

**Observations on the treatment of the epiphora, or watery eye, and on the fistula lacrymalis : together with remarks on the introduction of the male catheter, and on the treatment of haemorrhoids / by the late James Ware ; edited by his son Martin Ware.**

### **Contributors**

Ware, James, 1756-1815.

Ware, Martin.

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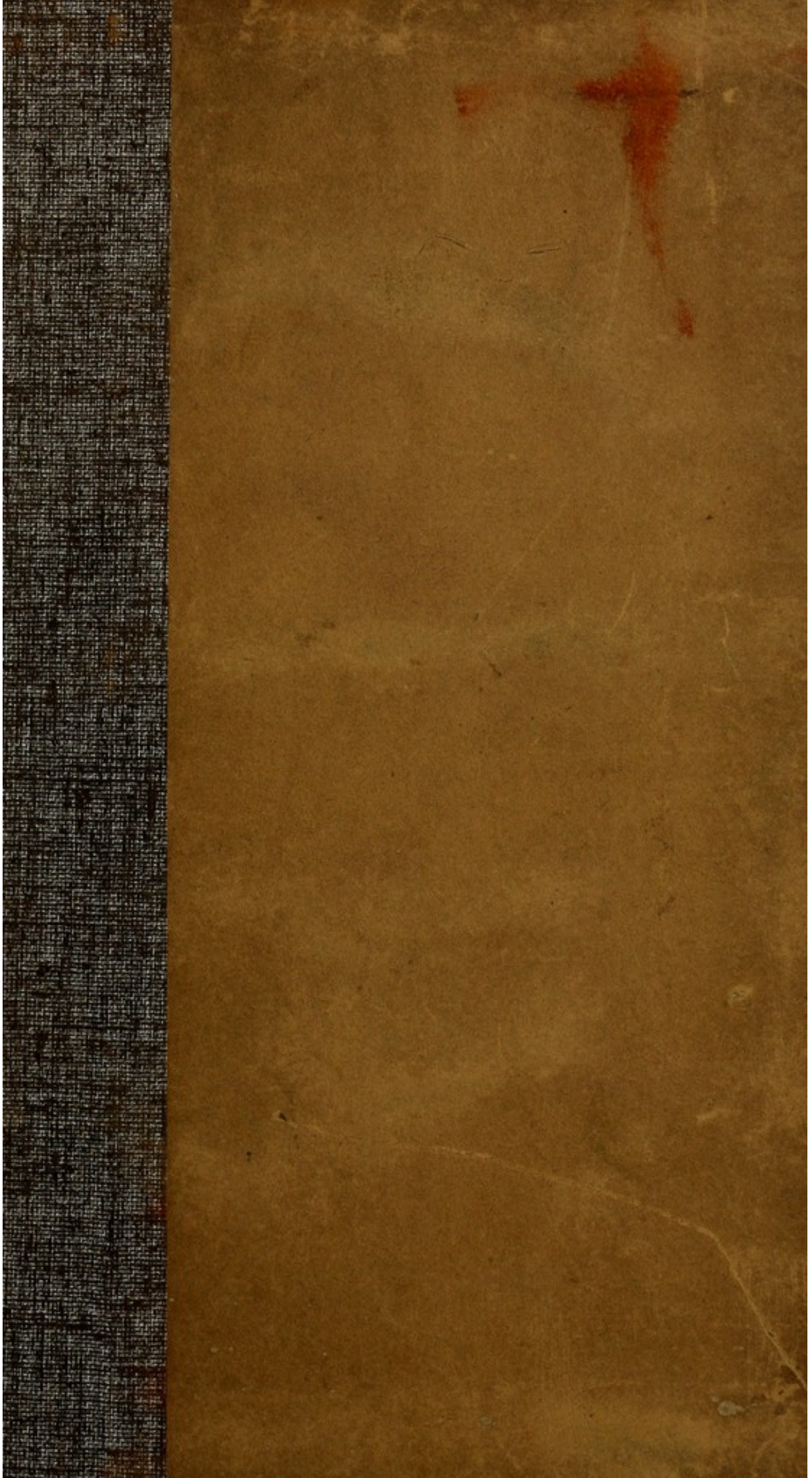
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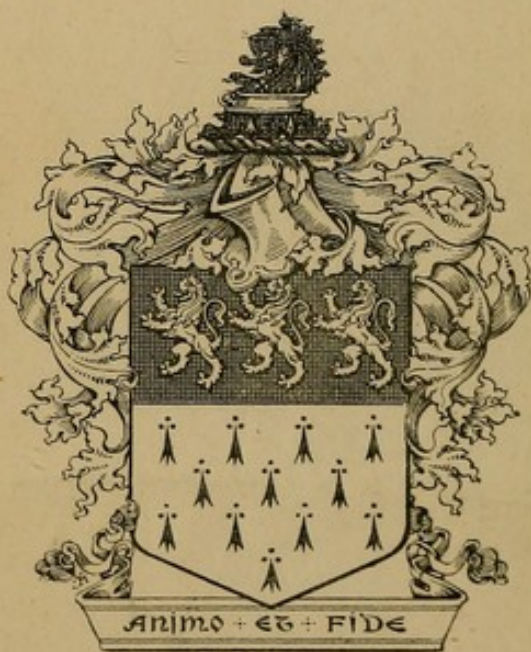
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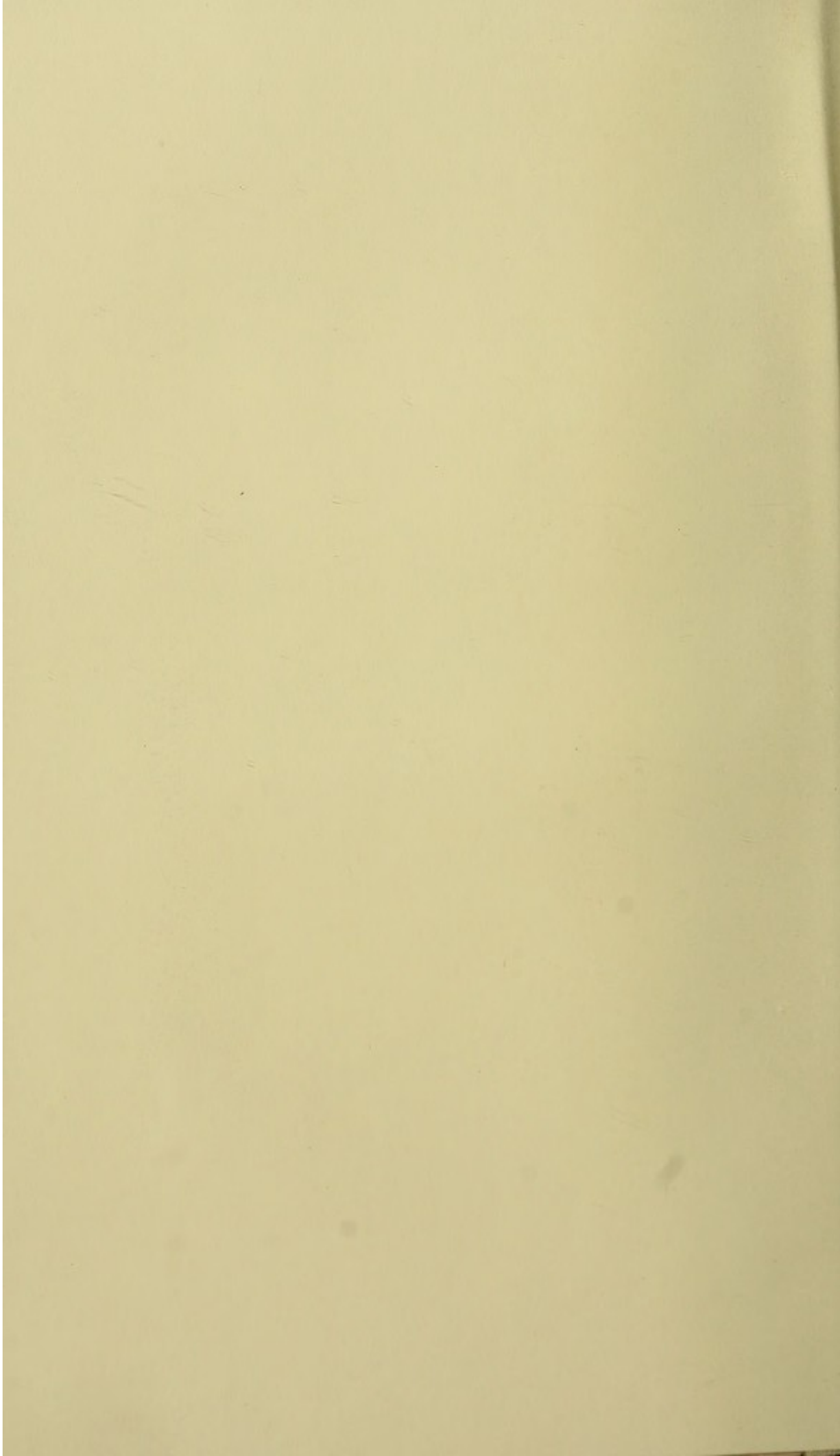
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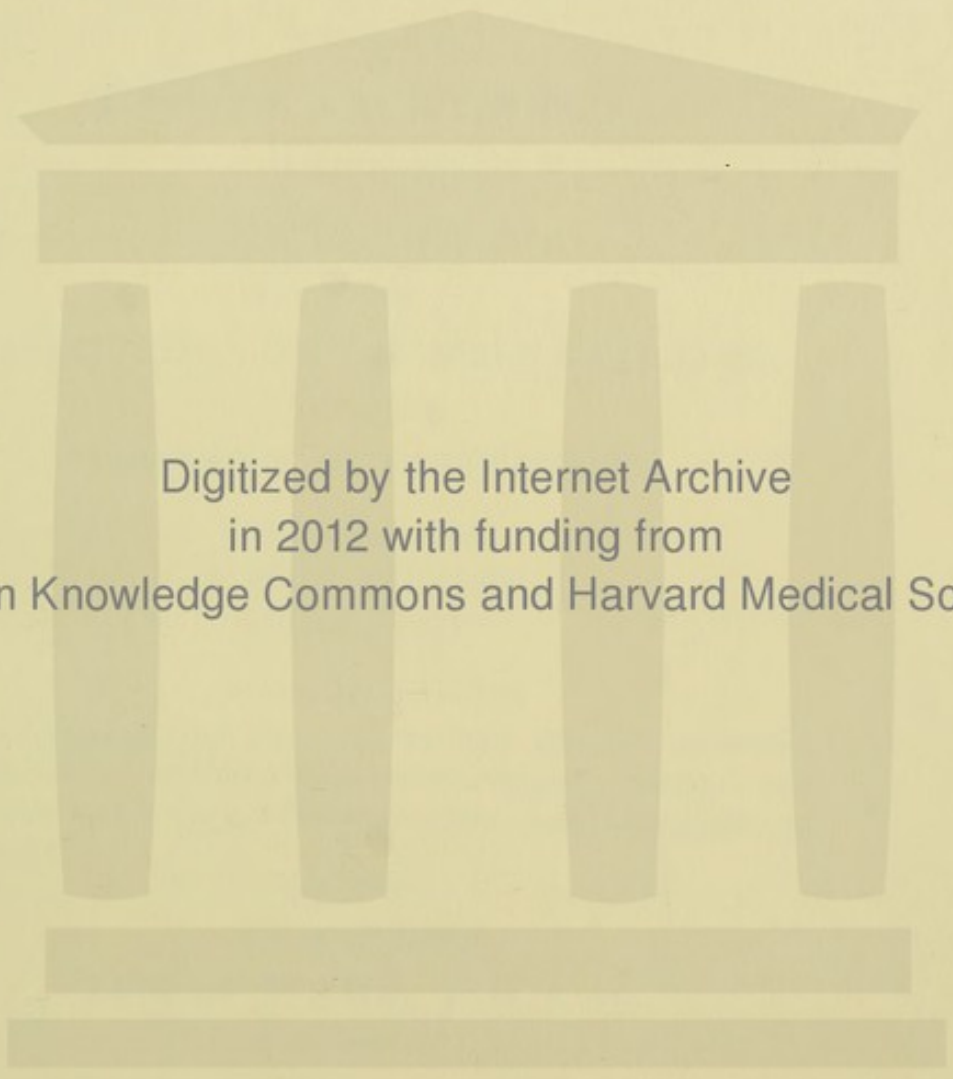
CHARLES A. OLIVER, M.D.,  
1507, LOCUST STREET,  
PHILADELPHIA.

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OBSERVATIONS  
ON THE  
TREATMENT  
OF THE  
*M. Reid M.D.*  
EPIPHORA, OR WATERY EYE;  
AND ON THE  
FISTULA LACRYMALIS:  
TOGETHER WITH  
REMARKS  
ON THE  
INTRODUCTION OF THE MALE CATHETER,  
AND ON THE  
TREATMENT OF HEMORRHOIDS.

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A NEW EDITION.

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*To which are now added,*  
OBSERVATIONS ON THE NEAR AND DISTANT SIGHT OF DIFFERENT  
PERSONS; ON THE MUSCÆ VOLITANTES OF NERVOUS PERSONS; AND  
ON THE STAPHYLOMA, HYDROPHTHALMIA, AND CARCINOMA, OF  
THE EYE.

---

BY THE LATE  
JAMES WARE, F. R. S. &c.

---

EDITED BY HIS SON  
MARTIN WARE,  
MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN LONDON.

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LONDON:  
PRINTED FOR T. AND G. UNDERWOOD, FLEET-STREET.

1818.

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Printed by T. and G. Underwood, Fleet-street, London.

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OF THE  
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AND OF THE  
PSTULA LACRYMALIS;  
TOGETHER WITH  
REMARKS  
ON THE  
INTRODUCTION OF THE METAL CATHETER,  
AND ON THE  
TREATMENT OF MEMBRANES

A NEW EDITION.

By JOHN WARE, M.D.  
OF THE ROYAL COLLEGE OF SURGEONS IN LONDON;  
AND  
OF THE ROYAL SOCIETY OF LONDON;  
AND  
OF THE ROYAL SOCIETY OF EDINBURGH;  
AND  
OF THE ROYAL SOCIETY OF BERLIN;  
AND  
OF THE ROYAL SOCIETY OF GÖTTINGEN;  
AND  
OF THE ROYAL SOCIETY OF HALLE;  
AND  
OF THE ROYAL SOCIETY OF BRESLAU;  
AND  
OF THE ROYAL SOCIETY OF VIENNA;  
AND  
OF THE ROYAL SOCIETY OF PETERSBURG;  
AND  
OF THE ROYAL SOCIETY OF ST. PETERSBURG;  
AND  
OF THE ROYAL SOCIETY OF MOSCOW;  
AND  
OF THE ROYAL SOCIETY OF WARSAW;  
AND  
OF THE ROYAL SOCIETY OF PRAGUE;  
AND  
OF THE ROYAL SOCIETY OF BUDAPEST;  
AND  
OF THE ROYAL SOCIETY OF BUDAPEST;  
AND  
OF THE ROYAL SOCIETY OF BUDAPEST;

BY JOHN WARE, M.D.

MARTIN WARE

LONDON:  
PRINTED FOR T. AND G. UNDERWOOD, FLEET STREET.

1818.

## ADVERTISEMENT.

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**T**HE present edition of some of my Father's publications, which, as Editor, I have the honor of submitting to my professional brethren, was, in a considerable degree, prepared for the press by the Author himself; and, if his valuable life had been spared, it would most probably have long since appeared.

A part of the preface to the former edition is now omitted, as the author had entirely altered the arrangement of the work, by printing the whole of the treatise on Ophthalmia in a separate volume. The last three papers in this volume have only appeared in the Transactions of the Royal Society of London, of the Medical and

Chirurgical Society, and of the London Medical Society.

I have much pleasure in acknowledging the obligations I am under to the President and Council of each of these Societies for permitting me to extract these papers from their Journals, as I am thereby enabled to bring together the whole of my Father's writings.

I regret that it is not in my power to unite the three volumes in one publication, as a new edition of the two former has recently been printed; but each of these may be procured separately, forming an entire and distinct treatise by itself.

MARTIN WARE.

*New Bridge-street,  
March, 1818.*

Preface

VI

crystaline; the first of which was published in 1798.

To these tracts, relative to the eye, the Author takes two, on the treatment of disorders, to which in a former part of his practice he devoted much at-

## PREFACE.

**T**HE Author of the following pages, having devoted a considerable part of his life to the study of disorders of the eye, and having at different times taken the liberty to present to the publick the result of his observations on these subjects, presumes once more to offer himself to their notice, and to lay before them a new edition of the following tracts, all of which he has revised with considerable care.

The tracts in this volume are a new edition, being the third, of observations on the Epiphora, or Watery Eye; the first of which was published in the year 1790; to which are added additional remarks on this disorder, which appeared first in 1795; and a new edition of Remarks on the Fistula La-

crymalis; the first of which was published in 1798.

To these tracts, relative to the eye, the Author takes the liberty to add two, on the treatment of disorders, to which in a former part of his practice, he devoted much attention; and which he still thinks contain hints that may be found of use by his younger brethren in the profession.

The first is on the Introduction of the Male Catheter in cases of Retention of Urine, first published in 1788: and the second on the Treatment of Hæmorrhoids, published in the year 1798.

## CONTENTS.

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	Page
On the Epiphora, or Watery Eye.....	3
Additional Remarks on the Epiphora.....	25
On the Treatment of the Fistula Lachrymalis.....	63
On the Introduction of the Male Catheter.....	151
On the Treatment of Hæmorrhoids.....	167
On the Near and Distant Sight of Different Persons	199
On the Muscæ Volitantes of Nervous Persons.....	235
On the Staphyloma, Hydrophthalmia, and Carcinoma, of the Eye.....	269



CONTENTS

On the Epiphora, or Watery Eye . . . . . 8  
Additional Remarks on the Epiphora . . . . . 22

ERRATA.

Page 104, line 4, *for* nail-head style, *read* nail headed style.  
— 151, — 2, *for* in suppressions of urine, *read* in cases of retention of urine.

On the Treatment of Haemorrhoids . . . . . 167  
On the Near and Distant Sight of Myopia . . . . . 179  
On the Muscular Volitions of Nervous Persons . . . . . 222  
On the Epiphora, Hydrophthalmia, and Curvature of the Eye . . . . . 229

## EXPLANATION OF THE PLATES.

### PLATE I.

**T**HE view of a vertical section of the right side of the face, in a line with the third of the Dentes molares; in order to show the position of the lachrymal canal anteriorly, and in its situation, with respect to the other parts of the face

- a. b. The Puncta Lachrymalia.
- c. d. The Sacculus Lachrymalis.
- d. e. The Ductus Nasalis.
- e. The termination of the Ductus Nasalis.
- f. A vertical section through the superior Os Spongiosum.
- g. A vertical section through the inferior Os Spongiosum.
- h. A vertical section through the Antrum Highmorianum.
- i. k. A vertical section through the cavity of the right nostril.
- l. m. A vertical section through the Septum Nasi.

### PLATE II.

Fig. 1. A view of a spear-pointed lancet, recommended, page 85, for the purpose of puncturing the lachrymal sac.

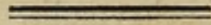
*List of Plates.*

**Fig. 2.** A view of the Probe, mentioned also page 86.

Its blunt end is of use to open an obstruction in the nasal duct; and its sharp end has sometimes been employed to make a perforation through the thin part of the Os Unguis.

**Fig. 3.** A front and side view of the Style that is re-

commended, page 86, for the purpose of being inserted in the nasal duct, or carried through a perforation in the Os Unguis.



*Directions for placing the Plates.*

Fistula Lachrymalis, plates I. and II. ....	63
Catheter. ....	151

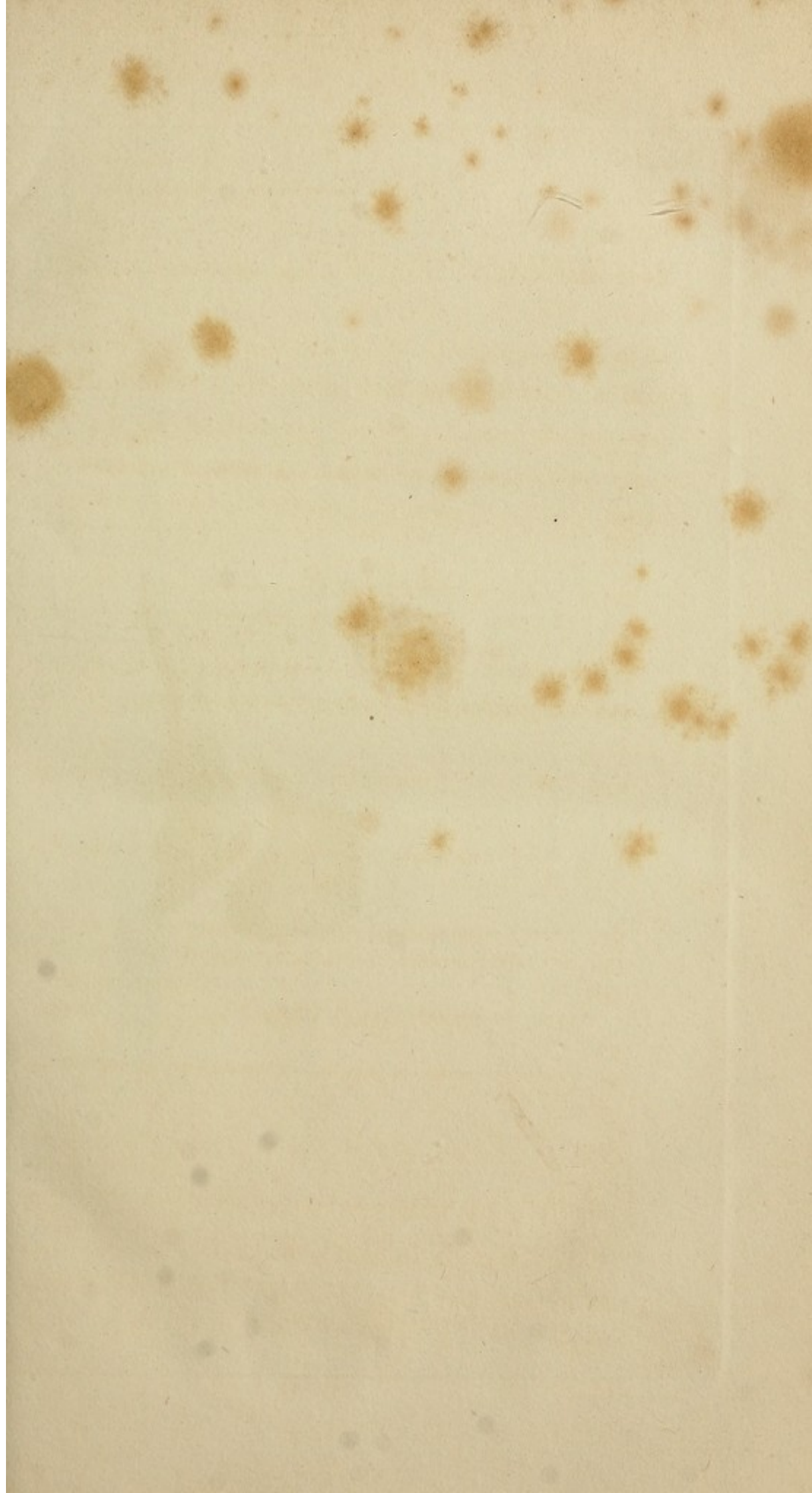
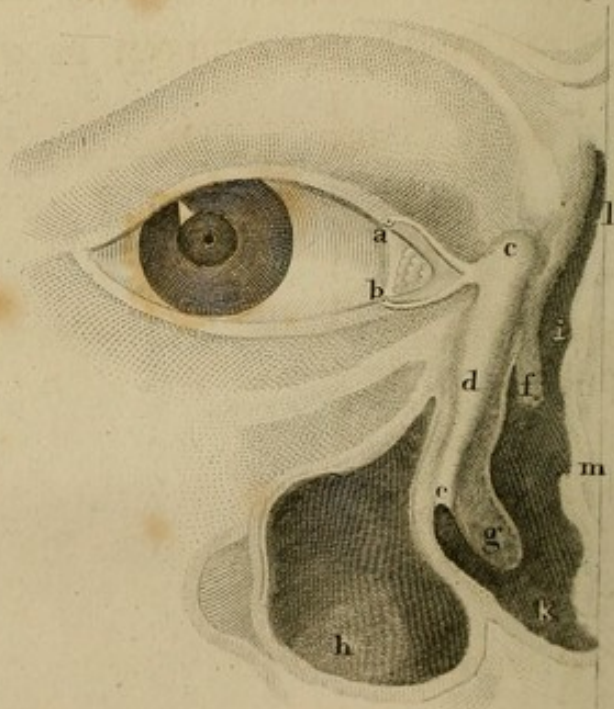


Plate 1



*Fig. 1*



*Fig. 2*

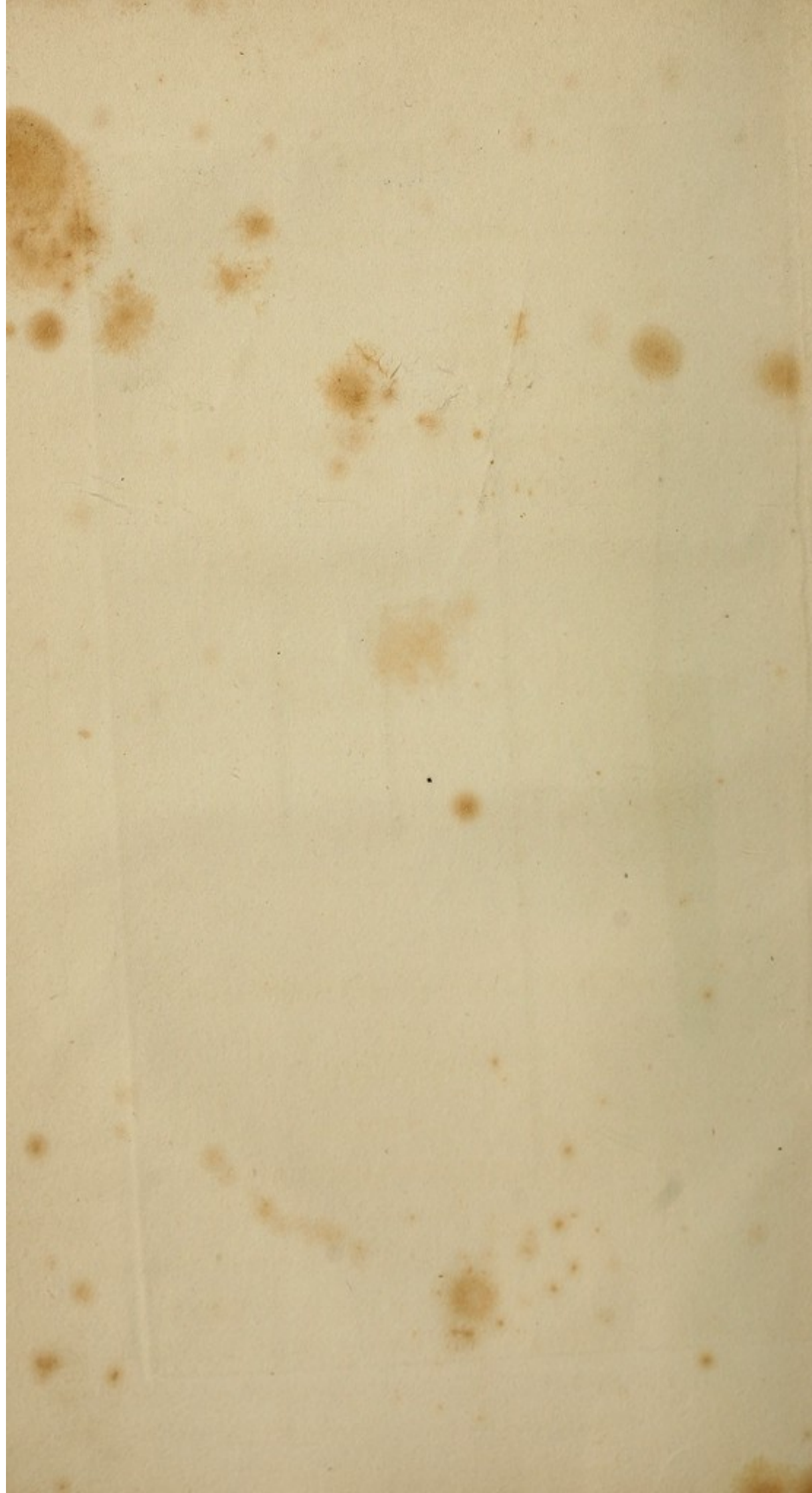


*Fig. 3*



*Fig. 3*





CHARLES A. ORVET, M.D.,  
307, LOCUST STREET,  
PHILADELPHIA.

