned, and yet so much of the same kind as to require a similar treatment, I shall give it a short description, prior to that of their cure.

In this case the eye appears as if it had been lately washed with cream, and that some of it was left behind, retained within, and adhering to the ciliary edges. If this be wiped off ever so perfectly, it will



soon return again. The eye is not so dry as in the former instance ; and though it is not attended with great pain, it is the cause of so much uneasiness, and occasional impediment to the sight, as to render the patient unhappy. I impute this complaint to some disease of the conjunctiva, producing a morbid secretion like the former ; and the more especially as it is accompanied with a diminution of the tears. Both however may arise from a general ill habit, or similar disorders of the other secretory organs of the body : but whether their source be local or constitutional, the topical treatment must be nearly the same ; and as contrary to that of the Epiphora, as the diseases themselves.

### *The Cure.*

AS the varnish covering the cornea, and the cremor which lodges within and upon the edge of the lower eye-lid, adhere to those parts only, because they are not as formerly washed away by the tears,  
it



it is necessary to supply their defect and office by some substitute, that may in part at least answer the same purpose.

The quality of these secretions is, however, so viscid, and they adhere so firmly, as not to be dissolved or detached from their situations by the application of simple aqueous fluids, even when rendered tepid. Nor is there any thing I have ever yet found so efficacious for their removal as a saponaceous lotion, the well-known detergent or menstruum for inspissated mucus.—Put three or four drops of the caustic alkali into the eye-tumbler, and pour two ounces of clear tepid water on it, which will fill about two-thirds of the glass. Apply it to the open eye, in which it may be continued for the space of a minute, or more. It will give little or no pain, and infallibly bring away all the morbid excretions from off the eye and its lids, and as instantly remove what the patient calls the cloud from his sight. But as this will quickly return, its fre-



quent application will be requisite ; making it fresh every time it is used.

The strength of this medicament should be gradually increased, till it becomes not only a wash, but a stimulus ; in order to excite, if possible, the natural secretion of tears. It must be acknowledged in this, as in every other mode of application to the eye, that the menstruum or medicine cannot reach or penetrate into the *glandula innominata* ; and that it can act only on its excretory duct, and on the eye itself. But this is by no means an objection : for we also know that any stimulus affecting the one, is sure to excite the action of the other ; that is, if not quite obliterated ; which I have known in some instances to be most certainly the case.

The tinctura thebaica, and the unguentum citrinum, may be occasionally made use of for the same purpose.

Snuffs, of any kind, applied to the pituitary membrane, are of the greatest  
use



use for exciting the action of the lacrymal gland.

Keeping the eye, at intervals, in tepid water alone, for some minutes at a time, is not only a substitute for the defect of tears, but it serves also to relax the eye and dispose it, as well as the means before recommended, to resume its natural functions.



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A P P E N D I X.

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O N T H E

Treatment of Patients after the  
Operation for the Cataract;

I N W H I C H A R E S H E W N

The Evils attendant on long Confinement and  
continued Bandages ;

And an opposite Practice recommended.

I L L U S T R A T E D W I T H C A S E S .

B Y

JONATHAN WATHEN PHIPPS,

SURGEON, *Walbrook.*



A P P E N D I X

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## A P P E N D I X.

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*On the Treatment of Patients after the  
Operation for the Cataract, &c.*

**M**UCH time, attention, and study, are required to advance any branch of human science towards perfection; and it is the endeavour of every age, not only to profit by the knowledge of their ancestors, but to discover and rectify their errors. The fate of other sciences has been participated by that of surgery, which has undergone various revolutions, each tending to the more effectual and successful treatment of disease.

Among these may be ranked the improvements in the operation for the Cataract. The mode by depression, subsist-  
ing



ing ever since the days of Celsus, has within these twenty years given place in this country to that of extraction, introduced by the late Baron de Wenfel; which is allowed to be infinitely more successful than the ancient practice. It is not my intention to devote any of these few pages to the description of that operation; indeed it has lately been so fully delineated by several authors, particularly by Mr. Wathen and Baron de Wenfel, that it would be wholly unnecessary; but shall confine myself entirely to the treatment of patients after that operation.

I am the rather induced to this from observing, that almost every writer on the subject, has been on this point unaccountably remiss; but which is notwithstanding so highly essential, that the practitioner who neglects it, will too frequently find his most skilful endeavours baffled or destroyed.

The accidents liable to occur after this operation, have indeed been enumerated  
by



by most of them ; and each has given his method of cure. But it is a practice, preventive of these accidents, that is here recommended, and which from repeated trials has been proved not only highly relieving to the patient, but also crowned with the happiest success.

I am informed by Mr. Wathen, who, together with the late Mr. Gattiker, attended most of the late Baron de Wenfel's operations for a considerable time after his introduction into this country, That he confined his patients to their beds, lying on their backs, without pillows or change of posture, for a fortnight or three weeks. All this time their sustenance was limited to simple fluids, given from a spout or tea-pot, without raising the head. The eyes were covered with rags, continually wetted with weak brandy and water, and never opened for inspection till the expiration of that period. This practice he continued till of late years, when he shortened the period of confinement



ment to eight or ten days, and in the room of brandy and water, substituted a simple plaster. Notwithstanding these disadvantages, the Baron's excellent method of operating, the soundness of his judgment, the quickness of his eye, and lightness of his hand, generally secured success. But the sufferings of the patient were great, and the injury done to the eye, such as frequently required much time to remove.

I have myself used it for several years, and seen it employed by others with various success. Convinced, however, of its pernicious effects, within these last fifteen months I have adopted an opposite practice, and in no less than forty cataracts have experienced its superior excellence. To this practice I was led by the following observations:

In that disease of the eye called the Hypopyon, the practice found most successful is allowed to be that of discharging the accumulated pus, by means of an incision through the cornea, the same in form,



form, and nearly as large as that for the extraction of the cataract.

A variety of these cases, since my connection and partnership with Mr. Wathen, has occasioned my frequent performance of this operation; and it has been the practice invariably to uncover the eyes the next morning, regulating the degree of light by means of a shade. In all these cases, the cornea has been found in that space of time so nearly healed, that it was never thought necessary to continue the bandages for a longer period.

If therefore we find, that, under circumstances thus unfavourable, the reunion of the cornea is so readily effected, might we not suppose that an event equally successful would take place, after the operation for the cataract, where there is neither preceding inflammation nor disease?

Admitting this circumstance, a total change of practice naturally follows: the long confinement of patients to their beds,



the feclosure of the eyes from light, and the long-continued bandages become useless, and the patient is not only liberated from much suffering, but many of the accidents attendant on extraction are prevented.

The event fully answered my expectations, and proved the utility of this treatment. One theoretical objection to it might arise : In cases of hypopyon, the degree of violence offered to the eye is much inferior to that in extraction, the cornea in the former being the only part wounded ; whereas in the latter, the iris is also deranged, the capsule rent, the crystalline humour brought away, the vitreous displaced, and a portion of it sometimes lost. To this it may be answered, that when the operation is well performed, a loss of the vitreous seldom takes place, and that the discomposure of the other parts does not in the least militate against the plan ; for in both cases, the re-union of the cornea being the desired



desired point; that effected, other circumstances are of no consequence.

To the usual practice subsequent on the operation for the cataract, a number of objections arise, relative to the constitution in general, and to the eyes in particular.

Confinement to the bed is highly detrimental to many constitutions: it frequently produces fever, and always more or less increases inflammation.

The extreme fatigue and uneasiness of lying on the back, and never changing that position, for days together, which is the common practice, becomes a source of pain to the patients; many of whom have complained more of that circumstance than of the operation itself.

In ophthalmia, even of the slightest kind, we know the evil consequence of keeping the eyes close bound; yet after the operation for the cataract, when they are in the highest degree susceptible of



inflammation, the irritation occasioned by compresses and bandages is continued for eight or ten days.

It is true they are renewed every day, and the eyes cleaned ; yet for the remaining twenty-four hours, the free exit of the tears being prevented, their confinement, and that acrimonious quality they always acquire after the operation, induces on the conjunctiva, and sometimes on the cornea itself, no small degree of inflammation. What little escapes by being received on the compresses, and retained in close contact with the outside of the lids, serves only to heighten the malady ; for thus both the external and internal surfaces of those parts, as well as the eye itself, become macerated in this acrid and pernicious fluid.

Another evil attendant on long-continued bandages is, that they frequently cause an entropium. Of this I have seen many instances ; and it is perhaps the most serious calamity they produce.

When



When the lids once get this unhappy propensity, the eye will, without the most vigorous exertions, be inevitably lost. I have known this disease so strong, that all means short of an operation to effect its cure have proved unsuccessful. I must add, that I do not recollect a single patient who has unfortunately been the subject of this accident, who had, prior to the operation, any tendency to an entropium.

The eyes being totally deprived of their natural element (if I may so term the light) and their seclusion from the atmospheric air, must also be highly detrimental.

From the inflammation necessarily induced by the operation, the heat of the eye is much encreased, and the bandages tend still farther to retain it in a degree of temperature much above that of nature; and thus add to the very inflammation they were designed to diminish.