ON  
**THE EPIPHORA,**  
OR  
WATERY EYE.



THE EPITAPH

OF

THE

ON  
**THE EPIPHORA,**  
OR  
**WATERY EYE.**

*Read before the Medical Society of London, Dec. 27, 1790.*

---

**BY** the term Epiphora is meant, an accumulation of tears on the anterior part of the eye; in consequence of which, the person afflicted with this disorder is not only under the necessity of frequently wiping them away, but vision is injured by the morbid refraction which they produce in the rays of light that enter the pupil. This disorder may be occasioned either by a more copious secretion of tears than the puncta lachrymalia are able to absorb, or, which I believe to be its more common cause, by an obstruction in the lachrymal canal, in consequence

of which the tears are prevented from passing freely from the eye into the nose.

It is not my design in this paper to enlarge on the manner in which the tears are produced. I shall only observe, that though they were formerly supposed to be secreted, solely, by the glandula lachrymalis, the observations of modern anatomists have given rise to an opinion, not only that a part of them transudes through the pores of the conjunctiva and cornea, but that their quantity is increased, and that their acrimony is abated, by the united secretions of the caruncula lachrymalis, and glandulæ meibomii.\*

When an Epiphora is produced by a too copious secretion of tears, if it do not depend on an affection of the mind, its more remote cause usually is an inflammation in the membranes of the eye; and in such a case

\* See on this subject Zinn's *Descriptio Anatomica Oculi Humani*, Gottingæ, in 4to. ch. xiii. sec. 1; and Janin's *Memoires et Observations Anatomiques, Physiologiques, et Physiques, sur l'Œil, et sur ses Maladies*, à Lyon, en 8vo. p. 51.

its cure will be accomplished by the removal of the inflammation: after which the eye may be strengthened by mild astringent applications, such as cold water, either alone, or mixed with small proportions of white vitriol or verjuice.

But that species of the Epiphora which I now propose particularly to consider, is produced by an obstruction to the free passage of the tears from the eye into the nose. This obstruction may take place either in the ducts leading from the puncta lachrymalia\* into the lachrymal sac, or in the sac itself. When the ducts are obstructed, the tears fall over the cheek, and the sac is constantly empty. Pressure on the sac, therefore, can produce no regurgitation either of tears or mucus into the eye. The method of cure is here evident. A small probe of a suitable size must be introduced through the puncta

\* The puncta lachrymalia vary much in size in different persons. Sometimes they are so large as to be plainly perceptible on a cursory inspection, and sometimes so small that the end of a minute bristle cannot be passed into them without difficulty.

of the obstructed ducts into the sac; and this operation be daily repeated until the obstruction be removed. But the part in which the obstruction more commonly lies is in the sac itself; and in this case the tears, mixed sometimes with mucus, flow back into the eye through the puncta, when pressure is made on the sac. Without adverting at present to the bony duct of the os unguis, (in which a part of the lachrymal sac is lodged) a disease of which duct occasionally causes an Epiphora, and in general terminates in a fistula lachrymalis, an obstruction to the passage of the tears may be produced either by a thickening of the membrane which lines the sac; by the lodgement of inspissated mucus in the inferior portion of this cavity; or by a spasmodic action in that part which has been called by some a sphincter of the sac. These three causes of the obstruction not only take place separately, but sometimes exist together; and they mutually tend to increase each other.

It is well known that mucus is secreted by the membrane which lines the lachrymal

sac, in like manner as it is secreted by the pituitary and other membranes. This mucus, when in its natural state, is perfectly limpid, and mixing with the tears, passes with them into the nose; but when the membrane which lines the sac is diseased, it often happens that the mucus secreted by it is thickened; in consequence of which, it becomes incapable of passing through the sac, and the tears by its lodgement are prevented from pursuing their regular course; their descent being probably still further interrupted by a spasmodic action in the inferior part of the sac, which, as I have just observed, is by some supposed to form a sphincter sacculi.

This is the precise state of the disorder, the treatment of which I now propose to consider; and it is in this state of it that the means which will be recommended appear most likely to prove successful.

Various are the remedies that have been proposed for the cure of the Epiphora by different surgeons. But it is needless to spend much time in enumerating them,

since I know of none of approved efficacy, except the method first recommended by Monsieur Anel, in the year 1712, and that by Mr. Blizard, in the year 1780. It ought, however, to be mentioned that, in some few instances, stimulating applications, such as the unguentum citrinum of the Edinburgh Dispensatory, and the \*unguentum ad lippitudinem of St. Thomas's Hospital, when applied to the edges of the lids, and rubbed into the skin which covers the lachrymal sac, have been thought to afford relief. Stimulating remedies drawn up the nose in order

\* The unguentum ad lippitudinem is directed to be made in the following manner :

℞ Axungiae viperinae curatae, drachmas tres.

Cerae albæ incisæ, drachmam unam.

Mercurii corrosivi rubri præparati, drachm. dimidiam.

Opii colati, grana tria.

Liquefiat cera cum axungiâ in balneo arenæ, ac simul ac mistura lentescere incipit, admisce mercurium et opium, et bene move donec unguentum penitùs refrixerit.—An ointment not much unlike to this has been introduced into the last London Pharmacopœia, under the name of Unguentum Hydrargyri nitrico oxydi.

*Or Watery Eye.*

9

to increase the secretion of the pituitary membrane, have also been supposed to possess some efficacy. But, notwithstanding the favourable effects which these remedies may occasionally have produced, practitioners well know that the assistance they are capable of affording is very uncertain; and, if thought advisable, they may be adopted in perfect conformity with the mode of cure I am about to recommend.

Monsieur Anel's method consisted first in passing a probe, and afterwards injecting a liquor, through the puncta lachrymalia, in order to clear away the matter which obstructed the lachrymal passage. By these means he asserts that he performed many remarkable cures; and Heister, in his General System of Surgery, confirms Anel's account; and adds, in his chapter on the Fistula Lachrymalis, part ii. sect. ii., that by a similar practice he had, in many cases, accomplished a cure in so short a space of time as three days. Strong, however, as this recommendation of Anel's mode of treatment, in cases of the Epiphora, unquestionably is,



the practice of it has been rarely adopted in this country; and many of our most celebrated authors, when writing on this disorder, have treated his proposition with marked indifference. Mr. Sharp, in his *Treatise on the Operations of Surgery*, page 176, declares himself "by no means inclined to think favourably of it." Mr. Warner, in his *Description of the human Eye, and its Disorders*, does not once mention it. And though Mr. Pott, in his *Observations on the Fistula Lachrymalis*, expresses himself more favourably of the use of Anel's syringe than Mr. Sharp did, yet after all, in page 40, he recommends the application of a vitriolic collyrium, and enlarges on the advantage of keeping the eye clean and cool, in such a manner as plainly to evince the indifferent opinion he entertained concerning it. Mr. Bell also, in the third volume of his *System of Surgery*, page 488, asserts in direct terms, that the puncta lachrymalia are so very small that no probe or syringe can be passed through them, of a size sufficiently large to remove an obstruction in the nasal canal.

In the year 1780, Mr. Blizard having turned his thoughts to the subject now under consideration, and recollecting that water injected through the punctum lachrymale not only had but little specific weight, but was urged through the lachrymal sac in an unfavourable direction, proposed, instead of water, to introduce quicksilver through a small pipe communicating with a long tube full of the same fluid. The specific gravity of the quicksilver, when the sac was distended with it, he believed, would have more power than water propelled through a syringe, to remove the lachrymal obstruction. In a paper read before the fellows of the Royal Society, in the year above-mentioned, Mr. Blizard informed them, that he had employed this method in a case which had continued seven months, and by means of it had accomplished a perfect cure of the disorder; the quicksilver, on the third and on the fourth time that the operation was repeated, passing freely through the duct into the nose. I have pursued Mr. Blizard's process several times, in cases which ap-

peared to me to be similar to this above-mentioned, and I have flattered myself, in one or two instances, that it was attended with good effects. But it is equally true, that in the greater number in which I used it the experiment failed. And it ought to be remembered, that in the case related by Mr. Blizard, as well as in those in which I used the quicksilver myself, the injection of water in Anel's method had not been tried. If, therefore, we admit its efficacy in the cases above-mentioned, we are still, I think, unsupported in giving it a preference to Anel's method, since the latter, if tried, might very probably have been attended with equal success.

In a visit I made to Paris in the course of the year 1791, I had an opportunity of conversing on the subject of lachrymal obstructions, as well as on many others which relate to disorders of the eye, with Messieurs Grandjean and Monsieur Arrachart, oculists of considerable celebrity in that city. By them I was informed that the practice of injecting water through the puncta lachry-

malia, in incipient cases of the fistula lachrymalis, was by no means relinquished in France; but, on the contrary, that it was still adhered to, both by themselves, and by others, and that it often produced highly beneficial effects. I saw the operation performed by Messrs. Grandjean in several instances; in some of which, the liquor passed freely into the throat and nose; and the Epiphora, which I was informed had been long troublesome previous to its use, appeared to be perfectly cured. In consequence of this recommendation, I determined, on my return to London, to give Anel's operation a fuller trial than I had hitherto done; and, as soon as I arrived here, I directed a small silver syringe, with pipes fitted to it of different sizes, to be made for me by Mr. Pepys, in the Poultry. When these were finished, I did not wait long for an opportunity of using them.

A lady in Great Russel-street came under my care, who for many months had been subject to an Epiphora of the left eye, which prevented her both from reading, and work-

ing with her needle, without undergoing great inconvenience. Whenever she employed herself in any way that required close attention, her eye became overspread with tears, and the sight was so much confused, that it obliged her to leave off almost as soon as she began. A great variety of remedies had been applied, under the direction of different medical men, but none of them produced any essential amendment. On examining the eye, I observed that the tunica conjunctiva, near the inner angle of the eye-lids, was slightly inflamed; and on pressing the lachrymal sac with my finger, I perceived that a tear regurgitated through the lower punctum. This appearing to be a proper case for the use of the syringe, I immediately determined to employ it. But I found that though a tear came through the lower punctum on my pressing the sac, yet this punctum was so small that it would not admit the point of the smallest syringe I then had. I introduced into it, however, a small probe, and by means of this I so far dilated the orifice, that

it admitted the point of the syringe, on the next day, without any difficulty. Upon my first using the injection, the water escaped through the upper punctum almost as fast as it was introduced through the lower; but, notwithstanding this, I persevered in urging the liquor on, until the whole contents of the syringe were exhausted. I repeated the injection three times the same day in immediate succession. The lady, however, was not sensible that any part of the water passed through the duct into the nose during either of these operations; and indeed it soon became evident that none had passed; for, having cleared her nose before I began, on her blowing it again immediately afterwards, she could produce no moisture on her handkerchief. I repeated the operation three times both on the second and on the third day; and each day, during the time that the water was passing, I not only endeavoured to prevent it from coming through the upper punctum, by covering it with the point of my finger, but I occasionally pressed the lachrymal sac in order

to give the water an inclination downward. On the fourth day I very plainly perceived, on the patient's clearing her nose after the operation, that a part of the water had passed through the duct; and, the next morning, I had the satisfaction to hear, that the eye, on the preceding day, had watered much less frequently than it had done for a considerable time previous to it. I repeated the process above-mentioned about ten times in as many days, and I observed that the quantity of water which passed through the duct was augmented every time I used it. The tears, after this, resuming their natural course, the lady recovered the power to read and work without any inconvenience.

Since the cure above-mentioned, I have made use of the syringe in a considerable number of cases, which appeared to be similar to this I have now described; and in several of these it was attended with very manifest advantage. I shall take the liberty to relate the three following, which appear to deserve notice.

A lieutenant in his Majesty's navy caught a violent cold, about six weeks before I saw him, in consequence of his being exposed for several nights and days together in an open boat at sea. The cold was accompanied with a watering of the left eye, which soon became excessively troublesome. It continued a fortnight, and then suddenly went off without the use of any remedy, except the occasional application of cold water to the eye. At the end of a week, however, the disorder returned with increased violence, and the young gentleman was obliged almost continually to wipe off the tears which ran over his cheek. With the tears a thick mucus was frequently mixed, particularly in the morning, and the eye-lids, when he awoke, were always gummed together, the eye itself being often inflamed. The disorder had been suffered to continue a month after the relapse above-mentioned, without any advice from the faculty, a hope being entertained that it would again go off, as it had before done, without medical assistance. Disappointed, however, in this expectation,



he at length consulted me. On examining the eye, I found that the tunica conjunctiva, on the side next the inner angle of the eye-lids, was considerably inflamed; the caruncula lachrymalis was enlarged; and some tears mixed with mucus were retained in the lachrymal sac, which regurgitated through the lower punctum on my pressing the sac with my finger. I immediately endeavoured to inject some water through the sac into the nose; but the passage was so much obstructed that no part of the liquor went through. I repeated the operation the following day, but again without success. After the process I each day touched the edges of the eye-lids with the unguentum citrinum, and applied a drop of the thebaic tincture to the eye. I also gave him a box of the unguentum ad lippitudinem to apply to the lids when he awoke in the morning, in order to remove the gum that collected on their edges; and in the course of the day I desired him to wash his eyes frequently with a weak solution of corrosive sublimate. On the two former days, as the weather was

warm, the water which I had attempted to inject through the punctum was cold. In the third experiment, this day, the water was warmed, and I added a pipe to the syringe, the point of which was much larger than that of the pipe I before used. I now had the satisfaction to find that a small quantity of the liquor passed into the nose. On the fourth day I was informed, that since the last operation the watering of the eye had been much less troublesome; and on repeating it, some of the water was evidently swallowed. On the fifth day the whole of the liquor injected through the punctum passed through the duct; part of it being swallowed and the remainder running out of the nose. After this time I had occasion to repeat the operation only twice, before the Epiphora entirely ceased, and the eye became perfectly well.

A third case, in which the operation succeeded, was that of a clergyman from Bristol, whose right eye had watered almost continually for seven months. He had no other apparent disorder in the eye, and the inferior

punctum was sufficiently open to admit the end of a pipe much larger than I usually employ on such occasions. The liquor passed freely through the sac the first time I attempted to inject it. I had occasion to repeat the operation only once more, and this after an interval of three days. The liquor again passed freely into the nose; after which the Epiphora entirely ceased, and the sight became as clear and perfect as that of the other eye.

The last case I shall mention, in which I used the syringe with success, was that of a young woman in Basinghall-street, whose right eye had watered almost continually for two years, and who had, in a great measure, been disqualified by it from attending to her business, which was that of a lady's woman. On examining the eye, I perceived that both the upper and lower puncta lachrymalia were exceedingly contracted, and I found it very difficult to introduce a small probe into either of them. As there did not appear to be any retention of tears in the lachrymal sac, I had a hope that a dilatation of the

puncta would have produced a cure. In this, however, I was disappointed, since on the following day I was informed, that the watering of the eye had been quite as troublesome as before the introduction of the probe. I now found some tears retained in the sac, and on my pressing it with my finger, they freely regurgitated through the puncta. It is probable, therefore, that on the preceding day the sac had been pressed by the patient, in order to make the eye appear clean before I examined it. I proceeded immediately to make use of the syringe, but at first could introduce only a very small pipe into the punctum. The patient received no relief from the operation till after it had been repeated several times. On the sixth day, however, the liquor passed freely through the duct into the nose. After this, the eye became a little inflamed, and I was under the necessity of desisting from the use of the syringe for nearly a week. I afterwards had occasion to repeat the operation only twice before the Epiphora entirely ceased, and the patient pursued her business with ease.

Before I conclude my paper, it may be of use to remark, that the only liquor which I have hitherto injected through the puncta lachrymalia has been common water; sometimes cold, but oftener warmed. Warm water, I think, in general, is to be preferred, on account of its relaxing power; by means of which, in addition to the mechanical influence which is communicated to it by the syringe, it also contributes to take off any spasmodic action that may have been excited in the inferior part of the lachrymal sac. Hereafter it may be found, that medicines may be injected through the puncta with advantage; but in making experiments care should be taken that the medicines be of such a kind as will neither clog nor corrode the pipe through which they are injected.

It is also proper to add, that the pipes I use are much shorter than that which is represented by Mr. Bell, in his System of Surgery;\* and they are a little arched toward the point. With this alteration they

\* Vol. III. Plate 37.

appear to me to be much more convenient for the purpose of being introduced into the punctum lachrymale, than if they were long and straight. It is advisable to have several pipes always ready. These should be of different sizes, and the largest that can be introduced, without giving pain, should always be used.

As an attention to minute circumstances is often of great consequence in performing operations, I take the liberty to add, that when I use the syringe, I find it convenient to stand either behind the patient, or on the side opposite to that of the diseased eye; and always high enough to give me a full command of the patient's head. The syringe being held in the right hand, the eye-lid should be drawn downward, and a little outward, with the fore-finger of the left hand. This will bring the inferior punctum fully within sight of the operator, and will place it in a position very convenient for the purpose of admitting the point of the pipe. When the pipe is introduced, the finger should be removed from the lower lid, and

be applied as accurately as possible over the superior punctum, to prevent the liquor from escaping through it; and with this finger the lachrymal sac should occasionally be compressed, in order to assist the determination of the liquor downward into the nose.

CHARLES A. OLIVER, M.D.,

207, LOCUST STREET,

PHILADELPHIA.

## ADDITIONAL REMARKS

ON

## THE EPIPHORA.

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**I**N a paper on the Epiphora read before the Medical Society of London, in December 1790, which was afterwards published in a small pamphlet, together with a few other chirurgical observations, I took some pains to recommend the mode of treatment, which had been first proposed by Monsieur Anel in the year 1712; viz. that of injecting a liquid through the inferior punctum lachrymale, with a view to wash away any matter that might obstruct the passage of the tears, into the nose. At the time the paper above-mentioned was read before the society, I had injected, for this purpose, only common water, either cold or warm; and by the help of this alone, I had been fortunate enough to accomplish a cure in several cases, four of which were related at some length. In



those instances it seems probable, that the obstruction was produced by the lodgment of inspissated mucus alone in some part of the lachrymal duct. But it ought to be remembered, that a similar obstruction may also be occasioned, not only by a tumefaction of the membrane which lines the duct, but by a spasmodic constriction in any part of this canal.\*

\* I scarcely need mention that after the tears have been spread over the eye, to keep it moist and transparent, they are absorbed by two minute orifices, called puncta lachrymalia, one on the edge, and near to the inner extremity, of each of the eye-lids; whence they are conveyed through two small tubes into a little pouch, called sacculus lachrymalis. This is situated in an excavation in the inner angle of the orbit, formed partly by the nasal process of the os maxillare superius, and partly by the os unguis. Anteriorly the sac has no bony cover. In the adult subject it is about five-eighths of an inch long, and a quarter of an inch broad in its widest part. The lower part of the sac forms a duct, about half an inch long, called the ductus nasalis, which commences at the inner, and inferior edge of the orbit, and is continued through a bony channel till it opens into the nose; through which the tears are discharged. The diameter of this duct varies much in different subjects. In some, I have seen it sufficiently large to allow a goose quill to pass through it: and in others, apparently of the same age, it has been so small

The membrane which lines both the lachrymal sac, and the nasal duct, is not only similar to the pituitary membrane which lines the cavity of the nose, but is a continuation of it. It is full of blood vessels, and has a mucous fluid secreted by its surface, which serves to defend it from being irritated by the tears that continually pass over it. The pituitary membrane, like all other mucous membranes, is liable to be inflamed and thickened by a variety of causes; and when the inflammation and tumefaction of this part take place to any considerable degree, they are apt to extend to the membrane which lines the duct and the sac. The nasal duct is entirely surrounded with bone; whenever, therefore, that part of the membrane which lines this duct is thickened, the passage for the tears is necessarily diminished; and when the tears are prevented from passing off, they acquire a degree of acrimony which irritates the membrane of that it would scarcely admit the end of a small crow's quill. The whole of this passage is denominated the *canalis lachrymalis*.

the duct, and contributes to keep up a contraction, and consequently an obstruction, in this part, after the inflammation and tumefaction are removed from the other part of the membrane which lines the nose. The mucus, also, secreted by the membrane of the duct, becomes inspissated, in consequence of the inflammation of this part. By these several means the obstruction in the duct is confirmed; and too often, if the disorder be not attended to, it at length terminates in an abscess of the lachrymal sac; which, bursting externally, produces, according to the strict literal meaning of the term, a fistula lachrymalis.

Another circumstance which has been assigned by writers as a cause of the Epiphora; and which it will be proper for me here to mention, is a spasmodic constriction in some part of the lachrymal canal, without any tumefaction of the membrane which lines it, and without any morbid inspissation of the mucus secreted by it.\* When this is

\* Those cases may perhaps be arranged under this

the cause of the disorder, the constriction is usually situated in that part of the lachrymal canal, which is denominated the nasal duct. It may undoubtedly take place in the lachrymal sac, as well as in the nasal duct; but it is more apt to happen here, not only because the diameter of the duct is less than that of the sac, but because the duct is the only part of the whole canal, entirely surrounded with bone. And the part in which it seems most likely that the constriction should take place, is its inferior termination, where it opens into the cavity of the nose; as the membrane which lines this part forms here a fold, which projects beyond the bony rim

description, in which one, or both, of the puncta lachrymalia, are either closed, or contracted in size. Many such have at different times, fallen under my observation. When the puncta are wholly closed, the case is often incurable; but when only contracted in size, relief may be speedily given, by passing the end of a small probe through the puncta, and increasing its size from time to time until the orifices have fully recovered their natural dimensions. In such cases it will also be proper to inject some warm water through the inferior punctum into the nose, in order to ascertain that there be no obstruction lower in the duct.

of the duct, and acts, according to the opinion of many, as a valve or sphyncter of this part.\* The fold serves to hinder noxious

\* Janin, who published his *Memoirs on the Eye* in the year 1772,\* asserts plainly, that the inferior orifice of the nasal duct is bounded by a valve, or sphyncter, placed there in order to check the too rapid descent of the tears through it, and to hinder the air, or any thing else that might prove injurious, from passing upward from the nose into the sac. To go further back, Bianchi, in the year 1715, expressed himself in the following strong terms on the same subject.† “*Valvulæ cæterum hujusmodi præsentiam apud nonnullos controversam adimi dubietas possit, demonstrabam in subjecto muliebri mense Februarii fluentis anni Clar. D. D. Doctoribus Claverotto, Vaccherio, Pelletta, Massola, cœtuique auditorum meorum numeroso. Figuram, instar aliarum grandiorum omnium, semilunarem ducit hæc valvula; ut ideo semilunaribus aortæ, aut sigmoideis pulmonaris arteriæ æquata proportione molis, æquiparari consulto possit.*” Notwithstanding this plain description of a valve or a sphyncter, at the termination of the nasal duct in the nose, Winslow, who published his *Exposition of the Structure of the Human Body*, seventeen years after the date of Bianchi’s epistle, and in it gives a very accurate description of the organs of sight and smell, takes no

\* *Memoirs et Observations sur l’Œil.* Lyon, 1772, p. 105.

† *Ductuum Lachrymalium novorum Epistolaris Dissertatio,* Joanne Baptista Bianchi. Taurino, 1715, p. 26.

particles from passing upward into the lachrymal sac; and by some it has been sort of notice of such a valve, and only says, that he has sometimes seen the membrane which lines the duct relaxed and folded. He adds as his opinion, that this appearance was the effect of disease, and not the natural state of the part.\* Messrs. Pott, Warner, Wathen, Bell, and many other authors, whom I have consulted on the subject, are entirely silent as to the existence of any valve, or sphyncter in this part. Zinn, however, the first edition of whose tract on the eye was published in the year 1755, appears to have attended more accurately to the mode in which the duct terminates; and in the following words he corroborates the observation that had before been made by Bianchi. “*Ductus nasalis in nares patet orificio ita oblique resecto, uti fere ureteres in vesicam se immittunt, quod orificium præterea aliqua ex parte clauditur plica membranæ semilunari libera, ut aliquam valvulæ speciem exhiberi videatur.*”† I have examined a considerable number of heads, of persons deceased, in order to obtain satisfaction on this subject; and I always found, when the *os spongiosum inferius* remained in its natural position, that the two sides of the membrane which terminated the duct lay flat on the side of the *os maxillare*, very near to each other, and the aperture into the duct was scarcely perceptible. But

\* *Exposition Anatomique de la Structure du Corps Humaine, à Paris, 1732, Chapitre de la Tête, No. 349.*

† *Descript. Anatom. Oculi Humani, Gottingen, 1755, Cap. xiii, Sect. iv.*

supposed to prevent the tears also from descending too rapidly through the duct into the nose. Now when the membrane which lines the duct is stimulated by any cause, it is far from being unlikely that this fold of it should contract ; in consequence of which, the passage of the tears through the duct will be either partially or wholly intercepted by it.