Another material objection to the old practice is, that the eyes, though cleaned every day, were seldom opened or examined before the elapse of a week. Whatever accidents occur in this period, must continue without the possibility of relief.

Thus a small portion of the pulpy substance of the cataract, which sometimes remains within the eye, by getting between the divided edges of the cornea, obstruct its re-union, render it opaque, and not unfrequently produce inflammation on the iris itself, which, contracting, entirely defeats the intention of the operation.

Another inconvenience attendant on the neglect of daily examination is, that when the incision has been extended beyond the margin of the cornea unto the conjunctiva, which frequently happens, and is in many cases highly adviseable, the aqueous humour is apt to insinuate itself into the interstices of the cellular membrane, connecting that coat to the sclerotica,



rotica, and causing a considerable distention. This may at first be easily remedied, by making a few punctures.

But as this requires the inspection of the eyes themselves, it could not in the old practice be accomplished; and the consequence was, that the retained fluids produced an appearance in the conjunctiva, similar to an ecchymosis, the inflammation increased, the sclerotica becomes affected, communicating the disease to the whole eye, and a suppuration of the globe is the consequence. I will also add, a slight pforophthalmia is sometimes the companion of the cataract; and tho' this may be perfectly cured before the operation, yet afterwards it will generally return, and the purulent discharge from the glandulæ meibomei, being confined within the eye by the bandages, mixes with the tears, increases their acrimony, and becomes a further cause of inflammation.

Many minor objections might be made, but these appear the principal; and many



of them may totally, and others in a great degree, be prevented, by dispensing with the bandages on the second, at farthest on the third day, and by a daily examination of the state of the eyes.

I am persuaded, that were bandages never applied, it would be much better, could we depend on the resolution of the patient to keep his eye closed. The only possible purpose they can answer, being that of retaining the eye in a state of rest during the re-union of the cornea; which, unless prevented by some adventitious circumstance, is usually effected, sufficiently to leave the eye at liberty in eighteen or twenty-four hours.

By confining the patient to his bed only the first day, all inconvenience to the general habit is prevented: by leaving off the bandages, and substituting a shade, on the second, and by a daily examination of the eyes, almost all the other evils may be obviated.

The



The usefulness of these few hints, drawn from practice itself, will, I trust, apologize for this Treatise: which I shall conclude by adducing a few cases, out of the large number in which this treatment has been used, with the greatest success.

### C A S E I.

Mrs. B. of Chatham, came to town in April 1791, and put herself under Mr. Wathen's and my care. Her eyes were remarkably full and prominent, more so than any upon which I have ever operated, or indeed ever seen. On account of this extreme projection of the eyes, and the violence with which I perceived the muscles of the globe to act beneath my fingers, I extended the incision beyond the margin of the cornea, a little way into the conjunctiva. With great care and attention, both cataracts were delivered with perfect success, and she immediately saw every object we presented to her. The eyes were bound up, as usual;



usual; and her habit being plethoric, a gentle cathartic was administered. On the next day she complained of a slight pain in the right eye, and a sensation, resembling that of a particle of dust, having insinuated itself into the left. She had been very restless and feverish all night. On examination, I found both eyes inflamed, and the conjunctiva of the left distended, by the aqueous humour having insinuated itself between the conjunctiva and sclerotica, as before mentioned. This I immediately punctured, and scarified the inside of both lids, and had her cupped and blistered on the left temple. The bandages were laid aside, and a shade substituted in their room.

I examined the eyes every day, and continued the scarifications of the lids, with the addition of the thebaic tincture. The sight was no otherwise affected than weak from the inflammation, which was subdued in about ten days, when no ill effect remained but a staphyloma in the left eye. This considerably increased, though



though touched every day with the causticum lunare, which Mr. Wathen has many years been in the habit of using, and which I have frequently seen successful. The desired effect not being gained by these means, the tumor was punctured. It filled again, but with decreased size; and after the third puncture, entirely disappeared. This is a practice almost always successful, and certainly preferable to that of the caustic, as it requires a repetition much less frequent, is attended with less pain, and never irritates the lids; which the other, however carefully used, generally does.

Where the staphyloma is small, a single puncture is usually successful. The caustic probably acts as a strong stimulus to the muscular fibres of the iris, causing them to contract: the puncture removes the pressure of the aqueous humor, and allows time for the fibres to regain their natural tone before re-union takes place. I have found it equally successful in the clear and opaque staphyloma. Mrs. B.  
returned



returned to Chatham in less than a month, with both eyes perfectly well; the pupil of the right was irregular, from the staphyloma, but was equally useful with the other. She reads, by the aid of glasses, the smallest print.