If a membranous stricture be the sole cause of the Epiphora, the disorder is usually confined to an accumulation of tears in the lachrymal sac, and to the regurgitation of those tears through the puncta lachrymalia, when either the sac is unable to contain

when the os spongiosum was drawn from the side of the os maxillare, the aperture became plainly visible, of an oval shape, and appeared to be bounded, as both Bianchi and Zinn have described, by a membranous fold, the longest diameter of which extended from above downward. The fold was perceptible in all the heads I examined, but was longer in some than in others ; and consequently the aperture bounded by it was not always equal in size. In general, it was situated near the anterior extremity of the os spongiosum inferius ; but sometimes it lay further back in the nose, near the posterior extremity, and under the upper edge, of this bone.

more, or when external pressure is made to empty it. In this state it has been called, with some propriety, by French authors, *une hydropisie du sac lachrymale*.\* But if either of the other causes I have mentioned occasion the retention, the fluid that regurgitates through the puncta will be mixed with inspissated mucus: and, in general, the eye-lids will be gummed together when the patient awakes in the morning.

It ought, however, to be remembered, that when the sebaceous glands on the edges of the eye-lids are diseased, the eyes are almost always in a state of irritability; and if they happen to be exposed to an unusual degree of wind, of light, or of heat, a considerable

\* It not unfrequently happens, that the projection which appears on the side of the nose, near the inner angle of the eye-lids, in consequence of the retention of tears in the lachrymal sac, may be removed by a slight pressure of the finger upon it; the retained fluid quickly and almost instantaneously passing into the nose. This circumstance appears to me to corroborate the opinion above-advanced, that the stricture, which retains the tears, is sometimes confined within a small space; and, in such cases, I think it highly probable, that it is situated in the fold of the membrane above-described.



flux of tears will often be excited, (though there be no obstruction in the lachrymal canal,) which not only obscures but weakens the sight.\* It is necessary to distinguish this case from an obstruction in the lachrymal canal, because it requires a very different mode of treatment. In the former, for instance, the remedies must be chiefly applied to the edges of the eye-lids, in order to amend the secretion from the ciliary glands; in the latter, the ciliary glands being undiseased, applications to them can answer no good purpose, and the chief object in view is to obtain a free passage for the tears through the duct into the nose.

Having made these remarks on the different proximate causes of the Epiphora, I now proceed to consider the most effectual modes of cure. And here I beg leave to observe, that whether the disorder be produced by the lodgement of inspissated mucus

\* An Epiphora may also undoubtedly take place in consequence of a disease in the glandula lachrymalis alone, without any affection of the neighbouring parts; but I believe this to be a very rare occurrence.

in the cavity of the nasal duct, by the tumefaction of the membrane which lines this duct, or by a spasmodic constriction in any part of its extent, in either of these cases, the introduction of a remedy to the seat of the disease, by means of a syringe, whose pipe is of a size suited to enter into the inferior punctum lachrymale, is not only very practicable, but I have often found highly beneficial. With regard to the sort of injection that is most proper on these occasions, I formerly made use of plain river water, sometimes warm, and at other times cold. In the use of this, it was my principal intention to act mechanically on the obstruction, and, by means of the moderate force with which the water was injected, to propel into the nose any inspissated mucus that might lodge in the duct, and impede the descent of the tears through it. By this mode of treatment alone, I had the satisfaction to accomplish a cure in a considerable number of cases; but it did not afford equal relief in all. The failures to which I was occasionally subject, induced me to extend my inquiries into the

different causes which might lay a foundation for the disorder; and if the three above-mentioned are just, it will follow, that the same remedy cannot always be equally successful: and that an application which in one case might have proved highly useful, in another might be found wholly ineffectual.

When, for instance, the obstruction to the passage of the tears is produced solely by the lodgement of inspissated mucus in the nasal duct, and is unaccompanied by any tumefaction in the membrane which lines this part, the injection of warm water, or indeed of any other liquor, is sufficient, merely by its mechanical power to remove the mucus, and accomplish a cure; but, when the lodgement of inspissated mucus is accompanied with a tumefaction of the membrane which lines this duct, the injection of warm water alone might rather tend to increase the tumefaction; and, in such cases, vitriolic, or saturnine applications, seem better adapted to answer the intention of cure. These may be assisted by taking away a small quantity of

blood from the vessels, near the lachrymal sac, either by the application of a leech, or by puncturing the angular vein. When, again, the obstruction is occasioned by a spasmodic constriction in some part of the lachrymal canal, astringent applications may rather tend to increase the constriction; and the remedies that seem indicated are, on the contrary, of a relaxing and sedative nature.

It is not easy, however, at all times, to discover the precise cause of the obstruction, and, in consequence, we cannot always immediately ascertain the peculiar mode of treatment that ought to be adopted. Although, for instance, the lodgement of inspissated mucus in the lachrymal sac is often accompanied by a tumefaction of the membrane which lines the nasal duct, it may also take place without any such tumefaction: and although a spasmodic constriction in a part of the nasal duct may only produce at first a retention of tears in the lachrymal sac, without altering the consistence of the mucus secreted by it, yet the tears, being

retained, will necessarily acquire some degree of acrimony, and these, irritating the sac, will soon produce an inspissation of the mucus secreted by it.

Under the uncertainty, therefore, to which in these cases we are unavoidably subject, I in general begin the treatment by injecting some warm water through the inferior punctum lachrymale, and I repeat the operation four or five days in succession. If, in this space of time, none of the water pass through the duct into the nose, and if the watering of the eye continue as troublesome as it was before the injection was employed, I usually open the angular vein, or direct a leech to be applied near the lachrymal sac; adding, in this last case, a caution that the leech be not suffered to fix on either of the eye-lids, lest it produce an extravasation of blood in the adjacent cells.\* About the same time that

\* This accident, after the application of a leech either on the upper or the lower eye-lid, is not uncommon; and though it be not attended with any danger, yet the discoloration and tumefaction it occasions, are extremely unpleasant, and they sometimes remain many days.

blood is taken away in the neighbourhood of the eye, I usually vary the injection, and try the effects either of a weak vitriolic, or anodyne lotion. In some instances when I have found it impossible, after several attempts, to inject any part of the liquid through the duct, I have introduced a golden probe, about the size of a bristle, through the superior punctum lachrymale, and, attending to the direction of the duct, have insinuated its extremity through the obstruction, and conveyed it fully into the nose; immediately after which I have found that a liquid, injected through the inferior punctum, has passed without any difficulty; and by repeating these operations, for a few successive days, I have at length established the freedom of the passage, and completed the cure. In other instances, I have recommended a strongly stimulative sternutatory to be snuffed up the nose, about an hour before the time of the patient's going to rest, which, by exciting a large discharge from the schneiderian membrane, has sometimes also greatly

contributed to open the obstruction in the nasal duct.

Cases occur very rarely which may not be relieved by some of the means above related. It ought, however, to be mentioned, that the Epiphora is sometimes occasioned by a polypous tumour in the nose, obstructing the inferior aperture of the nasal duct; in which case, being a secondary disorder, it can only be relieved by the removal of the polypus that occasions the obstruction. So likewise when the Epiphora is accompanied with an ozæna, this latter disorder must be removed before the cure of the former can be accomplished.

There is one other remedy for the Epiphora, recommended by ancient as well as modern writers, of which it will be proper for me to take some notice. I mean, the application of a constant gentle pressure over the lachrymal sac, in order to prevent its further distention, and to increase its tone and elasticity. The only cases, in which it seems probable that this remedy will prove

effectual, are those in which the obstruction is so slight, that though the tears are retained in the sac, yet a small degree of pressure is sufficient to propel them through the duct into the nose. The application of the finger on the sac is perhaps the most accurate mode in which pressure can be made. But as it cannot be continued in this way for any great length of time without inconvenience, an instrument to supply the place of the finger has been invented by several surgeons; of which representations may be seen in the works of Heister, Gooch, and some others. In my own practice, I have seldom found such pressure useful; and it scarcely need be added, that if the obstruction be so considerable, that nothing will pass through the duct into the nose, it is impossible that external pressure, however applied, can be of essential service.

It not unfrequently happens, that the fluid collected in the lachrymal sac, though capable of being propelled into the nose by external pressure, has a very offensive taste and smell. In some such instances, the bone behind the



duct has been much diseased, and the cure, of course, has been slow. In others the discharge has been speedily corrected by injecting daily through the sac a warm vitriolic lotion; by persevering in the use of which, the sac has sometimes also acquired, in a short time, its proper tone, and the accumulation has been prevented in future.

When an Epiphora is occasioned by an acrimonious discharge from the sebaceous glands on the edges of the eye-lids, it must be evident, that injections into the sac will be very insufficient to accomplish a cure, because the sac is not the seat of the disorder. The remedies that are employed, must be directed, on the contrary, to the ciliary glands themselves, in order to correct the morbid secretion that is made by them; and for this purpose, I do not know any application that is so likely to prove effectual as the unguentum hydrargyri nitrati, of the new London Dispensatory, which should be used here in the same manner in which it is applied in common cases of the psorophthalmy. It will be proper to cleanse the eye-lids every

morning, from the gum that collects on their edges during the night, with some soft unctuous application; and I usually advise to apply to them two or three times in the course of the day a lotion composed of three grains of white vitriol, in two ounces of rose, or elder-flower water. I beg leave, however, to offer a caution against the mode in which eye-waters are too frequently used, viz. by moistening a piece of linen with them, and applying it over the lids. When used in this way, it often happens, that not one drop of the lotion comes in contact with the parts principally affected; and I leave it to the most common observer to determine, whether it be possible for an inflamed eye, and much less for a diseased lachrymal sac, to receive benefit from the best contrived remedies so applied. The manner in which I generally recommend such lotions to be used, is either in an eye-glass,\* so suited to the shape of the eye that it will allow the liquor to go directly to the part affected, or

\* An eye-glass may be purchased at almost every glass or china-shop in London.

else by means of a camel's hair pencil, which being thoroughly wet with the water, is applied to the edges of the lids in such a way that the water may certainly insinuate itself between them and the globe of the eye. In those cases where it is desirable to have a part of the lotion conveyed into the lachrymal sac, it is particularly proper to attend to the direction now given; and in addition to this, the head should be reclined on the opposite side, in order that the water may collect in the inner angle of the eye-lids; the lids being repeatedly opened and shut to assist its absorption, by the puncta lachrymalia.

Having now finished all the remarks which I purposed to make on the subject of the Epiphora, I beg leave to relate the few following cases; the treatment of which will be found, somewhat different from that which was used in the cases of Epiphora, described in p. 13, and those that follow it.

## CASE I.

Mrs. H. about 25 years of age, applied to me on the 10th of August, 1792, on account of an Epiphora of the right eye, which had continued upwards of three years. It had been preceded by several styes on the edges of the eye-lids, one of which was situated close to the inferior punctum lachrymale. This like the rest broke, and healed in the usual way; but the obstruction in the lachrymal duct commenced soon afterwards; and during the last three months, the watering of the eye had been almost incessant, and, in a great degree, had disabled the patient from attending to any sort of employment. On pressing the sac with my finger, I brought through the puncta lachrymalia a glary fluid, which was almost transparent, having much less of a purulent appearance than it usually has in this disease. I immediately injected some warm water through the inferior punctum, and was surprised to find that it passed freely both into the nose and throat. The

injection was repeated several times in the course of the next fortnight; but at the end of this time, though the Epiphora was much diminished, it was still often troublesome; and whenever I examined the eye, a small quantity of glary mucus was always found in the lachrymal sac. I now varied the injection, and, for this purpose, made use of a solution of three grains of white vitriol in two ounces of distilled water. The next day the patient informed me, that the injection, last used, had made her eye very uneasy for a short time, but that when the pain went off, the eye felt stronger, and the watering was much less troublesome than it had before been. The quantity of mucus collected in the lachrymal sac was also considerably diminished. I repeated the use of the vitriolic injection four times in the following week; after which the watering wholly ceased, and the eye became quite well.

## CASE II.

M. C. about 40 years of age, who had been troubled with an Epiphora of the left eye between two and three years, and whose sight, during the greater part of this time, had been rendered very imperfect by an almost constant accumulation of tears on the surface of the cornea, was attacked, in June 1792, with an inflammation of the integuments that covered the lachrymal sac, which, in a day or two afterwards, swelled, and became very painful. The tumefaction continued to increase from the eighth till the twelfth of June, when I first saw her. At this time neither tears nor mucus could be made to regurgitate through the puncta lachrymalia, on compressing the sac; and the swelling was so considerable, that an attempt to hinder it from suppurating appeared to me to be in vain. In order, therefore, to hasten its termination in this way, I directed a warm bread and milk poultice to be applied immediately, and to be renewed

three times a day. On the fourteenth, notwithstanding the inflammation and swelling continued as before, there did not appear to be any advance in the suppuration. I therefore varied from my first plan, and recommended a leech to be applied directly over the sac; adding a caution, that it should not be suffered to fix so near the edge of the lids, as to cause an ecchymosis in the cellular membrane of this part. The leech drew blood freely, and gave immediate and considerable ease. I now intended to omit the use of the poultice, but, my directions on this subject being misunderstood, it was repeated, as before, when the hæmorrhage ceased; and as the application seemed afterwards to agree, I desired that it might be continued. On the sixteenth, another leech was applied on the sac, and the next day the tumor was still further diminished. The patient took a purgative draught this morning. On the eighteenth, I injected some warm water through the inferior punctum lachrymale, and a small portion of it passed through the duct into the throat. The water-

ing of the eye was much less troublesome afterwards, than it had been for many months. The next day I repeated the use of the injection; and almost the whole contents of the syringe now passed either into the nose, or throat. On the twenty-first, and twenty-third, the injection was again repeated with similar success. After this, the swelling of the sac entirely subsided, the watering ceased, and the eye became perfectly strong and useful.

### CASE III.

Miss S. about 10 years old, was brought to me in February, 1793, on account of an Epiphora of the left eye, which had been troublesome between three and four years, and of late had become much worse, in consequence of her having had the small-pox of a confluent sort. Several remedies had been tried without affording her any relief. At this time the lachrymal sac was filled with a



thick white mucus, and the tears ran down the cheek almost continually. I recommended to inject some warm water through the inferior punctum lachrymale; which operation was performed daily, for some time, by a surgeon in the country; but as it did not render her any benefit, she was brought to town, and committed entirely to my care. I began by adopting a similar method; injecting, for the first week, warm water alone, and afterwards a warm vitriolic lotion, for another week; but as it did not appear that any of the liquor passed, during this time, into the throat or nose, and as the Epiphora continued still troublesome, I directed a leech to be applied over the lachrymal sac. The hæmorrhage produced by the leech was considerable, but, notwithstanding, the obstruction still remained. I therefore introduced a small golden probe, through the superior punctum, and, by following the course of the duct, carried its extremity through the obstruction into the nose. It was left in the duct about a minute, and then retracted; after which I injected some

warm water through the inferior punctum, and had the satisfaction to find that a part of it passed into the throat and nose. The probe was introduced several days in succession; and although, previously, none of the water injected by the punctum would pass into the nose, it went, each day, afterwards, without any difficulty. The operation of passing the probe was at first painful; but, on the second, and subsequent introductions, the pain was considerably less severe. In a few days after the injected liquor had passed into the nose, the watering of the eye greatly diminished; but still a considerable quantity of purulent matter was collected every morning in the lachrymal sac. On this account I varied the injection, and instead of warm water alone, employed, for this purpose, as at the beginning of my attendance, a weak solution of white vitriol. This was injected daily, for about three weeks; and then every second, or third day, for a fortnight longer. The quantity of mucus collected in the sac, after this, was very inconsiderable, and the Epiphora gave so

little trouble, that the handkerchief was scarcely ever needed to wipe a tear away.

#### CASE IV.

In March 1793, I was consulted by Mr. W. in Titchfield-street, on account of his daughter, about 11 years old. She had been attacked with the small-pox, whilst an infant, during which disorder her eye-lids had been glued together for many days. When they were opened, the right eye was found to be affected with considerable inflammation, which was not subdued without much difficulty. After its removal an Epiphora remained; the tears that flowed over the cheek being generally mixed with a thick mucus. In this state the disease continued, till within a short period of the time at which I was consulted; when the smell of the mucus becoming highly offensive, it gave great reason to fear, that the bone behind the duct was carious. I immediately

injected a vitriolic lotion through the inferior punctum lachrymale: but the whole of the liquor regurgitated through the superior punctum, and brought with it a considerable quantity of the putrid matter above-mentioned. A similar lotion was directed to be applied frequently, by means of a camel's hair pencil, to the inner angle of the eye-lids; and their edges were touched with the unguentum hydrargyri nitratis, in order to correct an acrimonious humour which seemed to be secreted by the glandulæ ciliares. To assist in accomplishing the same purpose, I prescribed half a grain of calomel to be taken constantly, night and morning. The injection was daily repeated, and the whole plan regularly pursued, for ten days; at the end of which time the smell of the discharge became much less offensive; but the watering of the eye was nearly as troublesome as when I first saw her. I now passed a golden probe through the superior punctum, and it went with very little difficulty through the nasal duct into the nostril. The vitriolic lotion was afterwards injected; part of which

immediately passed through the duct, and was discharged on the handkerchief when the patient blew her nose. The next day I tried to inject the lotion without passing the probe, but could not succeed, until this instrument had been first introduced. I pursued a similar mode of treatment daily for a week, and afterwards omitted the use of the probe, and employed the injection alone. This was continued every second day for three weeks longer, the liquor each time passing through the nose, if the head was held forward, or into the throat if held backward. After this time the watering of the eye wholly ceased; but the vitriolic lotion was still continued, as an eye-water, on account of the mucus, a small portion of which was occasionally collected, when she awoke in the morning, in the lachrymal sac. It was now, however, perfectly free from any smell, and, when collected, the patient was able to press it into the nostril, by means of the finger applied on the sac.

## CASE V.

The daughter of Mr. C—, about nine years old, was brought to me in August 1794, on account of a constant watering of the right eye, and a frequent accumulation of matter upon it. The disorder had continued above nine months, and appeared at first to be the consequence of a common cold. On compressing the lachrymal sac, a considerable quantity of the same matter that appeared on the eye regurgitated through the puncta lachrymalia. I endeavoured to inject some warm water through the inferior punctum into the nose; but none of it would pass. I therefore recommended to wash the eye frequently with a vitriolic lotion, and prescribed a sternutatory powder to be snuffed up the right nostril every evening. On the third day some warm water was again injected through the inferior punctum; but still the whole of it was either retained in the sac, or regurgitated through the puncta. I now directed a leech to be applied

on the integuments of the sac, and recommended the vitriolic lotion, and sternutatory powder to be continued as before. On the fifth day, on injecting the water through the inferior punctum, a part of it passed into the throat. The same remedies were continued as before. On the seventh I injected a warm vitriolic lotion, and the whole of it passed either into the throat or the nose. The sternutatory powder and vitriolic lotion were still continued. I repeated the use of the same injection three or four times afterwards, and had the satisfaction, each time, to find that the whole of it went properly through the duct. After this the watering of the eye, and the discharge of matter from it, wholly ceased, and the sight became perfectly strong and useful.

#### CASE VI.

In the beginning of the winter 1793, a lady was attacked, during the time she had a

violent cold in her head, with an Epiphora of the right eye; which, after remaining troublesome many months, at length abated in a considerable degree without the use of any particular remedy. The tears, however, still collected occasionally in the lachrymal sac, and continued to accumulate, until they either regurgitated through the puncta in consequence of the sac's being unable to contain more, or were pushed through the nasal duct by the pressure of the finger. The patient was obliged to have recourse to this last-mentioned mode of obtaining relief many times in the course of the day. In June 1794, in consequence of a fresh cold, the passage through the nasal duct became wholly closed; and when the sac was compressed, the retained tears, instead of passing down, regurgitated through the puncta, and flowed over the eye; being frequently mixed with a very offensive matter. After the eye had been in this state about a fortnight, the lady applied to me. I injected some warm water several times through the inferior punctum into the sac, in hopes that



a part of it might pass through the duct into the nose; but the whole was, each time, either retained in the sac, or returned through the superior punctum. I afterwards directed a leech to be applied over the sac; and a strong stimulating powder, to be snuffed up the right nostril every evening. The leech produced a copious bleeding; and the snuff not only excited a considerable discharge from the nose, but induced several very violent fits of sneezing. No immediate good effects were perceived from the application of the leech; but after the snuff had been taken about three times, the inferior aperture of the nasal duct became pervious; so that when a pressure was made on the sac, its contents passed into the nostril, instead of regurgitating, as before, through the puncta lachrymalia. I injected some warm water through the inferior punctum; the whole of which was still retained in the sac, until by the pressure of the finger, externally applied, it was forced through into the nose. The eye was now brought to the same situation, in which it had been for several months

before the patient caught her last cold; and it continued, without any material alteration, about a fortnight longer; when, upon her taking a fresh cold, the inferior aperture of the duct became again obstructed, and all the old symptoms returned. I recommended the re-application of a leech; and a return to the use of the sternutatory powders. By these means, in a few days, the obstruction in the duct was again removed; and warm water injected through the inferior punctum passed with more freedom than it had before done, since the commencement of her illness, into the nose. The injection was repeated every day for a fortnight; and during this time the patient frequently inhaled the steam of an infusion of camomile flowers through the affected nostril. This, with a continued use of the injection and snuff, speedily produced the wished-for effect. The retention of tears in the sac was daily less; and in a short time the Epiphora ceased, and the eye became well.

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**I**T is well known by surgeons, that a free communication through the lachrymal canal, by which the tears may pass from the eye to the nose, is essentially necessary to the enjoyment of a perfect sight. Every degree of obstruction in this canal has a tendency to impair and weaken vision. When it occasions only a watering of the eye, and a consequent necessity of wiping away the effused tears, the disorder is described by authors under the denomination of Epiphora; but when a fluid resembling pus is accumulated in the lachrymal sac, which

fluid regurgitates through the puncta lachrymalia, when the sac is compressed, or when it is too full to contain more, it is more usually denominated a *Fistula Lachrymalis*. In consequence of an accumulation of this purulent fluid in the cavity of the sac, an inflammation not unfrequently takes place in the integuments which cover it; and this inflammation usually terminates in a suppuration, which varies much in its extent in different instances, according to the length of time the suppurative process has been suffered to proceed, before the matter is discharged. Sometimes it is so large as to occupy the whole of the eye-lids, and at others so small as only to affect the sac itself; and in both it is highly improbable that a cure of the disorder should be accomplished, without the use of means, not only to open the obstruction in the nasal duct, but to hinder a return of the obstruction afterwards.\*

\* A few instances have come under my notice, in which, after an Epiphora had continued many years, an extensive suppuration has taken place in the lachrymal

Prior to the year 1781, the authors whose publications on the *Fistula Lachrymalis* principally attracted the notice of the faculty in this country, and by whose directions their practice for many years was chiefly regulated, were Mr. Pott and Mr. Warner; of whom the former published a treatise professedly on this subject in the year 1758; and the latter introduced a tolerably full account of it in his "Description of the Human Eye, and the Disorders to which it is subject;" which work first appeared in the year 1773.

In order more clearly to shew the difference between the treatment proposed by these gentlemen, and that which I mean to recommend, I beg leave to introduce the following brief abstract of the observations they published on the subject now before us.

sac, and the integuments which cover it; and when the matter which was accumulated has been discharged, the tumefaction has subsided, the wound has healed, and the tears have resumed their natural course. A termination of the disorder, however, in this easy way, must not be considered an usual occurrence.



When the lachrymal sac and the integuments which cover it are inflamed and distended, Mr. Pott recommends to make an opening into the cavity of the cyst from the upper to the lower extent of the tumor; and afterwards to dilate the wound either with lint, or prepared sponge, in order to give an opportunity of ascertaining the state of the sac and duct. If, after a free discharge has been made for some days, and the inflammation occasioned by the first operation is gone off, the sac does not contract, and the lachrymal fluid resume its wonted course, Mr. Pott recommends to dilate the passage from the sac to the nose, by some means which will gradually distend it, without destroying its texture; in a way similar to that in which the dilatation of the urethra is effected, in the case of strictures, by passing either a probe, a piece of catgut, or a bougie, gently into it, as far as it will easily go, and repeating the operation occasionally until it has got quite through, and the passage is free. And if the natural passage from the lachrymal sac to the nose be so

diseased as to be quite closed up, Mr. P. directs to attempt the formation of an artificial passage, by making a breach in the thin part of the os unguis with a curved trocar of a suitable size. Mr. P. adds, "as soon as the perforation is made, a tent of lint should be introduced of such a size as to fill the aperture, and so long as to pass through it into the cavity of the nose. This should be permitted to remain in, two, three, or four days, till the suppuration of the parts renders its extraction easy; and, after that, a fresh one should be passed every day, until the clean granulating appearance of the sore makes it probable that the edges of the divided membrane are in the same state; the business now is to prevent the incarnation from closing the orifice, for which purpose the end of the tent may be moistened with spir. vitriol. ten.: or, a piece of lunar caustic, so included in a quill as to leave little more than the extremity naked, may at each dressing, or every other, or every third day, be introduced, by which the granulation will be repressed, and the open-

ing maintained; and when this has been done for some little time, a piece of bougie of a proper size, or a leaden canula, may be introduced instead of the tent; and leaving off all other dressings, the sore may be suffered to contract, as much as the bougie will permit, which should be of such length, that one extremity of it may lie level with the skin in the corner of the eye, and the other be within the nose.

“ The longer time the patient can be prevailed upon to wear the bougie, the more likely will be the continuance of the opening; and when it is withdrawn, the external orifice should be covered only by a superficial pledget, or plaster, and suffered to heal under moderate pressure.” \*

Mr. Pott concludes his observations in the following cautious manner: “ I must again repeat what I have said before, that there is no method of treating this disorder which is infallible, and none that will absolutely and in all cases prevent a return, especially in

\* Pott on the *Fistula Lachrymalis*, p. 68.

scrophulous habits : yet when a just distinction is made between those cases which are in their own nature incapable of cure, and those which by being improperly treated are not cured, I am inclined to believe that the number of the former will be found much smaller than it is generally imagined to be.”\*

Mr. Warner's observations on the *Fistula Lachrymalis* are much shorter than those made by Mr. Pott. He says, “This malady is seldom or ever curable by any other means than by operation; and the mode of operating must be different under different circumstances. If the lachrymal sac and its integuments be distended with only a small degree of inflammation, and thinness of the skin, a single incision made with a small sharp round pointed knife, and carried from the upper to the lower extent of the tumor, quite down into the cavity of the cyst, will sometimes be found sufficient for the purposes of applying proper dressings to the bottom of the diseased sac. But

\* Pott on the *Fistula Lachrymalis*, p. 70.

where the skin is much lifted up, and is grown thin and discoloured, from a large quantity of matter that has long been deposited and confined in the sac; or where the integuments have burst and are become callous, and the natural colour of them is altered to a mixture of paleness and lividness, it will be found expedient, in the first instance, to remove an oval piece of the integuments and sac, by making the incisions equally long with the distended skin, and of such a breadth, as will admit of a removal of the greatest part of the diseased integuments and sac: and in the second instance, the whole of the callous integuments, together with the upper part of the lachrymal sac, must be cut away at the time of operating, to afford us all the advantages of the proper treatment of an hollow ill-conditioned sore." \*

It is somewhat remarkable that Mr. Warner does not say one word in any part of

\* Warner's Description of the Human Eye, &c. 2d Edit. p. 18.

his book on the propriety of attempting to open the obstruction in the nasal duct; of the practicability of which it may from hence be presumed he was either uninformed or incredulous; and he recommends to perforate the os unguis, in all those cases where the disorder cannot be cured by the operations that have been just mentioned. He says, "By some it is advised that the process of perforating the os unguis should not be put in execution when this bone does not appear to be carious, the true characteristic of which is its being divested of its periostæum. But I must dissent from this opinion, since I have several times learnt from experience, that there is no curing a disease of this kind without destroying the os unguis, at least in part, even when that bone is not denuded and carious."\*

The perforation through the os unguis, Mr. Warner says he has often made with the edge of his incision knife; and if a trocar be thought necessary for this purpose, he

\* Warner on the Human Eye, p. 20.

advises that it be not much curved, lest its point be brought so much forwards and outwards, as to strike the nasal process of the superior maxillary bone. Mr. Warner adds that, after the perforation is made, it is his custom to introduce a small long sponge tent through the wound into the nostril, and to continue the use of it ten or twelve days, or longer, as he sees necessary. He makes use of a thin soft injection once or twice in the day, whenever he dresses the wound, in order to keep the parts clean and open quite into the nostril; and when, from the free passage of a probe or bougie, the opening appears to be sufficiently confirmed, he employs soft tents of lint for a week or ten days longer, applying them carefully to the bottom of the wound, and touching the sprouting and loose flesh occasionally with the lunar caustic. This he continues to do till he is satisfied of there being no more discharge from the wound than there ought to be from any other wound of the same size; after which he only covers it with a superficial dressing, and

suffers it to heal. Mr. Warner adds, that "after the wound is healed, the tears in some will not be any longer troublesome by their falling upon the cheek, whilst in others, they shall continue to be so in a small degree."

The above directions on the treatment of the *Fistula Lachrymalis*, as given by Mr. Pott and Mr. Warner, are those which, I believe, were principally regarded by the surgeons of this country for many years prior to the year 1781.

About this time, Mr. Wathen, having met with repeated disappointments in his attempts to cure the disorder, by pursuing the modes which were recommended by these gentlemen, determined to try the effects of introducing a metallic tube or canula into the nasal duct, with a view not only to form a communication between the eye and the nose, but, by suffering the wound to heal over the instrument, to hinder the obstruction from returning afterwards. This idea of Mr. Wathen differed from that of Heister, (as mentioned in his *System of Surgery*,



part ii. chapter 54,) principally in the position of the instrument; Heister proposing to insert it into a perforation of the os unguis, whereas Mr. Wathen conceived that it might be made more useful if placed in the natural nasal duct. He accordingly made the experiment in the way above-mentioned, and the success which attended it was so speedy, and appeared to be so complete, that both he and I, who for some years before and after this period were connected together in practice, repeated the operation in a great variety of instances, and almost universally accomplished by means of it a perfect and speedy removal of every unpleasant symptom. The tears resumed their natural course, the wounds healed, and the sight became both clear and strong. These flattering prospects, however, did not continue a great length of time; difficulties were soon experienced which gave both Mr. Wathen and myself much uneasiness as well as trouble. The tubes not unfrequently changed their position in the duct: sometimes they rose too high; at other times

they sunk too low ; and in consequence of these accidents the tears became again obstructed, and all the old symptoms returned. In some instances the disappointment was experienced within a short period after the tubes were introduced ; in others the patients continued well several weeks, and sometimes several months, before any alarm arose. A return of the disorder, however, occurred so frequently, that for several years prior to the termination of our partnership, which took place in the year 1790, neither of us placed any considerable degree of dependance on this mode of treating the disorder.

In the beginning of the year 1785, Mr. Bell, of Edinburgh, published the third volume of his *System of Surgery*, and in it introduced his remarks on diseases of the eyes. His observations on the *Fistula Lachrymalis* do not differ in any material points from those which were made by Mr. Pott. Towards the close of his remarks, Mr. Bell briefly mentions the proposition that had been made by former authors, of insert-

ing a metallic tube or canula either into the natural nasal duct, or into a perforation made through the os unguis, for the purpose of preventing a return of the disorder, and insuring the cure; but when this volume was published, he does not seem to have had any great experience of their efficacy in either of these ways of employing them.

In the year 1787, Mr. Bell published a fourth volume of his System; and in it unexpectedly gave an additional chapter on the diseases of the eyes. His chief motive for doing this, appears to have been to introduce an account of some supposed improvements in their treatment, which had been made by Monsieur Jean François Pellier, a French oculist, with whom he became acquainted after his third volume had been published. Among a variety of observations relative to these diseases, he added several on the *Fistula Lachrymalis*, and introduced them with the following mortifying acknowledgement: "It seldom happens that any permanent advantage is obtained from the remedies applied in this disorder, and even

they who are much accustomed to the management of it often fail entirely." Mr. Bell then states that one of the chief causes of the failure arose from the passage becoming again impervious after it had been opened; and he adds, "that it would be the idea perhaps of most practitioners to leave a tube in the opening, were it not liable to one very material objection, namely, the uncertainty of its continuing fixed in its situation; for hitherto we have not been possessed of any certain method of preventing the canula either from rising and forcing its way out at the corner of the eye, or from passing down, and coming out at the nose."\* He then adverts to various forms of tubes which he had delineated in his former volume, and adds, "that the invention of M. Pellier appears to be much superior to any of them." In one instance, Mr. Bell says, he knew it to have answered completely, though eighteen months had elapsed when he published the second edition of this

\* Bell's System of Surgery, vol. iv. p. 55.

volume, from whence I extract the present remark.

The peculiarity in the form of M. Pellier's tubes consists in their having two projecting edges; one at the top forming a kind of brim, and another nearly midway between this and the lower end of the instrument. By means of these, when it is properly fixed in the lachrymal passage, it is kept firm; the granulations which shoot out from the contiguous parts surrounding that portion of the tube which lays between the two projecting edges, and preventing it from passing either upwards or downwards.

In the year 1792, Mr. Wathen published a second edition of his tract on this disorder; and in it, as in the former edition of this work, it was his chief object to recommend for its cure, the insertion of a metallic tube in the nasal duct of the lachrymal canal. The shape of the instrument, however, was now considerably varied from that which it had when the first edition appeared; and Mr. Wathen seems to have taken much pains to adjust the tube to the size of the

canal, by making an accurate measurement of their different parts. In the introduction to the work he observes, that having accomplished his views in this respect by a simple apparatus, he can with confidence affirm that almost every degree of the *Fistula Lachrymalis* is capable of being perfectly cured by means more simple, less painful, more speedy, and less deforming, than any hitherto employed for this purpose."

It would afford me the sincerest pleasure, if the experience which I have had of the use of tubes, when employed for the cure of the *Fistula Lachrymalis*, would enable me to confirm the strong recommendation of them which has just been recited. After, however, an almost unremitting attention to the effects they produce, during a period of no less than twelve years, that is, from the year 1781 to the year 1793, and after having endeavoured to improve them by adopting the alterations that have been proposed, with respect to their shape and the mode of introducing them, by Mr. Wathen and Monsieur Pellier, I am obliged to say, that

I have experienced so many disappointments in my own practice, and have observed so many more in that of others, that for many years I have wholly declined to employ them. Mr. Wathen and M. Pellier appear to have been of opinion, that when the cure was not completed under the use of them, the failure was chiefly owing to their improper or unsteady position in the nasal duct; and to this cause I do not doubt many of the disappointments they experienced may, with great justice, be attributed; but I have met with repeated instances to convince me, that the failure has often also been occasioned by a cause which these gentlemen do not seem to have noticed; I mean, by the lodgement of inspissated mucus in the cavity of the tubes; which mucus, in some of those cases where I have been obliged to withdraw them, has become so hard as to be impenetrable without the exertion of very considerable force.

Mr. Wathen says the tube may be withdrawn with ease, if it do not answer the intended purpose. Many of my friends,

however, as well as myself, have experienced much trouble,—have given the patient great pain,—and in some instances have been obliged to repeat our efforts several times,—before we could disengage the instrument from the firm hold which it had taken in the lachrymal canal.

The operation which I have adopted in place of that of inserting a tube in the nasal duct, is, in general, so easy to be performed, has so speedily removed every troublesome symptom, and in a great variety of instances has so effectually accomplished a cure of the disorder, that I am induced to hope a description of it may not be unacceptable to my brethren in the profession.

It is an inquiry, however, of great importance, and it ought to be well considered, before this, or indeed before any chirurgical operation be determined upon, whether the inconveniences arising from the disorder are sufficiently great to render the operation necessary. And in aid of this previous inquiry, it should also be duly considered, what degree both of pain and of hazard are



likely to be incurred by the operation; and how far experience justifies the performance of it, by affording a probability of its answering the intended purpose of a cure.

When the obstruction to the passage of the tears has occasioned an inflammation and suppuration in the integuments which cover the lachrymal sac, and these have returned repeatedly, at short intervals, leaving the eye at all times weak and watery, it cannot be doubted that means should be employed to remove the obstruction, although there may be some degree of uncertainty whether they are sufficient fully to accomplish the intended object.

When again an ulcer is formed over the lachrymal sac, through which the tears, mixed with either pus, or mucus, are continually issuing, and this ulcer is connected with sinusses which run in different directions, there cannot be any doubt as to the propriety of proposing an operation, though it should afford only a probable chance of effecting a cure.

When, however, the only inconvenience

which the patient sustains is a watering of the eye, and a necessity, consequent upon this, of frequently wiping away the tears which run over the cheek, it was the advice both of Mr. Pott and Mr. Warner to submit to the disorder, rather than to hazard a painful operation, in the uncertain hope of having it removed.

But it should be remembered that this advice was given upon a presumption that the operation will necessarily occasion much pain and trouble, and will be attended with great uncertainty as to its successful issue; and under these circumstances, it is undoubtedly both a wise and a prudent admonition: but if the pain occasioned by the operation I am about to describe be, as I trust I shall be able to prove, both slight and of short duration; if there be not the least ground to apprehend any injurious consequences from it; and if, on the contrary, there be good reason to believe that the watering of the eye, and all the other troublesome symptoms, will speedily be removed by it,—in such a case, I think, we

are justified in recommending it, though the inconveniences produced by the disorder be not so great as would warrant us in having recourse to that which has been proposed by former authors.

No one, indeed, can doubt, that it is the duty of a surgeon, in all instances, to endeavour to remove disorders by the least painful means that can be devised: and, actuated by this sentiment, whenever a patient applies to me for relief, on account of an obstruction in the lachrymal passage, I always attempt to clear the canal from any inspissated mucus that may be lodged in it, by injecting some warm water through the inferior punctum lachrymale; joining with it, when necessary, a trial of the other remedies that have been proposed in the two papers on the Epiphora, published in the preceding part of this volume. But if after the use of these for about a week or ten days, there be not some perceptible advance towards a cure, or, if, from the long continuance of the obstruction, there be reason to fear that it is too firmly fixed to yield to this easy mode of treatment,

I do not hesitate to propose the operation which is now to be described. The only persons with respect to whom I entertain any doubts as to the propriety of this advice, are infants. These, as well as persons of a more advanced age, are sometimes afflicted with an obstruction in the lachrymal canal; and in such subjects I always think it advisable to postpone the operation, unless the symptoms be particularly urgent, until they are eight or nine years old.

When the operation is determined upon, the following is the mode in which I would recommend it to be performed:—If the disease has not occasioned an aperture in the lachrymal sac, or if this aperture be not situated in a right line with the longitudinal direction of the nasal duct, a puncture should be made into the sac, at a small distance from the internal juncture of the palpebræ, and nearly in a line drawn horizontally from this juncture towards the nose, with a spear-pointed lancet, of a size similar to that which is represented, Fig. 1, in the second plate.

The blunt end of a silver probe, of a size rather smaller than the probes that are commonly used by surgeons, should then be introduced through the wound, and gently, but steadily, be pushed on in the direction of the nasal duct, with a force sufficient to overcome the obstruction in this canal, and until there is reason to believe that it has freely entered into the cavity of the nose. The position of the probe, when thus introduced, will be nearly perpendicular; its side will touch the upper edge of the orbit; and the space between its bulbous end in the nose and the wound in the skin will usually be found, in a full-grown person, to be about an inch and a quarter, or an inch and three-eighths. The probe is then to be withdrawn, and a silver style of a size nearly similar to that of the probe, but rather smaller, about an inch and three-eighths in length with a flat head like that of a nail, but placed obliquely, that it may sit close on the skin, (see Fig. 2, in the second plate,) is to be introduced through the duct, in place

of the probe, and to be left constantly in it.\* For the first day or two after the style has been introduced, it is sometimes advisable to wash the eye with a weak saturnine lotion, in order to obviate any tendency to inflammation which may have been excited by the operation; but this in general is so slight, that I have rarely had occasion to use any application to remove it. The style should be withdrawn once in the day for about a week, and afterwards every second or third day. Some warm water should each time be injected through the duct into the nose, and the instrument be afterwards

\* It may be proper to introduce, at first, a style which has a head somewhat larger than that which is represented in the annexed plate, in order to hinder it from being wholly buried, by an unguarded pressure, beneath the external integuments; which accident I have known to happen in one or two instances, and to occasion both pain to the patient, and trouble to the surgeon, before the instrument could be retracted. The aperture in the skin, however, usually contracts so much in a short time, that it only leaves room for the style to pass through it; and when this takes place, an instrument with a smaller head may be employed, in order to make it less conspicuous to observers.

replaced in the same manner as before. I formerly used to cover the head of the style with a piece of diachylon plaster spread on black silk; but have of late obviated the necessity for applying any plaster by blackening the head of the style with sealing-wax.\*

The effect produced by the style, when introduced in the way above-mentioned, at first gave me much surprise. It was employed with a view similar to that with which Mr. Pott recommends the introduction of a bougie; viz. to open and dilate the nasal duct, and thus to establish a passage, through which the tears might afterwards be conveyed from the eye to the nose. I expected, however, that whilst the style continued in the duct, the obstruction would remain; and of

\* To black the head of a style, fix its small end in a cork, for the purpose of holding it; then put its other end over a lighted candle until it be quite hot, and press it immediately against a piece of the best black sealing wax, part of which will adhere to it. Let it then again be held over the candle for about a minute, when the wax will become perfectly smooth and polished.

course that the watering of the eye, and the weakness of the sight, would prove as troublesome as they had been before the instrument was introduced. I did not imagine that any essential benefit could result from the operation until the style was removed, and the passage thereby opened. It was an agreeable disappointment to me to find that the amendment was much more expeditious. The watering of the eye almost wholly ceased as soon as the style was introduced; and in proportion as the patient amended in this respect, his sight also became more strong and useful. The style, therefore, seems to act in a twofold capacity: first, it dilates the obstructed passage; and then, by an attraction, somewhat similar to that of a capillary tube, it guides the tears through the duct into the nose.

The wound that I usually make into the sac, if the suppurative process has not formed a suitable aperture in this part, is no larger than is just sufficient to admit the end of the probe or style; and this, in general, in a little time, becomes a fistulous orifice, through



which the style is passed without occasioning the smallest degree of pain. The accumulation of matter in the lachrymal sac, which, previous to the operation, is often copious, usually abates soon after the operation has been performed ; and, in about a week or ten days, the treatment of the case becomes so easy, that the patient himself or some friend or servant who is constantly with him, is fully competent to do the whole that is necessary. It consists solely in withdrawing the style two or three times in the week, occasionally injecting some warm water, and then replacing the instrument in the same way in which it was done before.

It is not easy to ascertain the exact length of time that the style should be continued in the duct. Some have worn it many years, and, not finding any inconvenience from the instrument, are still unwilling to part from it. Others, on the contrary, have disused it at the end of about a month or six weeks, and have not had the smallest return of the obstruction afterwards.

The troublesome ulcerations, which are

sometimes formed over the lachrymal sac, heal, in general, as soon as an opening is established through which the tears may pass into the nose. But in two instances which lately came under my care, in which the patients had occasionally been subject to violent cutaneous eruptions, these wounds did not heal so soon as I expected; and a considerable quantity of purulent matter was discharged through the aperture that had been made to admit the style, several days after the operation was performed. Both these cases were evidently relieved by administering internally a weak solution of the hydrargyrus muriatus, together with a light preparation of the peruvian bark; and by pursuing the use of these medicines, the wounds in a short time closed; the aperture, which had been made with the lancet contracted into a fistulous orifice, just large enough to admit the end of the style, and the purulent discharge wholly ceased.

The position both of the probe and style is very nearly the same, whether they be passed through the natural nasal duct, or

through a perforation in the thin part of the os unguis; and I have reason to believe that it does not essentially signify in which of these ways the operation is performed. It may be proper, however, to point out a few circumstances in which the two operations appear to differ. One is, that in consequence of the nasal duct being lined with a smooth membrane, the instrument usually passes through it with facility; and its passage is unaccompanied with that sensation of a forcible breach, which is perceived by the operator when it makes its way for the first time through the substance of the os unguis.—Another is, that when the instrument has passed through the nasal duct, it has nearly a perpendicular position with respect to the usual posture of the body; whereas, when it has passed through the os unguis, it has an oblique direction downward and inward.—A third difference is, that in the former instance, the instrument is more firmly fixed than it is in the latter, in which it often has an unsteady motion when touched with the finger. By an attention

to these hints, I think it may be discovered with tolerable certainty in which of the two ways the instrument has passed; and, I believe, I may venture to add, that whether the style be introduced in the former or latter of these directions, it is equally able to conduct the tears into the nose, and to accomplish a cure of the disorder.

After all, however, I do not wish to recommend in unqualified terms the operation that has now been described. There are none in surgery which are not subject to difficulties; and I should be sorry, by omitting to mention any with which I have become acquainted, to mislead those who are inclined to pay attention to my advice. I beg leave to observe, therefore, that in a few instances I have passed, first a probe, and afterwards a style, an inch and three-eighths in length, through a passage in the direction of the lachrymal duct, and, as it appeared to me, into the cavity of the nose, yet neither the accumulation of mucus in the sac, the regurgitation of tears through the puncta lachrymalia, nor the weakness of sight

produced by these, have been in any degree relieved by it. I have increased the length of the style to an inch and three-quarters; but still the obstruction in the lachrymal passage has continued, and the attempt to inject warm water through the new aperture into the nose has also failed. In such cases it seems evident, notwithstanding the position of the probe and style may at first have encouraged a different opinion, that neither of these instruments did really pass into the cavity of the nose. The cases are very few in which this accident has occurred; and it is remarkable that each of them was unaccompanied, prior to the operation, either with an inflammation or tumefaction of the lachrymal sac, the operation having been undertaken solely on account of the perpetual trouble which the watering of the eye occasioned. From hence I have been led to suspect, that, notwithstanding the aperture made by the lancet appeared to enter the lachrymal sac, and the probe and the style to pass through the duct into the nose, I was mistaken in my opinion in these respects;

instead of which the probe was only forced between the groove of the os unguis and the thickened membrane which lined it, without entering at all into the proper lachrymal canal; and in consequence of this disappointment, it unavoidably happened that the water injected through the wound was unable to pass forwards into the nose, and wholly regurgitated either through the wound, or through the puncta lachrymalia over the eye. This opinion seems strengthened by the advantage which, in some such cases, has afterwards been derived from a perforation carried through the thin part of the os unguis; after which the injected liquor has passed immediately into the fauces, and, on introducing a style through the aperture, the watering of the eye has immediately ceased.

In those cases where the nasal duct is so completely obstructed that the blunt end of a probe cannot be made to pass through it, there does not appear to me to be any way of obtaining a passage for the tears from the eye to the nose, so easy, or so effectual, as

that of making a perforation through the thin part of the os unguis; adopting some method afterwards by which the communication between these parts may be preserved from closing. I shall not dwell upon the mode in which this was advised by ancient authors to be performed, by the use of the actual cautery. It is now well known, that every purpose which the cautery is able to accomplish, may be attained by means which are much less alarming, as well as less painful. I have often perforated this part of the bone with the sharp end of a probe. Mr. Pott gave the preference to a curved trocar; and by others the bone has been pierced with the sharp end of a common incision knife. In either of these ways the perforation may be made with equal safety by a person who is acquainted with the situation and structure of the nasal canal. Let it only be remembered, that the instrument should not be pushed transversely through, lest its point strike unnecessarily against the os spongiosum superius; nor should it be carried perpendicularly, lest it get into the channel

*the Fistula Lachrymalis.*

97

of the nasal duct, and be stopped by bearing against that part of the maxilla superior, which contributes to the formation of this channel. On the contrary, when its point has reached the beginning of the nasal duct, it should be turned obliquely downwards and inwards, and be gently pushed on in this direction; by which means it will pass through the os unguis, in its thinnest part, (see Plate 1,) making a slight crackling noise as it pierces the bone; and will enter the nostril in the open space that lies between the os spongiosum superius and the os spongiosum inferius. When this part of the operation is accomplished, the perforating instrument should be withdrawn; and a nail-headed style, about an inch long, be introduced through the aperture, in the same way in which it is introduced through the nasal duct in those cases where the obstruction is not so great as to prevent its passing in this direction; and the style may remain here with as much safety as in the last-mentioned instance, for as long a time as its continuance may be thought necessary in



order to establish the freedom of the communication. It may be proper to observe, that when the style is carried through a perforation in the os unguis, the length of an inch is sufficient to allow its end to reach the open space that lies between the os spongiosum superius and the os spongiosum inferius; and, if it were longer, it would be liable to be entangled either in the septum nasi, or in the os spongiosum inferius. But when it is carried through the natural nasal duct, its length must not be less in an adult person than an inch and a quarter, or an inch and three-eighths, in order to allow it to pass completely through the duct into the nose.

Although the perforation through the thin part of the os unguis is made, in general, as has been just observed, with great facility, yet in a few instances I have experienced, in making it, a great obstruction to the passage of the instrument, which obstruction appears to me to have been occasioned by a peculiar thickness in this part of the bone.

Mr. Wathen, in the second edition of his tract on the *Fistula Lachrymalis*, page 47,

mentions, that an exostosis of the maxillary bone may not only close up, but destroy, the nasal duct; and, as a remedy for the inconvenience arising from this disease, he proposes, page 50, "to 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; and to repeat this process by a larger instrument of the same kind, until the perforation is as large, or rather larger, than the original and obliterated passage." After this, if there be any doubts with respect to its sufficiency in conveying the tears for the future into the nose, he recommends to insert either a tube or a tent,\* as shall be judged most expedient; by which method, he is of opinion, that "this effect will most assur-

\* The tent recommended by Mr. Wathen is hollow as well as the tube; and it appears to me to differ from the last-mentioned instrument in no other respect than that of its having a longer head; which, if I understand Mr. Wathen rightly, is intended chiefly to keep the lachrymal sac from contracting into too small a cavity.

edly be obtained and continued through life."

I beg leave, however, to observe, that a *Fistula Lachrymalis* produced by an exostosis of the *os maxillare* does not seem to differ in any essential points from those other cases of this disorder, in which the nasal duct is so completely filled up, that a probe cannot be made to pass through it; and, in all of these, it appears to me much more easy to perforate the thin part of the *os unguis*, than to attempt to force a way into the nose, by drilling through the thick portion of bone in which the nasal duct was formerly situated. Mr. Wathen, in several parts of his book, discovers a great dislike to the former of these operations. I am inclined, however, to believe, that, when the obstruction has been long continued, it is not only more easy to perforate the *os unguis* than to renew the old passage, but that it is in every respect, as likely to effect a radical cure of the disorder. In those cases, also, in which a tube or tent has been supposed to be inserted into the nasal duct, I am much

disposed to doubt, whether the instrument has not sometimes been placed, inadvertently, in a perforation, that has been made by the probe through the os unguis. And with regard to the insertion of such tube or tent to perpetuate the passage, after it has been made with a drill, in the way recommended by Mr. Wathen, the same objections lie against its use here, which may be made against its insertion in the natural nasal duct; and these appear to me so considerable, that, though I was formerly a friend to the operation, they have determined me, for several years past, wholly to relinquish it.

It may, perhaps, be thought, that the operation which I have taken the liberty to recommend in the preceding pages, has a close resemblance to that which was proposed by the late Mr. Pott. It will be found to differ from it, however, in many essential respects.—Mr. Pott, for instance, as well as Mr. Warner and Mr. Bell, advises the operator to make a large opening into the lachrymal sac. On the contrary, I have proposed to make a small one.—These gen-

tlemen, again, recommend different kinds of dressings after the operation; some of which are difficult to be applied, and painful in their action. The dressing, which I have proposed, is confined simply and solely to a silver nail-headed style.—Their operation is performed, and their dressings employed, in order to form a channel, through which the tears may afterwards pass into the nose; and until this passage be formed, and the necessity for further dressings cease, they do not encourage any hope that the disorder will be removed. Experience, however, teaches me, on the contrary, that as soon as the style is introduced, the disorder immediately ceases; and the tears pass at once into the nose, either through the natural nasal duct, or through the perforation that is made by the operator in the thin part of the os unguis.