Had this case been treated in the usual manner, it is most probable the patient would have lost both her eyes.

General remedies would, without doubt, have been used; but the examination of the eyes being deferred for four or five days, the distended conjunctiva would have become ecchymosed; and the supuration of the globe, in so plethoric and inflammatory a habit, had been the probable consequence.

The daily examination of the eyes, the early punctures, the constant scarifications of the eye-lids, the application of the thebaic tincture, and the exhibition of antiphlogistic remedies, altogether insured the success of this operation.



## C A S E II.

Mr. N. of Woolwich, consulted Mr. Wathen and myself, in April 1791, for a cataract in the right eye; the left had been operated upon by an eminent surgeon, about a year and a half before, with tolerable success. The pupil was extremely oblong and contracted, and the cicatrix of the cornea obscured some part of it. He could, however, with his glasses, read large letters. I operated on him upon the Thursday with perfect success; the pupil was exactly round, and he immediately saw whatever was presented to him.

On the following day the bandages were removed. He had had rather a free discharge of water from the eye; but it appeared little inflamed. The moment I opened his eye-lids, he exclaimed, Sir, I see perfectly! and added, it was near twelve months before he saw objects so distinctly with the other eye.—

No



No farther experiment was then made, but a shade ordered.

On the Saturday the eye appeared almost in health; not the smallest mark of the operation remained; and the redness of the conjunctiva very slight. On holding up my watch, and asking him what it was, I was surprized by his not only naming the object, but even telling me the hour of the day, without glasses. He was then ordered to shut that, and try the other eye, and endeavour to do the same: but here he failed, even when aided by spectacles.

On the Thursday following, exactly one week after the operation, he returned home perfectly well. This patient affords a striking example of the superior success of this new practice. He had in the former operation been treated in the old method; and, to use his own expression, he was on the rack for three months. The pain in his eye was so violent, that he thought he should have lost his senses;  
and



and he told me it was more than six months before he left the house. The bandages were kept on near a month.

With this last eye he had suffered no pain, except that of the operation: whereas in the former, his sufferings were inexpressible.

One remark, however, should be added: that the former was perhaps one of the worst instances of the old practice; the latter one of the best of the new yet met with.

### C A S E III.

On the last day of May 1791, I operated on both eyes of Mrs. C. of Rotherhithe. In the right eye of this patient, a small quantity of vitreous humour escaped; but of no consequence. The pupils were round, and she saw my fingers, scissors, &c. The bandages were removed on the third day; and on the fifteenth she returned home perfectly well, having had  
only



only a slight inflammation. The pupils perfectly round, and no traces of the operation remained. With glasses she reads the smallest print.

#### C A S E IV.

Mr. H. of Colchester, put himself under our care in June 1791, when I operated on both eyes with perfect success. The lids were so relaxed, that an entropium was feared, and endeavoured to be prevented by means of adhesive plasters. On examination, however, the next day, the left eye-lid had, notwithstanding every precaution, turned in, and the eye appeared highly inflamed. The bandages were immediately left off, and the plasters renewed every day, and often twice in that space of time. The inflammation diminished by proper applications, but the pupil contracted; and on the 1st of July, when Mr. H. returned home, though he read the smallest print with the right eye, yet with the left he could only distinguish large objects.

Had



Had this patient been treated in the usual method, he had most probably lost both eyes; for the lids of the right had the same unhappy propensity. Notwithstanding the use of the usual topical applications and exhibition of internal remedies, one of them was materially injured.

### C A S E V.

Master B. of Size-lane, aged four years and a half, was born with cataracts; and had no other sight but merely that of night from day. In every other respect he was a fine healthy child, and remarkably strong. His parents placed him under our care in March 1792. From his tender age, and of course incapability of exerting the powers of reason, though very able to exert those of resistance, the event of the operation was very uncertain. However, as the child could receive no education, his parents were anxious for the trial, and willing to run every risk with one eye. All persons born blind, have no command over the muscles of the eye: their actions are involuntary; and never having fixed them



on any object, they are therefore wholly incapable of assisting the operator. This circumstance, as the use of a speculum becomes absolutely necessary, renders the performance of the operation more difficult, and the event less certain. The left eye was, however, secured; and the operation performed with perfect success.

The pupil was round; and the child instantly appeared all amazement. He distinguished my hand, which I held before him for that purpose, and instantly stretched out his own to touch it; which he had no sooner done, than he told its name, and remembered it ever afterward. Mr. Wathen shewed him the stopper of a bottle, which happened accidentally to be at hand. This he said was lead, because it shone. I did not try him any more that day, for fear of accidents, but bound up the eye. He did not go to bed, walked about as usual, but was kept within doors, and his diet regulated, to prevent any inflammation.