I now proceed to relate a few cases for the purpose of exemplifying the above remarks. They are selected from a considerable number, in which a similar mode of treatment has been attended with an equal degree of success. In a tract like the present

I do not feel myself at liberty to mention the names of the persons whose cases are recorded; but, being fully sensible of the ease with which histories of this kind may either be manufactured, or altered, in order to support a favourite system, I have felt it incumbent upon me, for the satisfaction of the reader, to mention the names of the medical gentlemen who attended the cases with me; and through them a reference may at any time be made to the patients themselves. I am not conscious of any deviation from the strict line of truth in the details that are given of them.

**CASES.**

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**CASE I.**

*An obstruction in the lachrymal canal, of several years continuance, perfectly and speedily cured by the introduction of a nail-head style through the nasal duct.*

A young lady of Oxford, who for upwards of three years had been subject to an almost continual watering of one of her eyes, accompanied at different times with a troublesome inflammation of the tunica conjunctiva, was introduced to me on the 8th of July, 1796, by Mr. Curtis, surgeon, at Islington. Prior to my being consulted, the tears had frequently been mixed with a small portion of inspissated mucus, which at those times made the eye feel stiff and uneasy; and the eye-lids were usually gummed together when

she awoke in the morning. On examining the eye, an excoriation was perceived on the edges both of the upper and lower lids, and on gently pressing my finger on the lachrymal sac, which appeared fuller than in its natural state, a few small particles of inspissated mucus were discharged through the puncta lachrymalia, and spread over the eye. I endeavoured to inject some warm water through the inferior punctum into the nose; but the obstruction in the nasal duct was so great that none would pass, the whole of the liquor returning immediately through the superior punctum. A little of the unguentum hydrargyri nitrati was applied with a camel's-hair pencil to the excoriated edges of the eye-lids, and a weak vitriolic collyrium was directed to be used three or four times in the course of the day. The injection of warm water, together with the application of the ointment, were repeated several days in succession. On the eleventh, the watering of the eye was less troublesome. On the fifteenth, a part of the injected liquor evidently passed both into the nose



and throat; as it did also on the three following days; the flow of tears over the cheek being considerably diminished. On the nineteenth, the patient caught cold at the Opera; in consequence of which, the Epiphora immediately returned, and was accompanied with a small degree of inflammation on the ball of the eye. The next day no part of the injected liquor would pass through the duct. I scarified the schniderian membrane, on the inside of the nose, with the point of a lancet, and took away two or three tea-spoonfuls of blood; an opening medicine was administered; and a saturnine lotion applied to the eyes. On the twenty-first, the inflammation of the eye was removed; but still none of the injected liquor would go down. I introduced the end of a small gold probe through the superior punctum lachrymale, and gently pushed it on, in the direction of the duct, but it would not pass. On the twenty-second I repeated the attempt, and it now went freely into the nose; after which some warm water, injected through the inferior punc-

tum, also passed. The watering of the eye gave very little trouble for several days after this time ; but in about a week the obstruction to the tears returned, together with an inflammation on the ball of the eye, and a small tumefaction in the lachrymal sac. Both the patient and myself were much discouraged by this relapse ; and I now proposed to her to allow me to make a puncture into the sac, and to introduce a style, in the way that has been described in the preceding pages. Agreeably to this advice the operation was performed on the 7th of August ; and, with very little pain or difficulty, a probe was first introduced, and afterwards a nail-headed style, an inch and three-eighths in length, through the nasal duct into the nose. August 8th, the young lady had not experienced any pain, and the inflammation of the eye was abated. August 9th, I withdrew the style and injected some warm water through the wound. It passed freely into the nose ; after which the style was replaced with as much ease as it had been at first introduced. August 10th, the watering

of the eye was greatly diminished; and the eye, in every respect, much more easy than it had been for many months before the operation. The style was withdrawn and replaced every day for about a week, and afterwards every second or third day until the 30th of the same month, when the patient left London, being perfectly able to manage the operation: which she repeated every four or five days, in order to keep the style clean, and the passage clear.

On the 16th of August, 1797, she informed me by a letter, "that her eye had been effectually relieved by the introduction of the style; that she had then worn it without the smallest inconvenience above a year; and that she should certainly continue it until she had an opportunity of seeing me."

## CASE II.

*An Epiphora, produced by an old obstruction in the lachrymal canal, which, like the former, was speedily cured by the introduction of a nail-headed style through the nasal duct.*

The daughter of I. P., 13 years of age, was recommended to me August 14th, 1797, by Mr. Moore, apothecary, in Norfolk-street, Strand, on account of a constant watering of the right eye. It had been troublesome to her ten years, and began during the time she had the small-pox; which disorder had produced a violent inflammation in both her eyes. When I first saw her, the edges of the lids of both eyes, and particularly of the right, were considerably excoriated; and her sight was so extremely weak, that she had long been unable either to read, or to work with her needle. The right lachrymal sac was distended with a considerable quantity of thick mucus, which often returned through the puncta lachrymalia over the

eye; and not unfrequently she was obliged to discharge it by the pressure of her finger. I injected some warm water through the inferior punctum, but could not observe that any of it passed into the nose. The obstruction was so complete, and had continued so long, that it appeared to me in vain to attempt to clear the duct by a continuance of this mode of treatment. I, therefore, proposed to the mother of the girl, to permit me to puncture the sac with a spear-pointed lancet, as had been done in the preceding case, and to introduce a nail-headed style. The mother and daughter acceding to the proposal; the operation was performed the same day, and a style was introduced without any difficulty, through the duct into the nose. The head of the instrument being blacked with sealing-wax, no dressing was necessary over it; and the eye was no otherwise defended from the light than by the use of a common shade. August 15, the eye was not in the least inflamed, and the patient had not suffered any pain since the time of the operation. A little of the un-

gumentum hydrargyri nitrati rubri was applied with my finger to the excoriated edges of the eye-lids, and was wiped off immediately afterwards. August 16th, I withdrew the style, and injected some warm water through the aperture; the whole of which passed at once either into the nose or throat; after which the style was again introduced as before. This operation was repeated daily until August 23d, when the watering of the eye had wholly ceased, and the sight of the patient was become as strong as that of other persons. The style was continued in the duct until the 2d of October, being retracted only once or twice in the week, in order to inject some water through the passage. At this time it appeared to me that the lachrymal passage was sufficiently established to allow the instrument to be withdrawn entirely. This was accordingly now done, and the wound suffered to close; after which the Epiphora did not return, and the sight continued perfectly strong and useful.

## CASE III.

*An old obstruction in the lachrymal passage of both eyes speedily removed by the introduction of a style into each.*

The daughter of I. Millar, servant to Mr. Fell, corn-factor, on the Bankside, Southwark, about 12 years old, was brought to me on the 26th of July, 1797, on account of a considerable watering of her eyes, accompanied with a dilatation of both the lachrymal sacs, and the frequent regurgitation of a thick matter through the puncta lachrymalia over the eyes. The girl had had the small-pox very favourably when an infant; but afterwards the left eye was much inflamed, and a considerable opacity took place in the cornea; which, though diminished, was still visible. The watering of the eye did not come on till she was seven years old. It began, without any known cause, first in the right eye; and in six months afterwards, in the left also. The disorder was much increased whenever she caught cold, and

was often accompanied, as at the time when I first saw her, with an accumulation of thick matter in the lachrymal sacs. The eyes being occasionally inflamed, she had been advised by a gentleman in the city to drop some laudanum into them, but was not sensible of its having done her any good. In this instance it appeared to me to be in vain to try inferior modes of cure. I, therefore, immediately advised that a style should be introduced through the obstruction in each duct. On the 27th, I punctured the right sac, and without any difficulty introduced a style, an inch and an eighth in length. No inflammation followed the operation. It was withdrawn daily for about a week, and some warm water injected. At the end of this time the discharge of tears ceased to give trouble. On the 7th of August I punctured the left lachrymal sac, and introduced a style through this duct, with as much ease as it had before been carried through the right duct. On the 9th, there was not any matter retained in either of the lachrymal sacs; and the girl informed me



that neither the right nor left eye had watered more than four times in the preceding day. August 12th, there was a slight discharge from the aperture in the left sac, but none from that in the right. Her sight was now quite strong. She went to school; performed the usual school business with ease; and did not find the smallest inconvenience from the lodgement of the styles; the heads of which being small, and covered with black sealing-wax, were scarcely to be perceived. They were permitted to remain between two and three months; when the lachrymal passage appearing to be perfectly restored, they were withdrawn. The wounds closed immediately; and the girl has not had any trouble from the watering of her eyes since this time.

## CASE IV.

*Introduction of a nail-headed style, with immediate success, after the failure of a metallic tube.*

A daughter of Mr. G. in Great Mary-lebone-street, about eight years of age, had been afflicted with a watering of the right eye, ever since she was a year old, and it first took place after she had the small-pox. She had this disorder in a very slight manner; but, a pustule happening to form on the edge of the eyelid, it seems probable that the inflammation which it excited was continued to the membrane which lined the lachrymal canal. When she was three years old, an abscess formed over the lachrymal sac; in consequence of which she was taken to a surgeon at the west end of the town, who opened the tumor with a lancet, and proposed to the mother to insert a tube in the nasal duct. At this time the parents of the child would not consent to have the operation performed; and for two years the

abscess repeatedly broke and healed. When the child was five years old she was brought to me, during one of those seasons in which the abscess was full of matter. I was then of opinion, that the insertion of a hollow tube in the nasal duct was the most likely method of curing the disorder; and therefore I recommended this operation to the parents of the child, without knowing that the same advice had before been given by another surgeon. The parents now consented to have the operation performed. I therefore made a large opening into the sac, and introduced a tube with a tip, or projection, at the top, to hinder it from sinking too low, and two projections or shoulders, at a small distance from one another, to prevent it from rising too high. Within three days after the tube was inserted, the wound was healed, the tears passed freely into the nose, and the watering of the eye wholly ceased. She continued well about a year; but at the end of this time a thick mucus was frequently accumulated in the lachrymal sac, which she was unable to press downward through

the duct. She was therefore obliged, by pressure on the sac, to force it back through the puncta lachrymalia over the eye. The watering of the eye also returned in a small degree; though it was not nearly so troublesome as it had been before the tube was inserted. The eye continued in this state nearly two years; when the girl, who was nearly seven years old, received a violent blow on her face, which occasioned a great swelling of the nose; and, the next morning, the lower part of the tube, which seems to have been broken from the upper part at one of the shoulders above-mentioned, was discharged through the nostril. About a fortnight after this, an inflammation commenced over the lachrymal sac, which soon discovered a tendency to suppurate. She was now taken to Mr. Underwood, in Great Marlborough-street, who at first gave her an eye-water, but afterwards recommended a bread and milk poultice to promote the suppuration. This soon caused the abscess to break; and as the wound did not heal, Mr. U. accompanied her to me for further

advice. On examining the wound with a probe, I felt the top of the tube steadily fixed in the upper part of the duct; and it appeared highly desirable, in the first place, to extract it. A large aperture was therefore made with a lancet directly over it; and, after repeated attempts, I at length succeeded in securing it between the blades of a small forceps, and thus brought it away. A style, an inch and an eighth in length, with a broad nail-head was then introduced; after which the swelling of the integuments quickly subsided, the watering of the eye ceased, and the sight became as strong as that of the other eye. In about a week the wound was contracted to a fistulous orifice that was but just large enough to admit the introduction of the style. I therefore now made use of one that had but a small head; and within a fortnight took leave of the patient, having instructed her mother to withdraw the style once in a week; and to inject some warm water through the duct, in order to hinder any inspissated mucus from collecting round the instrument.

## CASE V.

*Introduction of a nail-headed style, with immediate success, after the extraction of a metallic tube which was become obstructed and injurious.*

Mrs. B. about 50 years of age, was attacked, in the year 1790, without any known cause, with an almost constant effusion of tears over the left cheek, which effusion was not unfrequently accompanied with a slight inflammation of this eye. After it had continued about six months, as the inconvenience it occasioned rather increased than lessened, she came to town and put herself under the care of Mr. Wathen and myself.\* At that time both of us had a high opinion of the efficacy of a metallic tube inserted in the nasal duct for the cure of this disorder. It was accordingly proposed; and on the 13th of December, 1790,

\* The partnership between Mr. Wathen and me did not terminate until March 1791.

the operation was performed. The adjustment of the tube to the duct in this instance, gave more trouble than we had usually experienced; but, after a few days, it fully answered the purpose of conveying the tears into the nose, and the watering of the eye ceased. The lady continued well after this time until the beginning of the year 1793; When in consequence of her experiencing a slight uneasiness in her eye, some warm water was injected through the inferior punctum lachrymale; but the obstruction in the tube was so considerable, that none of it appeared to pass into the nose or throat. Notwithstanding this obstruction, the watering of the eye at this time occasioned so little inconvenience, that it was not thought advisable to propose any particular remedy for it. The eye continued nearly in the same state about six months; but then the Epiphora became again troublesome, and it was frequently accompanied with a slight inflammation of the eye, very similar to that which the patient had experienced before the tube was inserted. In October, 1793,

*Fistula Lachrymalis.*

121

the uneasiness increased; the inflammation was more than ordinarily severe; and an abscess formed over the lachrymal sac. In consequence of this, she consulted Mr. Andrews, her family surgeon, at Rumford, who, being informed of the insertion of the tube, advised her to consult either Mr. Wathen or me, on the measures that were necessary to be now adopted. Mrs. B. accordingly came to town on the 30th of October, and called on me in New Bridge-street. The abscess at this time had burst, and a small aperture was formed directly over the entrance of the nasal duct. On introducing through the aperture the round end of a probe, I very readily felt the top of the tube, and endeavoured to carry the probe through it; but its cavity was so completely filled, that I found it impossible to accomplish my intention. The lady expressed a great desire to have the tube withdrawn; and as it appeared now to be incapable of answering the purpose for which it was introduced, I acceded to her wish, and enlarged the aperture, in order to give room for the introduction of a forceps



with which it might be secured. After making repeated attempts with this instrument, I, at length, succeeded in bringing it away; and on examining the tube its cavity was found to be filled with a black solid substance, which appeared to be chiefly formed of inspissated mucus. Some warm water was injected through the wound, and, being afraid to trust to the continuance of the communication without the insertion of a solid body through it, I introduced, in place of the tube, a part of a common probe, about an inch and a half long, which was bent at its superior extremity, in order to hinder it from passing too low in the duct. On the following day the inflammation of the eye was much abated, and the patient informed me that the discharge of tears over the cheek had been much less troublesome than on many of the preceding days. On the third day the watering of the eye had wholly ceased, and the sight was become quite strong. I now withdrew the probe; and again injected some warm water; after which the instrument was replaced as before.

When the probe was first introduced, it was my sole intention to employ it for a short time, in order to prevent the nasal duct from suddenly closing; which it was to be feared might have happened after the tube was extracted. I had not any expectation that the watering of the eye would wholly cease, so long as a solid body continued in the duct. Being agreeably disappointed in this respect, I determined to continue the style a longer time than was at first intended; and, instead of bending the upper end of the instrument, it was suggested by Mr. B. that if it had a head, like that of a nail, placed obliquely so as to sit close to the skin, it would be less likely to slip or be struck; and, if it were enamelled, so as to resemble the colour of the skin, it would be less observable. A style of this kind was accordingly substituted for the bent probe; and it has now been worn many years, being only withdrawn once or twice in a week to inject some warm water through the passage; and, during the whole of this time, the lady has not experienced the

smallest inconvenience from the watering of her eye, nor has she had the least inclination to omit wearing the instrument.

The case above related was the first that came under my notice, in which the efficacy of a solid style to guide the tears into the nose appeared to me sufficiently satisfactory to convey an idea that it might become a general remedy in the treatment of the *Fistula Lachrymalis*.\* But this case, considered alone, was not sufficient to justify a confident expectation of this kind; since the duct was dilated by the long continuance of the tube within it; and, the style being smaller than the cavity formed by the tube, it may readily be supposed, there might be room left for the tears to pass down by its side. Opportunities, however, soon offered to try the effects of a similar treatment in other instances of this disorder. An account of

\* I remember one instance, indeed, not wholly unlike to this, which occurred many years ago, during the time that Mr. Wathen and I were engaged in business together; but neither of us, at that time, paid sufficient attention to the case to make any practical use of it.

many of these is given in the present tract ; and in most of them the only aperture made in the obstructed duct was formed by an instrument no larger than the style itself. In these cases, no less than in that which has just been related, the watering of the eye almost immediately ceased, as soon as the style was properly introduced through the duct.

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CASE VI.

*Introduction of a nail-headed style through a metallic tube, inserted in the nasal duct ; which tube was become obstructed, and could not be extracted.*

A. G. 64 years of age, a workman in Mr. Seddon's warehouse, in Aldersgate-street, was first attacked with a watering of the left eye about six years before I saw him. For three years the only trouble it gave him arose from the necessity of often wiping away the effused tears ; but at the end of

this time an abscess formed over the lachrymal sac, which obliged him to ask advice from a surgeon. When the suppuration was complete, the abscess was opened by a gentleman in the city, who afterwards inserted a metallic tube in the nasal duct; in consequence of which, he became very quickly quite well, and for six months had not any trouble from the watering of the eye. At the end of this time, however, the obstruction returned; and, shortly afterwards an abscess again formed over the lachrymal sac, which was accompanied with a considerable inflammation of the tunica conjunctiva. The operation of introducing the tube into the nasal duct had given the patient so much pain, that he did not choose to repeat his application to the gentleman who performed it; but came, by the advice of a friend, to beg my assistance. The abscess had burst directly over the entrance of the duct. I, therefore, enlarged this aperture, and then endeavoured, with a small but strong pair of forceps, to extract the tube. After repeatedly introducing the instrument for this

purpose without success, I, at length, determined to try the effect of inserting a slender style, an inch and three-eighths in length, with a nail-head, through the tube; which operation was accomplished with ease; and the next day the inflammation of the eye was less, and the discharge of tears considerably diminished. The style was now withdrawn, and some warm water injected through the tube into the nose; after which it was replaced as before. In about a week his sight became as strong as it ever had been; and from that time to the period when I draw up the present statement of his case, which is upwards of two years, he has not had any return either of inflammation, pain, or watering of the eye. He takes out the style once every week, and injects some warm water through the tube; after which he immediately replaces the instrument, and has never experienced the smallest obstacle to its passing, or the least inconvenience either from the style or the tube, which last still continues fixed in the nasal duct.

## CASE VII.

*Case of an obstruction in the nasal duct, which had produced a troublesome ulceration in the integuments that cover the lachrymal sac.*

Mr. P. a merchant at Manchester, about 30 years of age, began first to experience uneasiness from the watering of one of his eyes in the year 1790; but as it gave him no other trouble than that of often wiping away the tears, it was not particularly attended to until November 1794; when, in consequence of his taking a violent cold, an inflammation took place over the lachrymal sac, which speedily advanced to a suppuration; and the abscess at length burst through the integuments a little below the entrance of the nasal duct. In a letter with which I was favoured by Dr. Taylor, of Manchester, he informed me "that the opening being too small, it was enlarged with a lancet, but care was taken to avoid wounding the sac; and, in three weeks or a

month after this enlargement, the sac of itself gave way, and the discharge then, for the first time, became watery and mixed." The disorder remained in this state several weeks. The tears continually issued through the wound, and were often blended with a thick mucus; the integuments over the sac were much thickened, and had a yellow appearance; and the eye was always uneasy. In this state he came to London, and put himself under my care. The aperture that was formed in the sac was too low to admit the passage of a probe through it into the nasal duct. Without paying any regard, therefore, to this wound, I made a puncture, with a spear-pointed lancet, directly over the entrance of the duct, and, after passing a probe through it, which was accomplished with very little difficulty, I immediately introduced a nail-headed style, and left it there. On the following day, the watering of the eye was much less than it had been for a long time prior to the operation, and there did not appear to be any increase of inflammation. On the third day I withdrew



the style, and injected some warm water, after which the style was replaced as before. Within a week from this time the old wound was completely healed, and the aperture which had been made with a lancet became a fistulous orifice, just large enough to admit the style to pass through it. The patient shortly afterwards returned to Manchester, with directions to withdraw the style every two or three days, in order to inject some warm water through the duct. It was worn, in the whole, about ten weeks; but towards the latter part of this time, it often slipped out imperceptibly; and as the effusion of tears did not give any trouble, the aperture was then suffered to close. Many years have elapsed since the cure, and there has not been the smallest tendency to a return of the disorder.

## CASE VIII.

*Cure of a watering of the eye, which was accompanied with a fixed tumor over the lachrymal sac.*

A young woman who had the care of the nursery in a merchant's family in Finsbury-square, applied to me on December 17, 1796, by the recommendation of Mr. O'Donnel, apothecary, in Great Marlborough-street, on account of a watering of the left eye which had been troublesome to her ever since she was a child, and was now accompanied with a fixed tumor over the lachrymal sac, and a constant uneasy heat in the eye and side of the nose, but without any apparent inflammation in these parts. The tumor began between two and three years ago, and within the last five months it was become so large as to be visible to every person who looked at her. It seemed to contain a fluid; but pressure did not produce any effect upon it, either in sending its contents into the nose, or in making them regurgitate

through the puncta lachrymalia. The effusion of tears, at the time she consulted me, was more than ordinarily troublesome, as was also the sense of heat in the ball of the eye. Being doubtful as to the nature of the swelling, I at first only advised her to foment the eye night and morning with an infusion of camomile flowers, and afterwards to rub it with a small portion of the common mercurial ointment. At the end of a week, I flattered myself the size of the tumor was somewhat reduced. She was directed to continue the same applications, and to wash the eye three times in the day with a weak vitriolic lotion. I did not see her after this time until February 7, when the tumor appeared to me to be as large as when I first saw it. Some warm water was now injected through the punctum inferius; but none of it passed into the nose. I also endeavoured to pass a probe from the superior punctum through the duct, but the obstruction was so great that it could not be accomplished. In this state of the disorder, I proposed to the patient to permit a puncture to be made

into the tumor, in order both to make me acquainted with the nature of its contents, and to show whether, by diminishing its size, the lachrymal passage might not be made pervious. Accordingly, on the 9th of February, the tumor was punctured with a spear-pointed lancet, and a gelatinous yellow fluid discharged. I afterwards endeavoured with the blunt end of a probe to find the entrance of the nasal duct; but could not discover it. On the 11th, there was not any inflammation, and only a small discharge of matter from the aperture that had been made. On the 13th, the quantity of matter discharged through the wound was considerable; and the patient experienced a great degree of pain. A bread and milk poultice was applied. On the 15th, an erisipelatous swelling came over the whole of the left side of the face, and much matter was still discharged through the wound. On the 20th, the discharge was diminished, and the inflammation much abated. The watering of the eye also was not quite so troublesome as it had been before. On the 27th there did

not appear to be any inflammation, but much matter came from the wound. The blunt end of a probe was again introduced through the aperture, and now, without the least difficulty, it was carried through the nasal duct into the nose; immediately after which I withdrew it, and with equal ease introduced a nail-headed style of the same size. March 1, there was scarcely any inflammation of the eye, or any discharge of tears. The lodgement of the style in the duct had not occasioned the smallest degree of pain or uneasiness. It was afterwards daily withdrawn, for a short time, in order to make room for the injection of some warm water. On the 4th, the watering of the eye had wholly ceased, and the sight was become quite strong. The wound in the sac was so much contracted, that it was but just large enough to admit the end of the style. After this time she did not experience the least trouble from her eye; and on the 25th of August called upon me to ask if the use of the style might not be omitted. As it had been worn above six months, it appeared to

me probable that the nasal duct would now continue pervious without using it. I therefore acceded to her proposal, and withdrew it entirely. The aperture closed almost immediately; she had not any return of the watering of her eye afterwards; and her sight has since continued perfectly strong and useful.

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#### CASE IX.

*Cure of an obstruction in the nasal canal, produced by a constitutional humor, and occasioning repeated suppurations in the lachrymal sac.*

Mr. A. 35 years of age, was attacked, about seven years ago, with a violent eruption in his face, neck, and shoulders, which spread in many parts into large sores, and was supposed to originate from a scrophulous habit. He took a considerable quantity of peruvian bark, and other medicines, and afterwards passed some months at the sea

side, without experiencing the least assistance from them. After this he was put upon a mercurial course; under which process, in a short time, the wounds began to heal, and by continuing to employ it, the eruptions entirely disappeared; but they left a watering of the left eye, which was so troublesome that it obliged him almost continually to keep the handkerchief applied, in order to wipe off the tears that fell over the cheek. He suffered no other inconvenience from it until February, 1797, when an inflammation and swelling suddenly took place over the lachrymal sac, accompanied with a violent pain in this part. The tumor speedily advanced to a suppuration; when it broke, and the patient became apparently well. Within a week, however, the inflammation and pain returned with their former violence; and in a short time the skin again broke, considerably below the entrance of the nasal duct. In this period of the disorder he put himself under my care, on the 11th of March, 1797, by the recommendation of his apothecary, Mr. Farley, in

Holborn. I advised him to foment the eye for a day or two, with a strong decoction of poppy-heads, and to continue the application of a bread and milk poultice on the tumor, in the same way he had done before. On the 13th the inflammation and effusion of tears were much abated; and the swelling of the sac subsided so much, that I was inclined to hope the lachrymal canal might again become pervious, without requiring the performance of any operation. But on the 18th, the eye became inflamed a third time, and another accumulation of matter took place in the lachrymal sac, which in a day or two was discharged in the same place as before. On the 21st, therefore, without paying any regard to the old aperture, I made a puncture into the sac with a spear-pointed lancet directly over the entrance of the duct; after which I introduced the blunt end of a probe, and found the obstruction in the duct so considerable, that it was impossible, without using a greater degree of force than appeared to me proper, to push the instrument through it into the nose. I,



therefore, withdrew the blunt end of a probe, and introduced that which was sharp; with which, without any difficulty, I perforated the thin part of the os unguis, which occasioned a few drops of blood to escape from the left nostril. I withdrew the probe, and introduced immediately a nail-headed style, which, being of a size somewhat smaller than that of the probe, passed with ease through the new aperture. On the 23d, the style was withdrawn, and some warm water injected. It passed freely into the nose; after which the style was replaced. This operation was repeated every day for a fortnight, at the end of which time the effusion of tears was inconsiderable; but the inflammation of the eye continued, and the edges of the wound, through which the style was introduced, were extremely sore, and appeared to spread. Different sorts of collyria were employed, but they did not effect any change. It now occurred to me, that the obstinacy of the disorder might be occasioned by a part of the same humour remaining in the habit, which had been found so difficult

to subdue when the obstruction in the lachrymal passage was first perceived. I therefore recommended a quarter of a grain of hydrargyrus muriatus, dissolved in half an ounce of spirit of nutmeg, and mixed with a basin of thin gruel, to be given every night at bedtime. Within three days after this plan was adopted, the inflammation of the eye began to abate; and within a fortnight it was wholly removed. The soreness of the wound, through which the style was introduced, was also gone; and this aperture was soon reduced to a size no larger than was sufficient to allow the instrument to pass through it. Many months have now elapsed since the cure was completed; and during this time the patient has not experienced the slightest inconvenience from the use of the style, which he withdraws only once in the week, and replaces with great facility.