The next day, on removing the bandages, I found the cornea united, and no vestige



vestige of the operation remaining, except a very slight redness round the margin of the incision.

The tender age of this patient prevented our making any scientific remarks from his observations, which Mr. Cheselden, from the maturer age of his subject, was enabled to do. Had it been possible, every observation of a person thus restored to the possession of a new sense, would be highly interesting.

A little shade was ordered, and left the eye at full liberty. He ran about the room, staring at and feeling every thing; but no longer hitting himself, as formerly, against the chairs and tables. Various articles were thrown on the ground; all which, when desired, he easily picked up. What seemed to give him the highest pleasure, was the sight of his nurse's eyes, which he said he had never seen before, nor ever thought eyes were such pretty things.

From the third day, he went out as usual, and never experienced the slightest



inconvenience. The parents kept him at home a short time, intending to have the operation performed on the other eye; but as he now possessed sufficient sight for every useful purpose, it was thought more prudent to defer it till he arrived at a maturer age. He returned to his nurse; since which period his sight, or rather improvement in the knowledge of things, greatly increases.

#### C A S E VI.

In March 1792, I operated on the left eye of a poor man, of the name of Miles: the right had been injured by an accident. The cataract was extremely large, and left some pulp behind it, which was brought away with the curette. On examining the eye the next day, the pupil appeared perfectly round, and the conjunctiva slightly inflamed. The bandages were left off, and a shade substituted.

On the third day, from a more particular examination, I found, though the eye was perfect in every other respect, there was no anterior chamber. This  
incident



incident I have frequently met with ; and it is that which a few days always remedies. The inflammation gradually decreased, and in ten days the anterior chamber was restored, and the eye perfectly well. He read with glasses the smallest advertisement in the news-paper.

### C A S E VII.

In December 1791, Mrs. H. of Southmolton-street, put herself under our care. This was the most complicated operation I ever met with : the eyes were difficult to fix ; both the capsules were opaque, and adherent. After the delivery of the cataracts, a considerable quantity of pulp was brought away, and at last the capsules themselves ; not however in the right eye, without a considerable loss of the vitreous humor. The pupils were perfectly round, the eyes bound up as usual, and an anodyne administered. On the next day she had suffered no pain ; the inflammation was slight, but as the eyes had been so unusually disturbed, the bandages were not left off till the third, when she saw distinctly all the objects in the room ;  
but



but the eye remaining very weak, a close shade was substituted in place of the bandages.

In about a week she appeared almost well, when unfortunately the weather becoming excessively cold, she caught the rheumatism, and her eyes became again inflamed. This inflammation went off in about a fortnight; and she could then see with her glasses to read small print.

In the left eye, it would be impossible to discover that any operation had been performed; but the pupil of the right is rather oblong, though it would not be perceived but on a particular examination.

This is a case highly commendatory of the new practice. The operation took up a full hour, and the different instruments were so often passed into the eye, that I much feared a very high degree of inflammation even of the iris. But by the timely application of proper remedies, which the omission of the bandages, and the daily examination of the eyes permitted, all these evils were happily prevented



vented; and had she not unfortunately taken cold, in ten days she would have been well. As it was, she recovered within a month.

### C A S E VIII.

Mr. R. of Tottenham-court-road, was operated upon on the 17th of May, 1792. The cataracts were delivered with perfect success; and he immediately distinguished with precision every object that was presented to him.

He was confined to his bed only the remainder of the first day. On the second, the bandages were entirely left off, and a close shade substituted in their room. The thebaic tincture was constantly applied; and the day fortnight after the operation, he walked by himself to our house in Walbrook, with his eyes almost free from inflammation; and capable of reading, by the aid of glasses, the smallest print.

### C A S E IX.

Two days after the preceding operation, Mr. B. of Gray's-inn-lane, put himself



self under our care. The operation was performed with the most perfect success.

The same treatment was here pursued as in the last case. He was confined to his bed only the first day; the shade was substituted in the place of bandages on the second, and the application of the thebaic tincture never omitted. The inflammation was very slight, and on the twelfth day, he went out and walked about as usual. The pupils were perfectly round, and no vestige of the operation remains. His sight is in every respect perfect.

It would be thought needless to add other cases; they would be but repetitions of those already given: many of a prior, and some of a later date, where the success has been similar, might otherwise have been adduced. Sufficient may have been said to prove the beneficial effects of the treatment recommended, and to shew its superiority over the former practice, by obviating many of those inconveniences to which that was subject, and by relieving the patients from much uneasiness and pain.