## CASE X.

*I am favoured with the following case by Mr. Green, Surgeon at Peckham; who drew it up, in compliance with a request I made him for this purpose, in order to introduce it in the present work.*

“ Mrs. S. in the year 1793, was suddenly attacked with an apoplectic fit, whilst standing at the top of a flight of stairs; in consequence of which she fell down several of them, and by the fall one of her teeth was beat out, and the left side of her face much bruised. She soon recovered her recollection; but, for a considerable time afterwards, was deprived of the use of her limbs on that side. The sight of the left eye also became dim; her left nostril was peculiarly dry; and she had frequent troublesome itchings in the left eye-lids. In the beginning of the year 1795, she caught cold by going on the water; in consequence of which the left eye and eye-lid became inflamed, and a tumor began to form about the middle of the under

lid, attended with a hardness nearly resembling that of a stone. The inflammation extended over the lachrymal sac, and the whole of that side of the nose; and the passage for the tears was so entirely stopped, that this fluid trickled continually down the cheek. By the use of fomentations and poultices, together with the administration of cicuta, &c. the tumor at length was brought to a suppuration, and burst. The edges of the sore, however, were very hard, and had an unpleasant carcinomatous appearance. She still suffered violent excruciating pain; and her distresses were much increased by her being at that time between seven and eight months advanced in pregnancy. In this state of the case I requested you to see the patient with me on the 28th of March. We enlarged the aperture with a narrow-bladed curved knife, and carried the incision into the lachrymal sac. A few days afterwards, I attempted to pass a thin bougie through the ductus ad nasum; but the wound was in such an irritable state, that I was obliged to desist without accomplishing

the object I had in my view; and, although the patient had experienced relief from the violence of the pain she before endured, by the enlargement of the aperture, the wound had still a very unfavourable aspect, and the tears continually trickled down the cheek. About the end of April, 1795, the operation you proposed was performed. The old wound being contracted in size, and situated in the inferior part of the lachrymal sac, an aperture was made into this cavity with a spear-pointed lancet directly over the entrance of the nasal duct; immediately after which the end of a nail-headed style was introduced into the aperture, and conveyed through the duct into the nose. From this time the wound put on a more favourable aspect, and the tears passed through their natural course. The style was withdrawn every second or third day, and some warm water injected. The old wound was dressed, as you desired, with the ceratum album, mixed with a third part of the flores zinci; and its edges were occasionally touched with the lunar caustic. Mrs. S. was brought to

bed in June, and had an easy natural labour. Being afterwards in a very weak state, she returned to the use of bark and cicuta; and the old wound did not completely heal until the end of the year. The watering of the eye, however, totally ceased soon after the style was introduced; and at the present time, which is two years since the operation was performed, she continues perfectly well. There is not the smallest hardness in the eye-lid; the scar is very little perceptible; and, as to the style, she scarcely thinks it an inconvenience."

These ten cases, which were published in the first edition of this work, will be sufficient to elucidate the observations that have been offered in the preceding pages, and I flatter myself, will evince the propriety of the treatment which I have taken the liberty to recommend. I should not have thought it now necessary to introduce any new one, if the following had not been sent me by a friend, just at the time that I am correcting

these pages for the press. It adds greatly to the strength of the recommendation.

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CASE XI.

*Communicated by Mr. Smith, Surgeon at Aylesbury.*

“Nov. 26, 1804, Mrs. B., about 39 years of age, was recommended to me by Mr. Firth, Surgeon of Tring, on account of a constant watering of the left eye, attended with great pain both in the head and in the left side of the face. The lachrymal sac was considerably distended, and the skin over it inflamed. On pressure, tears mixed either with pus or mucus passed through the puncta lachrymalia. The edges of the lids were excoriated, and the tunica conjunctiva slightly inflamed. The patient complained of the sight of the eye being so very indifferent, that at times she could neither work

with her needle, nor read a large print. The disease first made its appearance after a severe fever, two years ago, and had gradually increased to the present time. Mrs. B. had been under the care of another surgeon before Mr. F. attended her, and had tried a variety of applications without relief. I, therefore, proposed the operation recommended in your treatise, and the patient willingly consented to submit to it. It was performed on the 28th, in presence of Mr. Woodman, a surgeon of this place. I made a small opening into the sac over the orifice of the duct, and with very little difficulty introduced a probe through it into the nose, and afterwards a nail-headed style, an inch and three-eighths long. The pain suffered during the operation, was trifling. I advised the eye to be washed with a saturnine lotion, and suspended a compress moistened with it over the eye-lids. In the evening the patient complained of considerable pain in the head and left side of the face; but the eye was perfectly easy, and the inflammation had not in the least increased. On the 29th, she



had passed an indifferent night from pain in the head, (the face being better) but it had not been more severe than she had repeatedly suffered before the operation was performed. The eye had been free from pain; had watered less; and she was sensible her sight was clearer, and that there was some degree of moisture in the left nostril. On the 30th, Mrs. B. had rested well; the pain in the head had left her; the eye was easy; the watering had scarcely troubled her; and she informed me that her sight was stronger than it had been for several months. I removed the style, and injected some warm water through the opening; and it readily passed into the throat and left nostril. I then replaced the style without the smallest difficulty, and applied a small quantity of the unguentum hydrargyri nitrati to the excoriated edges of the lids. The style was daily removed, and some warm water injected through the duct; the use of the ointment and lotion being still continued. December 3d, I removed the first style, and substituted one which measured an inch and

a quarter; the other being too long. The inflammation in the eye was now completely gone, and also the excoriation of the eye-lid. The eye only watered when she first awoke in a morning. The pain in the head and face also was removed, and her sight as good as before the disease commenced. On the 8th she returned home. I afterwards saw her on the 18th; and as she complained that the style hurt her nose when it was pressed, I shortened it about one-eighth of an inch more; after which she did not find any inconvenience from it. She was then enabled to work with her needle, and to read a common sized print without difficulty, and the pain in the head and face had not returned. I saw her on February the 1st, and the eye continued perfectly well."

*Feb. 4, 1805.*

a quarter the other being too long. The inflammation in the eye was now completely gone, and also the excoriation of the eyelid. The eye only watched with the first awake in a morning. The pain in the head and face also was removed, and her sight as good as before the disease commenced. On the 21st she returned home. I afterwards saw her on the 18th; and as she complained that the eye felt her nose when it was pressed, I shortened it about one-eighth of an inch more; after which she did not find any inconvenience from it. She was then enabled to work with her needles and to read a common sized print without difficulty, and the pain in the head and face had not returned. I saw her on February the 1st, and the eye continued perfectly well.

Feb. 4. 1803.

APPENDIX.

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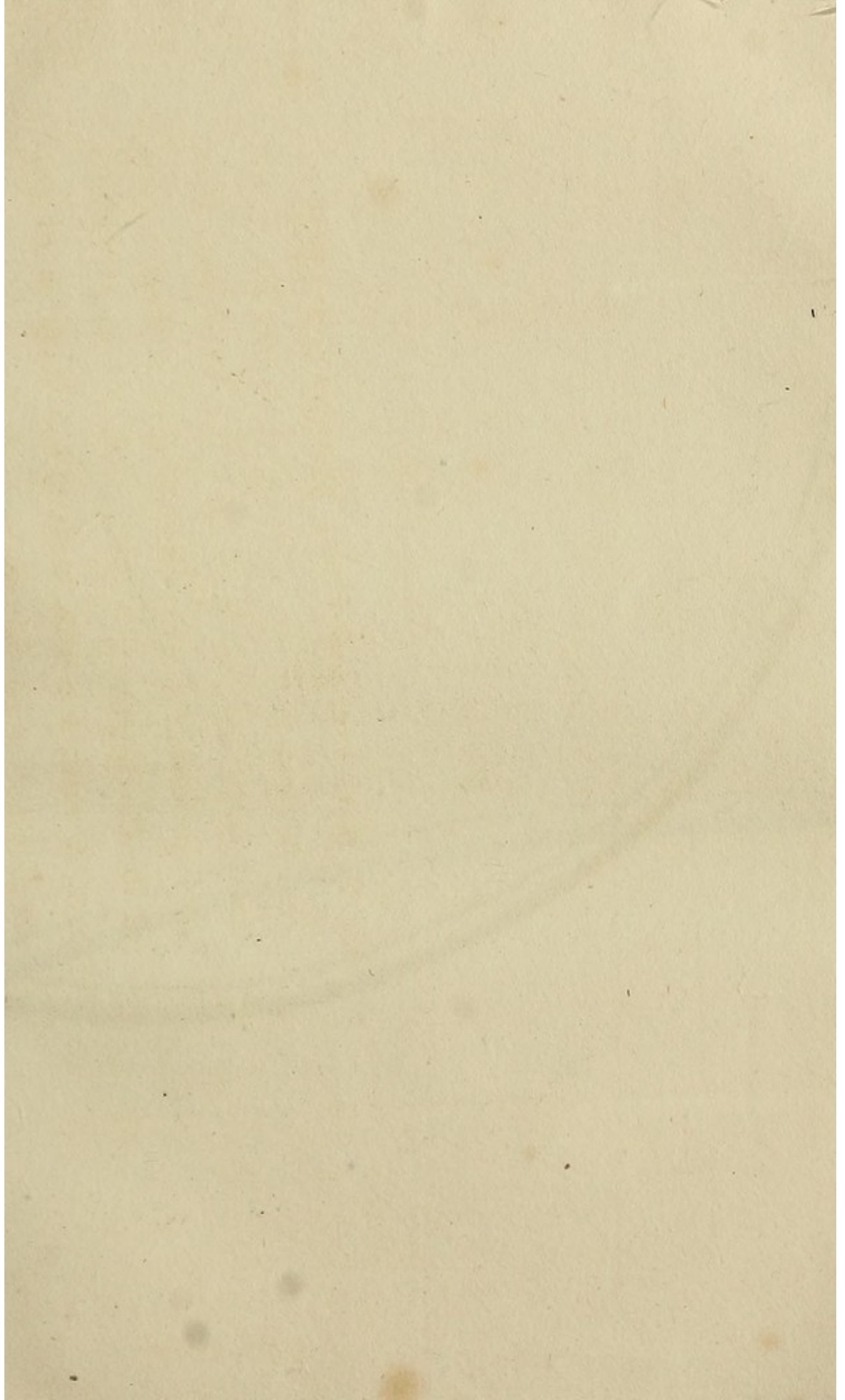
ON THE

INTRODUCTION

OF THE

MALE CATHETER.

APPENDIX  
—  
ON THE  
INTRODUCTION  
OF THE  
MALLE-CATHETER.





ON THE  
INTRODUCTION  
OF THE  
MALE CATHETER.

*Read before the Medical Society of London, Sept. 8, 1788.*

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**T**HE introduction of the male catheter, in suppressions of urine, often supplies the only remaining means for the preservation of life. It becomes, therefore, an object of very considerable importance; and in the following paper I propose to lay before the society such remarks as have occurred to me on this subject.

In the first place, it appears to me not a little extraordinary, that the curvature of the catheters, which are represented in many books of surgery, and also of those which are usually sold at the instrument-makers, should



differ so much, as I find they do, from that of the sound, that is used in searching for the stone.

If, as a modern author of acknowledged merit informs us,\* the curvature of the sound he represents be taken exactly from the natural curvature of the urethra, and be most proper for its introduction into the bladder; that curvature, I should imagine, would be most suitable for the catheter also. This instrument, however, is, in general, curved very differently from sounds; and the catheter, recommended by the author himself, a representation of which is given in plate 15, vol. ii. is curved quite differently from his sounds, represented in plate 12, of the same volume. The curvature of the staff, for directing the gorget into the bladder, in lithotomy, is required to be large; and, perhaps, larger than that of the other instruments I have mentioned, in order that it may prove a more certain guide, in conducting the knife through the integuments in perinæo.

\* See Bell's System of Surgery, Vol. II. p. 34.

But this is a use to which neither sounds nor catheters are applicable; and, therefore, unless the largeness of the curvature renders the introduction of these instruments into the bladder more easy, it does not appear requisite in either of them.

It may probably be urged, that the sound requires a considerable curvature, in order that a large portion of it may be introduced into the bladder; and thus, in searching, when the stone is small, the chance of striking on it may be greater, than when the curvature is less. But I am very doubtful, whether a larger portion of the sound can be introduced when its curvature is great, than when it is small; and, besides this, the stone naturally falls to the bottom of the bladder, and this is a part of it which may be reached without any extraordinary curvature of the instrument. Besides which, the apex or inner termination of the sound admits of a considerable motion, by raising or depressing its handle; and, therefore, it may, by this method, in most cases, be carried into contact with any body that is lodged in the bladder.

It is, however, necessary for me to add, that as the curvature of the sound is sometimes too large, that of the catheter, on the contrary, is often made much too small; and I have several times been disappointed in the attempt to introduce such an instrument, when I have afterwards succeeded with a catheter, whose curvature was larger.

The translator of Mons. Le Dran's Treatise on the Operations of Surgery, observes, page 219, "that the curvature of the catheter should be proportionable to the make of the patient; and that this may be guessed at sight." I am at a loss to understand the meaning of this sentence, if any thing more is intended by it, than that the curvature of the catheter should be varied according to the size of the person on whom it is to be used. And this appears to have been the meaning of Le Dran himself, since the original words, "*grandeur du malade,*"\* may, I think, more properly be translated, "size

\* *Traité des Operations de Chirurgie*, par H. F. Le Dran, p. 288.

of the patient," than "make of the patient." The curvature of the urethra, in persons whose size is similar, is, in general, I believe, nearly alike; and when the size varies, as in the case of a boy and a man, I am disposed to think, though the several parts are larger in the latter than in the former, that the curvature is still similar. Heister seems to have been of this opinion, and, in plate 27, he gives a representation of a number of catheters differing in length and thickness; but in all of these the same curvature is preserved in proportion to their respective lengths.

Some surgeons have shaped their sounds according to the shape of the large curvature of the urethra; but this does not seem to furnish a certain rule for the construction either of sounds or catheters; since the difficulty that occurs in introducing them does not arise from the want of such conformity, but from the opposition these instruments meet, when their apex, or inner termination, reaches the end of this curvature, and has to pass a small curvature of the

urethra, which lies under the symphysis pubis, at the entrance into the bladder.

Le Dran observes, that the size of the catheter should be suited to the size of the urethra; and that this is to be determined by the size of the orifice in the glans penis.\* I have, however, often found the orifice of the urethra in the glans penis much contracted; and yet the urethra, in its whole length afterwards, has been of its full natural size. Le Dran adds a remark, which I believe is universally admitted to be just, "that a pretty large catheter always passes better than a small one."

As to the length of the catheter, these instruments are generally made much shorter than sounds. In the latter, indeed, the additional length affords a considerable advantage to the surgeon, enabling him to move it about in the bladder, in search of a stone, with much more ease than he could do, if it were shorter. But the necessity is not

\* *Traité des Operations de Chirurgie*, par H. F. Le Dran, p. 288.

the same, in the use of the catheter. Notwithstanding which, if the length of that instrument were increased to about twelve inches, according to the representation of it on the plate annexed, which is more than an inch above the ordinary length, I believe the facility of using it, would often be in no small degree increased.

The figure, just referred to, is taken from an instrument which I have long made use of myself; and have found it so often to succeed, where others of a different size and curvature have failed, that I beg leave to recommend it to the notice of this Society.

With regard to the posture of the patient during the operation, I have performed it at different times when this has been much varied. I have generally found it most convenient for the patient to stand, with his back against the wainscot of the room, and the surgeon to be seated before him. If, however, the patient be very infirm, the operation may be performed either in a sitting or more reclined posture, whichever he

shall find to be most commodious and easy to himself.

The mode in which I pass the instrument, is as follows :

Being first thoroughly oiled, I introduce it into the urethra, with its convex part uppermost, and carry it as far as it will pass, without using force. It is the practice of some surgeons, in doing this, to draw the penis forwards over the catheter; and Mons. Le Dran observes,\* “ that the great art in searching,” and I presume he must mean, there is the same art in drawing off the urine, “ is to keep up a kind of intelligence between the hand that supports the penis, and the other which directs the instrument.” He adds, “ that they ought to act so in concert, that, alternately, the catheter may be thrust into the penis, and the penis drawn forwards upon the catheter.” In this method, I have repeatedly attempted to introduce the catheter; but, notwithstanding all the

\* *Traité par Le Dran, p. 290.*

care I could use, my attempts have, in general, been without success; and I have observed, in various instances, that the attempts of others, in the same way, have been equally unsuccessful. I do not mean, however, by this remark, to convey a doubt of Le Dran's success, according to the method he has described; but since I, and others, have not been so fortunate, as to meet with similar success, I hope I shall stand excused, if I propose a method somewhat different, and which, in my practice, has been more successful. I therefore add, that in a great number of instances, I have scarcely once found it necessary to touch the penis, after the apex of the catheter has been introduced into the urethra: nor will this, I think, appear improbable, when it is considered, that the anterior portion of the urethra is the only part which can essentially be affected by drawing the penis forward; and this affords no obstacle to the passage of the instrument, unless there be a stricture in it. The posterior part of the urethra, through which, alone, it is difficult to pass the instru-



ment, can neither be straightened nor smoothed by this part of the process. But, besides the objection I have now mentioned to the practice of drawing the penis forward, I shall presently have occasion to observe, further, that the confinement of the catheter, necessarily occasioned by it, is not only unnecessary, but, in a subsequent part of the operation, may also prove injurious.

When the catheter has proceeded as far as it will pass, without using force, I turn it slowly round, so as to bring its concave side uppermost; and, in doing this, I make a large sweep with the handle of the instrument, and at the same time, keep my attention steadily fixed on its apex, or inner termination; which I take particular care, neither to retract, nor to move from its first line of direction.

In this part of the operation, as well as the former, I differ considerably, both from the directions and practice of many eminent surgeons. Mr. Bromfield,\* in particular, directs,

\* See Bromfield's *Chirurgical Observations*, Vol. II. p. 200.

when the apex of the sound meets with resistance in perinæo, that it be turned round, not *slowly*, as I have directed, but *suddenly*; and, though I do not find the same direction so expressly given by other writers, yet this is the mode I have generally seen pursued by surgeons. Sometimes, when the operators have been experienced men, like the gentleman above-mentioned, it has, without doubt, succeeded in this way, but in general, and especially when the surgeon has been inexperienced, the operation has failed; and, even with the finger in the rectum, it has not always been rendered successful.

When, again, the apex of the catheter reaches the neck of the bladder, if it do not easily pass in on depressing the handle, Mr. Sharp\* recommends to withdraw it a quarter of an inch, and then to introduce the finger into the rectum to raise it; by which method he says it will seldom fail to enter. For my

\* See Sharp's Treatise on the Operations of Surgery, p. 81.

own part, except in those cases where the prostate gland has been enlarged, I have rarely had occasion to introduce my finger into the rectum, in performing this operation; and in the direction above given for introducing the instrument, I have mentioned, particularly, that its inner termination should not be permitted to retract, when it reaches the arch of the os pubis. I beg to dwell upon this circumstance, believing it to be essential to the easy introduction of the instrument. On the contrary, whenever I have been inattentive to it, and have allowed the catheter to fall back, I have always been under the necessity of entirely withdrawing it.

But the part of the operation of introducing the catheter, on which, I believe, its success chiefly depends, is the preservation of the apex of the instrument, at the time of turning its concave side uppermost, in the right direction of the urethra; so that it may not then press against the sides of this canal. In order to make my meaning better understood, I will suppose a person to press the

apex of a catheter, with its convex side uppermost, against his finger, or any other resisting body. If he turn the instrument suddenly round, so as to bring its concave side uppermost, he will find, unless he use great care, that its apex will be moved from its place, and take a new direction, different from that which it followed before he made the turn. A similar effect takes place when the instrument is in the urethra; and if in that case, on the turn of the instrument, its apex, instead of pressing straight forward in the urethra, should take its direction against the sides of the canal, no additional pressure, afterwards, can make it advance. For this reason, instead of turning the instrument suddenly, in the way recommended by Mr. Bromfield, I always make the turn slowly, and give the handle of the catheter a large sweep round; and this large sweep of the handle is accomplished much more readily when the instrument is unconfined, than it can be when the penis is drawn forwards over it, in the way recommended by Mons. Le Dran.

When the catheter is turned, it must still be pressed onward, and its handle at the same time be gently depressed. By this method it will be made to enter the bladder, and upon removing the style, the urine of course will be discharged through it.

I scarcely need mention, that previous to the use of a catheter, a bougie should be introduced. This alone, in many instances, has been sufficient to procure the discharge of the urine. I have also not unfrequently succeeded, in drawing off the urine, with a hollow bougie made of elastic gum. But notwithstanding these successes, cases will still often occur, which the catheter alone can relieve. Every hint, therefore, that may tend to render the introduction of this instrument more easy and certain, will, I flatter myself, be thought not unworthy the attention of this society.

ON THE  
TREATMENT  
OF  
HÆMORRHOIDS.

H. MORRIS

TREATMENT

ON THE

ON THE  
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OF  
HÆMORRHOIDS.

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**BY** the term Hæmorrhoids, or Piles, is generally understood a morbid state of the blood vessels that are situated in the internal surface of the intestinum rectum, near the termination of this gut in the aperture of the anus. They are distinguished by authors into those that are blind and those that are bleeding. When these vessels are only distended, they are denominated blind or tumified Piles; but when there is an aperture in them through which blood is discharged, they are called open or bleeding Piles. They are also distinguished into those that are external or visible, and those that are internal



or concealed; these last, however, being usually visible, after the fæces have been discharged; although in a short time they become concealed, by the contraction of the protruded part of the rectum within the sphyncter ani. The blind Piles are sometimes so soft and thin, as evidently to be formed by distended or varicous blood vessels; but, more commonly, they appear to be occasioned by a thickening of one or more of the plicæ or folds in the internal membrane of the rectum; which folds in this part of the intestine are usually numerous. The bleeding piles are seldom painful; and the blind piles, when painful, often become easy, as soon as a discharge of blood takes place from them.

The hæmorrhoidal evacuation is generally thought to be produced by an effort of nature to amend the constitution. There are many whose health is never so good as when they have a regular return of this hæmorrhage; and, on the contrary, serious disorders of different kinds have been observed to come on, when this discharge has

been hastily suppressed. Every prudent practitioner, therefore, will proceed with great caution, and will carefully consider the preceding and accompanying symptoms, before he uses means either to stop or check it. Various circumstances, however, may arise, which render a medical interference indispensably necessary; and, among these two of the most important, and those to which I mean particularly to direct the attention of the reader at this time, are the extreme pain which hæmorrhoidal tumors occasionally excite, and the inability they produce, in the persons who are troubled with them, to prosecute in a proper manner, the usual concerns of life.

A costive state of the bowels, and a difficult expulsion of indurated fæces, are among the most common causes of Hæmorrhoids. A compression of the blood vessels of the abdomen, by tumors within this cavity, as by the gravid uterus, by the enlargement of the liver or of any of the other viscera, or by the accumulation of water within the peritonæal tunic, is another not unfrequent cause

of this disorder. When Hæmorrhoids are occasioned by the gravid uterus, they are usually cured by the delivery of the child; and when the ascites produces them, the remedy consists in the discharge of the contained water; but it rarely happens that they admit of a cure so long as abdominal tumors of any kind continue to impede the free course of circulation. Gently laxative medicines, and an horizontal position of the body, will do some service in alleviating the uneasiness they occasion. The application of an ointment, composed of equal parts of the powder of oak-galls and of elder ointment or hog's-lard, has also contributed to answer a similar purpose. The application, again, of hot water to the affected part, by means of a bidet or semicupium, though at first sight it may seem a remedy of a nature contrary to that of the ointment of galls, has occasionally afforded much ease, by taking off the tension of the tumified gut; and occasionally it has excited a discharge of blood from the distended vessels. To effect a similar discharge, leeches have sometimes

been applied on the verge of the anus; and, at other times, the dilated hæmorrhoidal vessels have been punctured with a common lancet. The former of these operations has in some instances afforded relief; but the hæmorrhage which the latter occasions is, in general, inconsiderable; and, as far as my observation extends, it has very rarely alleviated the pain of the patient.

When the remedies that have been mentioned have been tried without success,—when the patient is disabled from pursuing his usual occupation,—and the pain which the Hæmorrhoids occasion is both violent in degree and frequent in returning,—it becomes indispensably necessary to have recourse to other means of affording assistance; and the only ones I recollect, that have been proposed by authors, since the use of the cautery and caustics has been relinquished, are—the operations of extirpating the whole of them; either by cutting them off with a scalpel or scissars,—or by tying a light ligature round their basis, in order to deprive them of nourishment, and thus to cause them to die

and fall off. These operations, though less dreadful than those that are relinquished, are still formidable in no small degree. The former, if the tumors are large, makes a wound of considerable extent, and risks a hæmorrhage, which has sometimes been very difficult to suppress; and the latter brings on a severe pain, which has continued many days, before the portions that are included within the ligatures have separated and come away.

Before a recourse is had to either of these operations, it may be of use to recollect, that though the number of hæmorrhoidal tumors protruded through the anus is often considerable, yet the pain which the patient suffers is not produced equally by all of them. If an accurate inquiry be made, I believe, it will be found that the patient will point to one, or at most to two, of the tumors, from whence all his pain proceeds. When these are examined, it will be discovered that they are much harder and more inflamed than the rest; and generally they are also smaller and less prominent; protruding but just

low enough to be compressed by the sphincter ani.

If this be a just description of the state of the disorder, it follows, that the operations I have mentioned, as being in common use for its cure, when more easy means have failed of effecting it, viz. that of cutting off the whole number of Hæmorrhoids with a scalpel or scissars, and that of tying a ligature round them, in order to cause them to die and fall off, are both alike unnecessary. Instead of having recourse to these severe remedies, we have only to direct our attention to the hard inflamed tumor, which is the cause of the pain, and which is not unfrequently situated in the centre of the rest. This is often no larger than the end of the little finger; and the removal of it almost instantly abates the pain, and, in a short time, causes the rest of the tumors to collapse and disappear. The mode in which I have performed the operation in a great variety of cases, with perfect success, is simply this. Having secured the little hard tumor, which, as above-mentioned, is often

situated near the centre of the rest, and much darker coloured than they are, with a common dissecting hook, or forceps, I snip it off as close to its basis as possible, with a sharp pair of curved scissars. The pain which the operation occasions is really trifling; and the hæmorrhage which follows is so slight, that I have rarely had occasion to use any application to check it. If the Hæmorrhoids be constantly protruded, the operation may be performed at any time; but if they only appear after the fæces are voided, that opportunity must be chosen for this purpose.

In those cases where the pain produced by Hæmorrhoids has not been violent, but where there is a constant distressing uneasiness, with frequent returns of a profuse hæmorrhage, (which hæmorrhage sometimes debilitates the patient to so great a degree that his strength is nearly exhausted) an operation similar to that I have described will not unfrequently be sufficient, in an easy manner, to effect a radical cure of the disorder. In cases of this description, as well

as in those before-mentioned, a careful inquiry will often discover, that one, or at most two of the Hæmorrhoids are alone productive of these effects, and alone require to be removed; the excitement and protrusion of the rest being merely the effect of the irritability which these occasion.

The proci-dentia ani sometimes accompanies Hæmorrhoids, in which case it usually ceases as soon as this disorder is cured. It sometimes takes place also from mere weakness in the intestinum rectum. Those who are old are particularly subject to a proci-dentia from this cause; but it happens occasionally to persons of all ages. A very large portion of the rectum is sometimes protruded in infants; and if it be suffered to remain long in this unnatural position, it is liable to become much inflamed, and even gangrenous. When a surgeon is called to a case of this kind, no time should be lost, but the gut be returned to its proper position, as soon as possible, by the gentle and gradual pressure of the fingers; after which a thick compress, so graduated in size as to adapt itself to the



space between the nates, and steeped either in red wine, or in some astringent lotion, should be bound on the part with a T bandage, to hinder the gut from again protruding. When a bandage is applied for the above purpose, the patient should be gentle in all his movements; since a sudden change of posture is apt to vary the degree of pressure that the bandage makes, and to allow the bowel again to protrude; in which case the pressure of the bandage on the tender gut has been found to do harm rather than service. In some instances of the *proci-dentia ani*, the patients have been served by introducing into the rectum, morning and evening, a tent about two inches long, and as thick as the little finger, made of a candle or of some stiff cerate. So long as a tent of this kind preserves its consistency, it compresses the sides of the gut, and hinders it from coming down; but when it is melted by the heat of the part it loses its efficacy; and therefore the application of the compress and bandage above-described is necessary, at the same time that the tent is used, in order

to assist its action. The internal administration of the medicine known by the name Ward's paste has also in some instances of proidentia been found useful to strengthen the debilitated bowel. This medicine is said to be composed of the following ingredients:

R. Pulv. Piperis Nigri,  
Radicis Enulæ Campanæ, sing. ℥j.  
Seminum Fæniculi dulcis ℥iij.

Bene misceantur; tunc adde

Mellis despumati,

Sacchari purificati, sing. ℥ij.

Liquefiat mel cum saccharo, et bene misceantur cum pulveribus, in mortario marmoreo, ut fiat massa. Capiat æger magnitudinem nucis moschatae bis vel ter quotidie.

If the proidentia has been of long continuance it must be confessed, after all, that none of these means can be depended upon, as affording a certain security against the return of the disorder, not only after a costive stool, but on any quick or sudden motion of the body. In all these cases, it is the duty

of the surgeon very accurately to examine the state of the protruded part; since, in some it has been found that a small portion of the gut has been evidently more tumefied than the rest, and more tender when touched with the finger; the removal of which tumefied part, in the way I have recommended common Hæmorrhoids to be removed in the preceding pages, has occasioned the remainder to collapse, and the patient to become quite well.

Former authors, and particularly Mr. Benjamin Bell, of Edinburgh, seem to leave it, as a matter of indifference, whether Hæmorrhoids be cut off or tied off. The violent pain which the operation of tying them occasions, and the continuance of this pain for two or three days together, are objections to the use of the ligature, which, in my own mind, I have never been able to overcome. At the same time the danger that is liable to arise from a profuse hæmorrhage, after cutting off so large a number of Hæmorrhoids, as often protrudes in this disorder, is with many an objection of no

small weight against the old mode of excision ; although I believe this hæmorrhage may always be hindered from becoming seriously troublesome, if a due attention be paid to keep the patient cool, and to avoid hot liquors for the first day or two after the operation has been performed. I think, however, it must be admitted by every one, that, whether the danger be greater or smaller, it is considerably diminished by the alteration in the mode of operating which I have taken the liberty to suggest in the preceding pages.

After the operation, a thick compress should be applied, wet either with cold brandy and water, or with a cold saturnine lotion ; retaining it on the part with the usual T bandage. The patient should be directed to keep perfectly still ; to lie rather cooler than usual in bed ; and to take nothing, in the way of diet, that is either hot or strong. I remember only two instances, in a considerable number of this kind, in which further attentions were found necessary. In neither of these did any ill conse-

quences follow, except the alarm from an hæmorrhage, which was quickly suppressed; and the history of one of them is given in the sixth case that will be found annexed to these remarks.\*

\* It may be of use to observe, that after the cure is completed, it is a salutary practice to wash the weakened part daily with cold water, by means either of a bidet or large sponge.

## CASES.

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### CASE I.

A gentleman in Birchin-lane applied to me, about three years ago, on account of an hæmorrhoidal disorder to which he had been subject many years. For the last twelve months several large tumors were protruded through the sphyncter ani whenever he had a stool, and afterwards they not only bled, but he was often for hours in so much pain, that he was unable to attend to any business. Many medicines had been given him, and different applications employed, but without affording him any assistance. On an examination I found a considerable number of Hæmorrhoids protruded through the anus, all of which appeared to be in a state of inflammation; but one in particular was excessively tender, and felt quite hard when

touched with the finger.\* I stated to the patient my opinion, that this hard pile was the cause of the pain he endured, and that the removal of it was a highly probable means of giving him ease, and causing the other tumors to collapse. On the subsequent day I performed the operation in the following manner. Having secured the hard Hæmorrhoid with a dissecting hook, and drawing it forward, I cut it off, with a curved pair of scissars, as close to its basis as I was able. The remainder of the tumors instantly collapsed, and withdrew within the sphincter; and, as they were quite soft, I did not think it necessary to search further for them. The pain the operation occasioned was much less than the patient had experienced for a long time after every motion. No hæmorrh-

\* It has been observed above, that hæmorrhoidal tumors are not unfrequently occasioned by a thickening of one or more of the plicæ or folds in the membrane which lines the inferior part of the intestinum rectum. I have reason to believe that this is much more frequently the cause of these tumors, than a varicous enlargement of any large blood vessel that is situated in this part.

hage followed. I applied a compress dipped in a saturnine lotion over the anus, and bound it on with the usual T bandage. An uneasy sensation was experienced in the rectum during the whole of the first day, but the patient slept well in the night, and the following day was perfectly easy. On the third day he took a gently opening medicine, which procured him two loose motions. These were mixed with a small quantity of blood; but gave him very little pain as they came away, and were followed with a very slight protrusion of the gut, which went back, immediately on the application of the finger. He had not any occasion to take medicines afterwards. The bowels in a short time performed their proper office without pain or protrusion, and he became quite well in every respect. For a year and a half he continued free from any uneasiness of the hæmorrhoidal kind; but then the gut began to have a slight tendency to protrude whenever he had a costive stool. He took particular care to avoid this by an attention to his diet, and by the use of gently purga-



tive medicines. As this, however, did not hinder the gut from occasionally coming down, he was advised to take the size of a nutmeg of Ward's paste every morning and evening. He had not taken this medicine long before the tendency to a prolapsus entirely went off, and for the last two years he has not had the least uneasiness in this part.

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## CASE II.

Mr. B., a wine-merchant in the city, applied to Mr. Wathen and me, during the time we were connected together in practice, on account of a considerable number of Hæmorrhoids which had been troublesome to him many years; and, for some months prior to the time of his consulting us, had been often so excessively painful, that, for hours after voiding his fæces, he was unable to move either from his bed or couch. On an examination I found that the tumors were very similar to those that are described in the

preceding case. A considerable number of them was protruded through the sphincter ani; and, nearly in the centre of these was one, much smaller than the rest, which was excessively hard and painful, and very livid in colour. Having secured this hard tumor with a dissecting hook, we immediately removed it with a curved pair of scissars. No hæmorrhage followed the operation; and he became almost instantly easy. Nothing particular occurred in the subsequent treatment; and, from that period to the time of my drawing up this statement of his case, which is upwards of ten years, he has not had the smallest tendency to a return of the disorder.

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### CASE III.

Mr. D., a merchant in the city, about 40 years of age, has been troubled with Hæmorrhoids ever since he was seven years old; scarcely ever having had a stool, since this time, without the protrusion of one or more

of them, which he afterwards was obliged to return through the sphyncter ani by the pressure of his fingers. They gave him, however, no further trouble till about three years ago, when, without any known cause, he was unable to keep them up, and they became so painful that he could not walk without difficulty; and in a short time the pain increased to so great a degree, that he could neither sleep nor continue long together in any one posture. In this state he sent for me. The case exactly resembled those which I have above related. In the midst of a large number of Hæmorrhoids, there was one much harder and darker coloured than the rest, and excessively tender when touched with the finger. I gave him my opinion that the whole of the pain proceeded from this hard Hæmorrhoid; and therefore advised him to have it removed. His consent was immediately given; and I cut it off, together with a small Hæmorrhoid near it, which seemed somewhat harder than the rest, the same evening. The operation gave him very little

pain, and was not followed by any hæmorrhage. He became easy almost as soon as it was performed, and afterwards passed a very good night. No hæmorrhage took place, nor did any accident follow; and in a few days he was well enough to return to his usual business. There is, however, still, as there has been from his youth, a protrusion of part of the gut whenever he has a stool; but this he returns with great facility; and, as it gives him no further trouble, he is not uneasy about it.

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#### CASE IV.

Mr. B. applied to me, about twelve years ago, on account of an excruciating pain, produced by Hæmorrhoids, which had then continued a week with scarcely any intermissions. On an examination I found, as in the preceding cases, in the midst of several Hæmorrhoids, one much harder than the rest; which though small was nearly black.

I desired him to strain, that this black pile might become more visible through the sphyncter ani; when touching it with the end of my finger, he immediately exclaimed that this was the part from whence his pain proceeded. Previous to the present attack the patient had never been subject to any complaint of a similar kind, but had enjoyed in all respects a good share of health. I immediately removed the hard pile in the way above-recommended; after which the pain very quickly abated. No hæmorrhage ensued, nor were any other dressings employed than the usual compress and bandage. Within a fortnight he was perfectly cured, and returned to his business. He did not experience any further trouble from the disorder till about twelve months ago; when he was again attacked with an agonizing pain similar to that he had before experienced; and a hard tender tumor was again protruded through the sphyncter ani together with a number of others of a softer nature. He was now at a considerable distance from me; in consequence of which I had not an

opportunity of attending him. The gentleman he consulted recommended a free use of sulphureous medicines externally, and the application of various softening ointments to the protruded tumors; but a month had nearly elapsed before he experienced any lasting amendment from them. The pain then gradually went off, and the hard tumor disappeared; since which time he has again enjoyed his usual health.

In this instance does it not seem probable that the removal of the hard Hæmorrhoid would have prevented the patient a great part of the pain he endured, and have much shortened the time of his confinement from business?

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#### CASE V.

A lady who has borne many children, applied to me about three months ago, on account of a protrusion of Hæmorrhoids through the sphyncter ani, which occasioned her a continual uneasiness in this part. The

disorder commenced about three years ago, and was supposed to have been brought on by some active medicines which she took about that period. For a long time the Hæmorrhoids had been accustomed to bleed whenever she had a costive stool; and for a month before she consulted me, not a day elapsed, in which she had not lost six or eight ounces of blood in this way; notwithstanding which, there was very little diminution in her usual menstrual discharge. In consequence of the pain and loss of blood she was exceedingly reduced both in strength and size, and had entirely lost her inclination for food. On an examination I found, as is above-described, a considerable number of Hæmorrhoids protruded through the sphyncter ani; two of which appeared more prominent than the rest; but they were not more tender, and there did not appear to be any difference in their colour. I stated my opinion to the patient, that the removal of these prominent piles would be a likely means of causing the remainder to collapse, and of restraining the hæmorrhage which

had so repeatedly returned, and so greatly weakened her. The next day I performed the operation. Having secured the tumors with a common hook, I cut them off with a curved pair of scissars, as close to their basis as I was able. The hæmorrhage that followed was really trifling, and the gut immediately retracted within the sphyncter. A thick compress dipped in cold brandy and water was immediately applied, and the patient was directed to lie cool in bed, and to avoid hot drinks of every kind. She continued perfectly easy until the evening of the following day, when, having an inclination for a stool she voided a considerable quantity of grumous blood without any mixture of fæces. The nurse who attended her was so much alarmed by its appearance, that she wished to send immediately for me; but the patient would not permit it, assuring her that for many days previous to the operation she had voided as large a quantity of blood that was quite pure. The next morning she took a table spoonful of castor oil, which procured her two loose stools, without the



least mixture of blood, or the smallest protrusion of the intestine. The precaution I at first gave her to avoid hot drinks, and to lie cool in the bed was still strictly regarded. She had a stool every day afterwards without the need of any medicine to procure it; and at the end of a fortnight every symptom of the disorder was perfectly removed.

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#### CASE VI.

Mrs. H., about four years ago, had occasion to take a purgative medicine, which unexpectedly operated with great violence. In consequence of this, whenever she had a stool afterwards, a part of the internal membrane of the rectum was protruded through the sphincter ani, requiring the application of the fingers to return it to its proper position; and in a short time the gut became so weak, that it came down whenever she walked the distance of a hundred yards. She was also troubled not unfrequently with

a considerable hæmorrhage from this part, which sometimes came on suddenly, and occasioned her great distress. Many remedies, both external and internal, had been made use of, but without affording her any relief. I at first suspected that this was one of the common cases of Hæmorrhoids; and, as the patient was constitutionally costive, I directed her to take the size of a nutmeg of an electuary composed of sulphur and cream of tartar mixed with lenitive electuary, once or twice every day, according as the state of her bowels made it necessary. An ointment composed of equal parts of the powder of oak-galls and elder ointment was also prescribed to be applied, morning and evening, to the protruded gut. These remedies, however, did not produce any good effect. She was then advised to introduce up the gut the end of a small candle, about two inches long, and as thick as the little finger, once or twice every day, in order, by its pressure, to hinder the protrusion, and, in this way, to give strength to the weakened part. A thick compress at the same time

was confined on the anus by a T bandage, which was bound on the part as tight as it could be borne, without giving pain. These applications seemed at first to have a good effect in keeping up the gut; but in a short time the benefit they afforded ceased, and the introduction of the candle, and wearing the bandage, became a work of so much fatigue, that the patient could not be prevailed on to continue the use of them. I was now permitted to examine the seat of the disease, and I found the posterior and inferior part of the rectum protruded through the sphyncter ani, about the size of the first joint of the little finger. There did not appear to be any distinct tumor in this part that could properly be denominated an Hæmorrhoid; but the resemblance between the two disorders was so strong, and the distress of the patient so great, that I thought myself fully justified in recommending the excision of the protruded part, in the same way in which I would remove an inflamed Hæmorrhoid. The patient giving her consent, I performed the operation on the fol-

lowing day. Having secured the most prominent part of the tumor with a hook, I cut it off in the usual way with a curved pair of scissars. The hæmorrhage that ensued was very inconsiderable; and the gut immediately returned to its proper position. I covered the part with a cold saturnine lotion, and bound it on with a T bandage. About two hours after the operation the patient felt an uneasiness in the rectum as if she should have a stool; and shortly afterwards a large quantity of thick blood was brought away. This much alarmed both the patient and her friends, and occasioned them to send in haste for me; their alarm being increased by a return of the hæmorrhage before I arrived. I immediately applied a dossil of lint dipped in a strong vitriolic lotion to the wound, and repeated the use of a thick compress dipped in a cold saturnine lotion to the external part of the anus. A bolus, containing five grains of dragon's blood, and an equal quantity of alum, was given every two hours; the weight of the bed-clothes was lessened; and hot drinks of every kind

were carefully avoided. No hæmorrhage of any consequence took place after this plan was adopted. It was steadily continued for twenty-four hours; the compress being frequently dipped, during this time, in the cold saturnine lotion. The bolusses were afterwards given every four hours for another day. On the third, the patient took some castor-oil, which brought away a loose stool, but without any protrusion of the gut. She had a slight sense of soreness in the wound for about a month; but then the pain wholly went off; and from that time to the present, which is upwards of three years, she has enjoyed her health perfectly in every respect.

**OBSERVATIONS**  
**RELATIVE TO**  
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**OF**  
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*Read before the Royal Society, November 19, 1812.*

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**T**HE fact that near sightedness most commonly commences at an early period of life, and distant sightedness generally at an advanced age, is universally admitted. Exceptions, however, to these rules so frequently occur, that I flatter myself a brief statement of some of the coincident circumstances, attendant on these different imperfections in vision, may not be found wholly undeserving the attention of the Royal Society.



Near sightedness usually comes on between the ages of ten and eighteen. The discovery of it most commonly arises from accident; and, at first, the inconvenience it occasions is so little, that it is not improbable the imperfection would remain altogether unnoticed, if a comparison were not instituted with the sight of others, or if the experiment were not made of looking through a concave glass. Among persons in the inferior stations of society, means are rarely resorted to for correcting slight defects of this nature; and, indeed, I have reason to believe the imperfection in such people is not unfrequently overcome by the increased exertions that are made by the eye to distinguish distant objects. This, however, is not the case, in the present day, with persons in the higher ranks of life. When these discover that their discernment of distant objects is less quick or less correct than that of others, though the difference may be very slight, influenced perhaps by fashion more than by necessity, they immediately have recourse to a concave glass; the natural

consequence of which is, that their eyes in a short time become so fixed in the state requiring its assistance, that the recovery of distant vision is rendered afterwards extremely difficult, if not quite impossible. With regard to the proportion between the number of near sighted persons in the different ranks of society, I have taken pains to obtain satisfactory information, by making inquiry in those places where a large number in these several classes are associated together. I have inquired, for instance, of the surgeons of the three regiments of foot guards, which consist of nearly 10,000 men; and the result has been, that near sightedness, among the privates, is almost utterly unknown. Not half a dozen men have been discharged, nor half a dozen recruits rejected, on account of this imperfection, in the space of nearly twenty years; and yet many parts of a soldier's duty require him to have a tolerably correct view of distant objects; as of the movements of the fugleman in exercise, and of the bull's eye when shooting at the target; the want of which might furnish

a plausible apology for a skulker to skreen himself from duty, or to get his discharge from the service. I pursued my inquiries at the Military School at Chelsea, where there are 1,300 children, and I found that the complaint of near sightedness had never been made among them until I mentioned it; and there were then only three who experienced the least inconvenience from it. After this, I inquired at several of the colleges in Oxford and Cambridge; and, though there is a great diversity in the number of students who make use of glasses in the various colleges, they are used by a considerable proportion of the whole number in both Universities; and, in one college in Oxford, I have a list of the names of not less than thirty-two out of one hundred and twenty-seven, who wore either a hand glass or spectacles, between the years 1803 and 1807. It is not improbable, that some of these were induced to do it solely because the practice was fashionable; but, I believe, the number of such is inconsiderable, when compared with that of those whose sight

received some small assistance from them, though this assistance could have been dispensed with, without inconvenience, if the practice had not been introduced. The misfortune resulting from the use of concave glasses is this, that the near sightedness is not only fixed by it, but a habit of inquiry is induced with regard to the extreme perfection of vision; and, in consequence of this, frequent changes are made for glasses that are more and more concave, until at length the near sightedness becomes so considerable, as to be rendered seriously inconvenient and afflicting. It should be remembered that, for common purposes, every near sighted eye can see with nearly equal accuracy through two glasses, one of which is one number deeper than the other; and though the sight be in a slight degree more assisted by the deepest of these than by the other, yet on its being first used, the deepest number always occasions an uneasy sensation, as if the eye was strained. If, therefore, the glass that is most concave be at first employed, the eye, in a little time,

will be accommodated to it, and then a glass one number deeper may be used with similar advantage to the sight; and if the wish for enjoying the most perfect vision be indulged, this glass may soon be changed for one that is a number still deeper, and so in succession, until at length it will be difficult to obtain a glass sufficiently concave to afford the assistance that the eye requires.\*

Although near sightedness is in general gradual in its progress, instances occasionally occur of its existence, in a considerable degree, even in children; in whom it is sometimes discovered almost as soon as they begin to take notice of the objects around them. This may be occasioned by some degree of opacity in the transparent parts of

\* I have observed that most of the near sighted persons with whom I have had an opportunity of conversing, have had the right eye more near sighted than the left; and I think it not improbable, that this difference between the two eyes has been occasioned by the habit of using a single concave hand-glass; which, being most commonly applied to the right eye, contributes, agreeably to the remark above-mentioned, to render this eye more near sighted than the other.

the eye; but such a cause of near sightedness is easily discovered by an examination, and is quite different from that state of the eye to which the term myopia, or near sightedness, is usually applied; by which is simply meant, too great a convexity either in the cornea or in the crystalline, in proportion to the distance of these parts from the retina. In such cases of extreme near sightedness in children, it is sometimes necessary to deviate from a rule, which in slighter cases I always follow, of discouraging the use of spectacles; since without their assistance, it would be impossible for them to prosecute their learning with ease or convenience.

Extreme near sightedness is sometimes occasioned by an evident change in the spherical figure of the cornea, and its assumption of a conical shape. This morbid state of the cornea is not only productive of near sightedness, but when the projection is considerable, vision is so much confused, that it affords little or no service, and cannot be amended by any glass. The cornea, in most

of these cases, is preternaturally thin, and not unfrequently it is accompanied with symptoms of general debility; under which last circumstance chalybeate medicines, and bracing applications to the eye, have been found to afford considerable benefit.

Near sightedness, to an alarming degree, has sometimes attacked young persons suddenly. A remarkable case of this kind came under my notice a few years ago in a young gentleman at Westminster school, who had been attended by Sir George Baker and Mr. Sutherland, on account of a variety of anomalous nervous symptoms. These had wholly left him before I was consulted; and the consultation with me was solely for the purpose of determining whether he might be permitted to make use of concave glasses, and to return to the business of the school. The patient's health at that time not being perfectly restored, it was thought advisable to send him for a few weeks into the country, and to postpone the use of glasses. This advice was followed; but in ten days the afflicted youth died suddenly. No ana-

tomical examination of the head was permitted by the relatives. It seems, however, probable, that the near sightedness, as well as the previous indisposition, no less than the death of the patient, were occasioned by the pressure of a morbid substance of some kind or other on the source of the nerves in the brain.

Near sightedness is seldom alike in the two eyes, and a few cases have come under my observation, in which one eye of the same person has had a near, and the other a distant sight.

It has been said by Dr. Porterfield,\* that the pupils of near sighted persons are more dilated than those of others. This, however, does not accord with the observations I have made in such cases.

It has also been commonly believed, that the size of the pupil is influenced by the distance of the object to which the attention is directed, this aperture being enlarged when

\* *Treatise on the Eye and the Manner of Vision*, Vol. II. p. 38.



the object is far off, and becoming more and more contracted as it is brought near. But though the activity of the fibres of the iris is sometimes sufficient to be visibly influenced by this circumstance, yet in the greater number even of those cases where the dilatation and contraction of the pupil are powerfully influenced by a difference in the strength of the light, the distance of the object considered alone produces so little effect upon it, as to be scarcely perceived. That it has, however, in general, some degree of power on the pupil is highly probable; and an extraordinary instance of this kind exists, at the present time, in a lady between thirty and forty years of age, the pupil of whose right eye, when she is not engaged in reading, or in working with her needle, is always dilated very nearly to the rim of the cornea; but whenever she looks at a small object, nine inches from the eye, it contracts, within less than a minute, to a size nearly as small as the head of a pin. Her left pupil is not affected like the right; but in every degree of light and distance, it is contracted rather

more than is usual in other persons. The vision is not precisely alike in the two eyes; the right eye being in a small degree near sighted, and receiving assistance from the first number of a concave glass, whereas the left eye derives no benefit from it. This remarkable dilatation of the pupil of the right eye was first noticed about twenty years ago, and a variety of remedies have been employed at different times with a view to correct it; but none of them have made any alteration. It should be mentioned, that, in order to produce the contraction of the pupil, the object looked at must be placed exactly nine inches from the eye; and if it be brought nearer, it has no more power to produce the contraction than if it were placed at a remoter distance. It should also be mentioned, that the continuance of the contraction of the pupil depends, in some degree, on the state of the lady's health; since, though its contraction never remains long after the attention is withdrawn from a near object, yet whenever she is debilitated by a temporary ailment, the contraction is of

much shorter duration than when her health is entire.\*

Dr. Wells, in his ingenious paper, published in the second part of the Transactions of the Royal Society for the year 1811, has taken pains to ascertain, whether the power by which the eye is adjusted to see at different distances, depends in any degree on the faculty in the pupil of dilating and contracting; and whether its fixed dilation has any

\* Several instances have come under my notice, in which the pupil of one eye has become dilated to a great degree, and has been incapable of contracting on an increase of light, whilst the pupil of the other eye has remained of its natural size. In some of these, the eye with the dilated pupil has been totally deprived of sight, the disorder answering to that of a perfect *amaurosis*; but in others, the dilatation of the pupil has only occasioned an inability to distinguish minute objects. Reading has been accomplished with difficulty, and convex glasses have afforded very little assistance. Though objects at a distance were seen with less inconvenience than those that were near, these also appeared to the affected eye much less distinct than to the other. Most of the persons to whom I allude had been debilitated, by fatigue or anxiety, before the imperfection was discovered in the sight; and in some it had been preceded by affections of the stomach and alimentary canal.

influence in preventing an accurate view of near objects. This last mentioned effect Dr. Wells relates to have taken place remarkably in the case of Dr. Cutting, whose pupil being fixed in a dilated state by the action of the extract of belladonna, perfect vision of a near object was removed, as the dilatation advanced, from six inches (which was the nearest distance at which Dr. Cutting could distinctly see the image of the flame of a candle reflected from the bulb of a small thermometer,) to seven inches in thirty minutes, and to three feet and a half in three quarters of an hour. My eldest son, who has a very extensive range of vision, has made a similar experiment on his right eye with a similar result. Previous to the application of the belladonna, he could bring the apparent lines on an optometer (like that improved by Dr. Young from the invention of Dr. Porterfield, and described in the Philosophical Transactions for the year 1800) to meet at four inches from the eye; and, by directing his attention to a more distant point, he could prevent them from meeting

till they were seven inches from the eye, after which they continued apparently united the whole length of the optometer, which was twelve inches.\* He could see the image of a candle reflected from the bulb of a small thermometer, five-sixteenths of an inch in diameter, at the distance of three inches and three quarters from the eye; and he could also see the same image at the distance of two feet seven inches. The belladonna produced a conspicuous dilatation of the pupil in less than an hour; after which, on viewing the apparent lines on the optometer, he was unable to make them meet at a nearer distance than seven inches, or to gain a distinct image of the candle reflected by the bulb of the thermometer nearer than this distance; but he could discern it at two feet ten inches from the eye, which was three

\* The two lines that are perceived on looking through the slits of an optometer, cross each other precisely in the point from whence the rays of light diverge in order to be brought to a focus on the retina. And their apparent union before and after this point is occasioned by the unavoidable thickness of the line drawn on the optometer.

inches further than he was able to see it, before the belladonna was applied. During the time of the experiment on the right eye, the left eye possessed its usual range of vision, but the sight, when both eyes were open, was rather confused, in consequence of the unequal foci of the two eyes; and it did not become clear until the pupil of the right eye recovered its usual power of contracting, which power was not acquired till the third day after the application of the belladonna.

It is remarkable that a different effect is sometimes produced on a near sighted eye by the application of the belladonna, from that which it has on an eye that enjoys a distant sight. Dr. Wells made an experiment of this kind on a friend of his, who was near sighted; and he informs us, in the paper above referred to, that in this instance, the nearest point of perfect vision was moved forwards during the dilatation of the pupil, whilst its remote point remained unaltered. I have made a similar experiment on the eyes of several such persons; and though in two

of these the result appeared to be similar to that which has been mentioned by Dr. Wells, yet, in the greater number, their sight, like that of those who were not myopic, has become more distant as the pupil became more dilated.—In one gentleman, in whom the lines of the optometer appeared to meet at four inches and a quarter from the eye, the pupil, in half an hour after the application of the belladonna, became completely dilated, and in consequence of this the sight at first was confused; but both on that day, and for two days afterwards, it was evidently more distant, and the apparent lines on the optometer could not be made to meet nearer than seven inches from the eye.—In a young lady, seventeen years of age, whose right eye was so near sighted that the apparent lines on the optometer met at two inches and three quarters from the eye, these lines, when the pupil was dilated (which took place in a small degree in less than half an hour), could not be made to meet in less than three inches and a quarter; and on the following day, the pupil being more dilated,

the lines did not meet till they were at the distance of nearly four inches.—In a third instance, viz. that of a lady forty-five years of age, who had been remarkably near sighted from her infancy, and for many years had used concave glasses of the fifteenth number, (which number is ground on each side, upon a tool the radius of which is only three inches,) the sight was become so confused in both eyes, that she saw nothing distinctly, and was unable to read letters, of the size that are used in the printed Transactions of the Royal Society, either with or without a glass. In this case, after the pupils had been dilated by the application of the belladonna, the sight was so much improved that she was able to read a print of the above-mentioned size at the distance of two inches with either eye. I do not insist, however, on the present case, because, though there was not any visible opacity in the crystalline, this sometimes exists in a small degree without being perceptible even to an attentive observer; and it may be doubted whether the amendment in the



lady's vision were not occasioned solely by the retraction of the iris from before a part of the crystalline that was not yet become opaque: it being well known that the outer part of this lens not unfrequently retains its transparency for some time after an opacity has commenced in the part that surrounds its centre.

It is evident, that near sightedness has no dependence on the greater or smaller degree of convexity possessed by the cornea, when this circumstance is considered alone; since the length of the axis of the eye from the cornea to the retina, and the greater or smaller degree of convexity in the crystalline humour, must be also regarded, before the distance of accurate vision can be determined.

It is no less evident, that near sightedness is not necessarily occasioned by a morbid protrusion of the whole eye; since some persons are born with eyes of this description, and others acquire the peculiarity, when further advanced in life, in consequence of a morbid accumulation of *adeps*

at the bottom of the orbit, without either of them being more near sighted than those who are free from this imperfection.

I have seen many instances in which old persons, who have been long accustomed to use convex glasses of considerable power, have recovered their former sight at the advanced age of eighty or ninety years, and have then had no further need of them. Dr. Porterfield was of opinion that in such cases the amendment is occasioned by a decay of *adepts* at the bottom of the orbit; in consequence of which the eye, from a want of the usual support behind, is brought, by the pressure of the muscles on its sides, into a kind of oval figure, in which state the retina is removed to its due focal distance from the flattened cornea. But if a morbid absorption of *adepts* at the bottom of the orbit were sufficient to restore the presbyopic to a good sight, it might be expected, that a morbid accumulation of *adepts* in this part would produce a presbyopic or distant sight. This, however, has not happened in any of the cases that have come under my notice. On

the contrary, in some such persons a degree of near sightedness has been induced by the accumulation; and in others the sight, with regard to distance, has not been affected by it. It appears to me more probable, that this remarkable revolution in the sight of old persons is occasioned by an absorption of part of the vitreous humour; in consequence of which, the sides of the sclerotica are pressed inward, and the axis of the eye, by this lateral pressure, is proportionably lengthened. An alteration of this kind is also sufficient to explain the reason, why such aged persons retain the power of distinguishing objects at a distance, at the same time that they recover the faculty of seeing those that are near; since the lengthened axis of the eye leaves the power by which it is adjusted to see at different distances, precisely in the same state, in which it was before the lengthening of the axis took place.\*

\* Dr. Young, in the paper to which I alluded in page 211, has described a great number of ingenious experiments devised by him, to show that the faculty of seeing

Although old persons lose the power of distinguishing correctly near objects, and require for this purpose the aid of convex glasses, they usually retain the sight of those that are distant as well as when they were young. Instances, however, are not wanting of persons advanced in life, who require the aid of convex glasses to enable them to see near, as well as distant, objects. Dr. Wells is one of these. He informs us, in the paper to which I have more than once adverted, that when twenty years younger, he was able, with his left eye, to bring to a focus on the retina, pencils of rays which flowed from every distance greater than seven inches from the cornea; but at the age of fifty-five, he required not only a convex glass of six inches focus, to enable him to bring to a point on the retina rays proceeding from an object seven inches from the eye, but likewise a convex glass of thirty-six inches focus, to enable him to bring to a  
at different distances is produced by a power in the crystalline humour, to become more or less convex, according as the object is more or less distant from the eye.

point parallel rays.—There are also instances of young persons, who have so disproportionate a convexity of the cornea or crystalline, or of both, to the distance of these parts from the retina, that a glass of considerable convexity is required to enable them to see distinctly, not only near objects, but also those that are distant; and it is remarkable that the same glass will enable many such persons to see both near and distant objects; thus proving that the defect in their sight is occasioned solely by too small a convexity in one of the parts above-mentioned, and that it does not influence the power by which their eyes are adapted to see at distances variously remote. In this respect such persons differ from those who have had the crystalline humour removed by an operation; since the latter always require a glass to enable them to discern distant objects, different from that which they use to see those that are near. This circumstance, in my apprehension, affords a convincing proof that the crystalline humour is indispensably necessary to enable the eye to see at different

distances.—It is also worthy of remark, that persons who have had the crystalline humour removed, have less power to ascertain the distance of an object when they look through a convex glass, than when they view it without this assistance; in consequence of which such persons seldom make use of glasses when they are walking: and the inconvenience of glasses is particularly experienced when they descend a flight of steps, or pass over uneven ground.

Near sighted persons do not appear to possess the same extent of vision that is enjoyed by those who have a distant sight. Being near sighted, I have repeatedly endeavoured to ascertain my own range of vision; and I find, by examining the focus of my right eye through the above-mentioned optometer, that I see two converging lines, which appear to meet, with very slight variations, at the distance of three inches from the eye; and no effort I am able to make can keep these lines united further than the distance of four inches and a quarter. They then separate, and continue to diverge. With my

left eye, the lines do not appear to meet nearer than four inches, and they continue united as far as five inches and a quarter, after which they also separate and diverge; so that the range of distinct vision in me does not extend further than an inch and a quarter in either eye, and within these distances I always hold a book when I read.— I find also the following rule, for determining the concavity of the glass that is best adapted for near sighted persons, to be perfectly correct with respect to myself, and, I believe, it may be safely adopted by those who, from distance or any other cause, are unable to suit themselves at the shop of an expert optician. The rule is this. Multiply the distance at which the person reads with ease, (which, with my left or best eye, is five inches,) by that at which he wishes to read, which may be said to be twelve inches; divide the product, sixty, by seven, the difference between the two, and it leaves nearly nine inches for the focus of the concave glass that shall produce the desired effect. This is the exact concavity of the

glass that I am obliged to use, to enable me to read with ease; and it answers to that, sold under the name of No. 6; which, I am informed by Mr. Blunt the optician, is a double concave glass, ground on a tool of eight inches radius on one side, and eleven inches on the other, the mean between which is very nearly nine inches. With a glass of this description I can read the smallest print, but to distinguish distant objects I am obliged to look through that denominated No. 9, by opticians, which is ground on a tool of nine inches radius on both sides. In this respect, my eye has varied from what it was a few years ago, when I was able to distinguish both near and distant objects correctly, through No. 8. This is ground to a radius of eight inches on one side, and six inches on the other, and with it I can still read a type like that in which the Transactions of the Royal Society are printed; but am unable to distinguish through it many distant objects, which I formerly used to see distinctly.—Hence it appears that my eyes have a confined range of distinct vision,



extending only to an inch, or an inch and a quarter; and that they remain nearly in the same state in which they were many years ago with regard to near objects, but have lost a part of the power which they formerly possessed, of adjusting themselves to distant ones. In this last respect, they differ from the eyes of those who have naturally a distant sight, since, as such persons advance in life, they usually retain the power of distinguishing distant objects, but lose that of seeing those that are near. It appears to militate also against the common observation, that as near sighted persons grow older they become less near sighted; since my eyes, on the contrary, are more near sighted, at the age of fifty-five than they were at twenty-five, and I am now obliged to employ deeper concave glasses than I then used to see distant objects, though I am not able to see distinctly through them things that are near.

The alteration which has taken place in my range of vision, I have reason to believe, is not unusual. Dr. Wells, in his paper on

this subject, mentions the case of a gentleman, who, like me, was near sighted, and whose sight, as he advanced in life, had undergone a similar change.—The following is also an instance of this kind, that is still more remarkable. Mr. L. sixty-six years of age, who has spent a great part of his life in the West Indies, and whose sight, when he was young, enabled him to see both near and distant objects with great precision, began, at the age of forty, to experience a difficulty in reading and writing. He immediately procured convex spectacles of the first number sold by opticians, which glasses are usually ground to a focus of forty-six or forty-eight inches, and by the aid of these he continued to read and write with ease (distinguishing perfectly in the usual way all distant objects without them,) until he was fifty. At this time he first began to perceive an indistinctness in the appearance of things at a distance; and, on trying with different glasses, he discovered that, by looking through a double concave glass of the sixth number, (which is ground to a radius of

eight inches on one side and eleven inches on the other,) he was enabled to see distant objects distinctly. He has continued to use glasses of this description for the purpose of seeing distant objects from that time to the present; but is obliged to remove them whenever he reads, and still to employ the first number of a convex glass.—In this instance, a presbyopic was changed to a myopic sight, without any known efficient circumstance to produce it.—In the two following cases, a similar change took place; and in them it was attributable to known causes. A woman, about fifty years of age, of a full habit, who for several years had been obliged to make use of convex glasses, in order to read a small print, was seized with a dimness in the sight of the right eye, accompanied with a small degree of inflammation. The sight of the left eye having been long imperfect, this affection of the right eye occasioned a great depression of spirits. Recourse was necessarily had to copious evacuations, by means of which the inflammation and dimness of sight were

soon removed; but afterwards the patient was much alarmed on finding that the spectacles she had been accustomed to wear, instead of affording their usual assistance, confused her sight. Upon this discovery, she was induced to look through her husband's glasses, which, in consequence of his being near sighted, were double concaves of the fifth number, and ground to a radius of eleven inches on each side. These did not assist her in looking at near objects, but by their aid she saw much more distinctly those that were distant; and, on attempting to read, nothing more was now necessary, than to bring the book a little nearer to her, than she had been previously accustomed to place it.—The second case occurred in a patient about the same age, who, in the course of the last year, was attacked with an inflammation in both eyes. By the use of leeches and cooling medicines, it was speedily removed, and, afterwards, she was much gratified, by finding that the necessity for using glasses when she read, which had existed many years, was removed; and that

she could see both near and distant objects correctly, without any extraneous help. The amendment in this lady's sight continued, however, only a few weeks; after which she was again obliged to use the same convex glasses in looking at small near objects, which she had used before her eyes became inflamed.—In addition to these cases, I beg leave to add the information I have received from an eminent mathematical instrument maker, about fifty years of age, who has long made use of convex glasses to assist his sight in reading. He tells me, that when he has been employed many hours together, for several successive days, in looking through a double microscope that magnifies twenty-eight times, (in order to enable him to mark the degrees on a small brass plate) he has afterwards been able, repeatedly, for a few weeks, to read without his glasses; but then the amendment gradually ceases, and he is soon obliged to return to the use of the same glasses that he had worn before.

In the instances that have been mentioned,

the distant sightedness affected persons who were considerably advanced in life: but in the three that follow, a similar affection of the sight occurred in those that were young; and a like good effect was produced by the use of evacuating remedies. One of these was a boy eight years old, who suddenly became presbyopic, and had repeatedly been punished at school, on account of his incorrect and defaced writing; the real cause of it, at that time, being unknown to his master. After the presbyopia had continued a fortnight, and different local applications had been used, without producing any sensibly good effects, the lad was cured by the application of leeches to the temples, and the administration of a few purgative medicines. The other instances occurred in two daughters of the same family. The eldest, twenty years of age, had never been able to do fine work, and for three years had been greatly assisted by convex spectacles. The youngest, a girl of fifteen, had become presbyopic about a year ago, and since that time had been obliged to use spectacles whenever she read,

or worked with her needle. The young person, last mentioned, in the course of six weeks, (during which time she totally abstained from the use of glasses,) was completely relieved from the necessity of using them, by the application of two leeches to each temple twice in a week. The former, in the same space of time, experienced much relief from a similar treatment, but was still unable to do fine work without glasses, partly in consequence of the long continuance of the infirmity, and partly on account of her not having abstained with equal steadiness from the occasional use of them.

From the preceding statement, the following inferences may be deduced.

First; near sightedness is rarely observed in infants, or even in children under ten years of age. It affects the higher classes of society more than the lower: and the instances are few, if any, in which, if the use of concave glasses has been adopted, increasing years have either removed or lessened this imperfection.

Secondly; though the usual effect of time

on perfect eyes be that of inducing a necessity to make use of convex glasses, in order to see near objects distinctly, yet sometimes, even after the age of fifty, and after convex glasses have been used many years for this purpose, the eyes have not only ceased to derive benefit from them, when looking at near objects, but they have required concave glasses to enable them to distinguish, with precision, objects at a distance.

Thirdly; though the cause of this change be not always known, yet sometimes it has been induced by the use of evacuating remedies, particularly of leeches applied to the temples; and sometimes by looking through a microscope, for a continued length of time, in several successive days.

Fourthly; instances are not uncommon, in which persons, far advanced in life, (viz. between eighty and ninety,) whose eyes have been accustomed for a long time to the use of deeply convex glasses, when they have read or written, have ceased to derive benefit from these glasses, and they have become able, without any assistance, to see both



232 *Observations on near and distant Sight.*

near and distant objects almost as well as when they were young. Although it be not easy to ascertain the cause of this amended vision, it seems not improbable that it is occasioned by an absorption of part of the vitreous humour; in consequence of which the sides of the eye collapse, and its axis, from the cornea to the retina, is lengthened; by which alteration the length of this axis is brought into the same proportion to the flattened state of the cornea or crystalline, or both, which it had to these parts before the alteration took place.

CHARLES A. OLIVER, M.D.,  
1307, LOCUST STREET,  
PHILADELPHIA.

ON THE  
**MUSCÆ VOLITANTES**  
OF  
**NERVOUS PERSONS.**

MUSCLE VOLUNTARIES

NERVOUS PERSONS

ON THE  
**MUSCÆ VOLITANTES**  
OF  
NERVOUS PERSONS.

*Read before the Medical and Chirurgical Society, July 19, 1814.*

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**N**O imperfection of vision is more common than that which is occasioned by the appearance of dark coloured moats before the eyes. These assume various shapes and figures, appear at different distances, and move in different directions, but have no tangible existence in the places where they are seen. Though they do not hinder a distinct perception of the smallest objects, the sight is often much incommoded by them; and the mind is agitated by the apprehension that they are certain precursors of the loss of sight. In the following paper, I propose to give an

account of this affection, as it appeared in three different persons; after which I shall offer a few remarks on their proximate cause, their probable termination, and the means that have been employed to accomplish their removal.

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CASE I.

Mrs. L. was first molested by these appearances in the year 1786, being then about thirty years of age. When she awoke in the morning, some minutes elapsed before she could see any thing distinctly; and then a great number of small yellow moats appeared to dance before every object to which she directed her eyes. At the time I was consulted, the moats had increased considerably in size, though their magnitude depended much on the distance at which they were observed; being larger when seen far off, and smaller when near the eyes. Besides these yellow sparks, if the eyes were exposed to a strong light, the air appeared full of

small particles resembling globules of quicksilver in continual motion; among which were three or four darker coloured than the rest, which appeared as large as small peas, and seemed to turn round on their axes. When the eyes were exposed to a strong light, she perceived several long irregular figures, some of which seemed to be composed of these globules twisted together, and others were like the flue that is swept from bed-rooms. These figures appeared to rise when she lifted her eyes up, and to fall when she turned them down, and they never continued long in one position. If she looked at the sky for two or three minutes, and then turned from it, her eyes flashed fire for the same space of time; and if she looked at the sun, though but for a moment, she seemed to see four or five suns, which appeared at first like balls of fire, but soon turned green, and still continued visible, though she shut her eyes, and applied her hands before them. All the impressions which a strong light made on the eyes continued for some time after the light was

excluded, except the dark coloured specks, one only of which was perceived when the eyelids were closed, and this also disappeared, if the hand was placed before it.

When the preceding description was given me, both eyes were supposed to be affected in the same way; but on a closer inquiry, it was found that the right eye only perceived the moats; the left eye being scarcely affected by them.

This lady had been much afflicted, shortly before I saw her, by the death of her husband; her legs and arms trembled, and her heart beat violently. She was much troubled with flatulency, and had a dull heavy pain in the back of her head; which pain sometimes extended to the forehead and sockets of the eyes. She had a strong beating in her temples, with a noise in her ears; and was in general remarkably irritable. Her bowels were in good order, and all the usual evacuations regular as to time and quantity.

On examining the eyes, the pupils appeared perfectly clear; they dilated and contracted freely, on every diminution or increase of

light, and the patient distinguished with facility, and with either eye the smallest characters. Under these circumstances, I did not hesitate to deliver my opinion, that there was not any danger to the sight in the symptom that had so much alarmed her; and my advice was to aim at strengthening the constitution, and particularly the nervous system, by giving two or three times in the day small doses of the volatile tincture of valerian, mixed with an equal quantity of tincture of castor, and joined occasionally with the camphor mixture or infusion of cascarilla. I directed warm water, or a warm infusion of rosemary, to be applied to the eyes and forehead, whenever they felt heavy and uncomfortable; and that the forehead, temples, and outside of the eyelids, should be embrocated morning and evening with a camphorated rosemary spirit. I also recommended a change of residence, with such occupations and amusements, as were most likely, without occasioning fatigue, to withdraw the mind from the reflections which had been the source of anxiety and



distress. This advice was pursued for a considerable length of time; the moats soon becoming less troublesome, and the mind being relieved from the dread of blindness, which had previously occasioned extreme anxiety.

In the year 1813, that is, twenty-five years after I had been first consulted in this case, I again saw the patient. She then enjoyed good health and spirits. The moats were still occasionally perceived; but they had become so faint, that she could only see them in a strong light, and when she took pains to look for them. It ought, however, to be mentioned, that at this time her daughter was just married; whereas, when she first consulted me, she had lately lost her husband.

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#### CASE II.

In the year 1801, I was consulted by the brother of a nobleman, about thirty-one years of age, on account, as he described it,

of a considerable number of intersecting moats or beams which floated continually before both his eyes, but particularly before the right. Sometimes they appeared nearly spherical, sometimes like long knotted lines, and sometimes like a series of spherical knots, varying in number, magnitude, and opacity. Sometimes they seemed to have an undulatory motion, and one of them in the right eye was always larger than the rest. They were perceived when the eyelids were closed, almost as strongly as when they were open. When the eyes were directed to an object beyond the usual distance of distinct vision, this object appeared as if it was seen through a pane of glass sprinkled with water. The right eye had been less vigorous than the left for ten years. He had never suffered from headach or pain in the eyes; but when the present morbid sensations began, he had had a violent heat in them, without inflammation, and the heat was followed by a great languor. It had been suspected at one time, that an insect had insinuated itself under the right upper eyelid, and much

pains were taken to extract it, but of course without success. He had lived three years in a tropical climate, had made free use of mercury, had had much mental agitation, and frequent feverish dreams. He had never been intemperate, and was usually abstemious in his diet. His temper was naturally even, his spirits vigorous, and he had very rarely been subject to hypochondriacism or melancholy. On examining the eyes they appeared perfect, the pupils were clear, and of their proper size, and they dilated and contracted regularly in different degrees of light. He was near sighted, though this did not appear by any unusual convexity of the cornea, and the near sightedness was obviated by the use of a concave glass.

After a careful consideration of the preceding history, I assured the gentleman that his sight was not endangered by any of the symptoms that he described; and the advice I gave was very similar to that which had been given in the preceding case; viz. that he should endeavour to strengthen the constitution, particularly the nervous system:

and abstain as much as possible from every thing likely to agitate the spirits.

Twelve years afterwards, I had occasion to see this gentleman again, when he informed me that he retained the perfect sight of both eyes, and could distinguish the most minute objects with either of them. In a bright light, however, he still perceived the moats as before, if he took pains to look for them, but he was now so much accustomed to their appearance, that they did not occasion any uneasiness. He continued near sighted, and made use of a concave glass, denominated No. 4, to distinguish objects at a distance.

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### CASE III.

About ten years ago, a lady consulted me, in great distress of mind on account of the recent appearance of several dark coloured moats before her eyes. These had no external existence, but assumed fixed figures: that before the right eye was nearly the eighth of

an inch wide, and three inches long: its sides were bound by wavy lines; and its length was interrupted by many apparent knots, being bent near its middle so as to form an obtuse angle; whilst that before the left eye was quite straight, of the same width with the other, about two inches long, and was continued obliquely downward from the right to the left. These appearances were most plainly perceived when she went from one bright light to another, the intermediate space being dark; as for instance, when she removed from looking through one window in a room to look through another. When the moats were first noticed, they were only seen in a bright light, but after a short time they were also perceived in the shade, becoming, however, much plainer and more numerous when the light was strong. When the lids were shut, a great number of dark coloured spots were seen before both eyes, but they were not united to form lines until the lids were opened. She had not had pain in the eyes, but her head felt heavy, and was often giddy. Her spirits were easily agitated,

and she had continually a rumbling noise in her ears. When she looked from a room into the street, objects appeared larger than natural, and she was obliged to contract her eyelids to bring them to their proper size, distant objects always appearing hazy and confused. The eyes were free from inflammation, and the pupils perfectly clear, dilating and contracting with great readiness in different degrees of light. On looking through a concave glass, the undue magnitude and haziness of distant objects immediately ceased, and she beheld them of their natural size and clearness. The imaginary knots and lines continued to molest her notwithstanding the use of the glass, but they were not then so strongly marked. On considering all these circumstances, I thought myself justified in assuring the patient that there was not any danger in the symptoms she had described; and after giving her a medicine to clear the bowels, I advised her to take a dram of the volatile tincture of valerian, in a cupful of the camphor mixture two or three times in the day, and to bathe her temples

and forehead, and the outside of the eyelids, morning and evening, with a camphorated rosemary spirit. After this time I did not hear from her professionally during many years; but was occasionally informed that the moats had not wholly disappeared, though they were become so faint, and so little interfered with vision, that she, in a great degree, had lost her anxiety about them. Two years ago I was again consulted on account of a recent discovery that she was unable to read with the left eye: on examining it I found the pupil perfectly clear and retaining its full power of dilating and contracting; but I took notice that when an attempt was made to read, the book was held at a considerable and unusual distance. This was the more remarkable as the eye had previously been near sighted. It was now, however, evidently become presbyopic, and on holding a convex glass of thirty-six inches focus before it, the confusion was removed, and the smallest characters were read without difficulty. Notwithstanding this sudden change in the sight of the left

eye, the right eye continued myopic, and required a concave glass to enable it to see distant objects. I again assured the patient that there was not the smallest danger in this new symptom; but as she was far advanced in pregnancy and naturally of a full habit, I advised that she should lose ten ounces of blood from her arm, and that she should take a few cooling medicines, joining with them some volatile drops whenever her spirits were much depressed. By this treatment the presbyopic sight of the left eye was in a short time removed, and I have just heard from her family physician that the left eye has now no other defect than that which arises from the *muscæ volitantes*, which are only occasionally seen, and do not injure vision: and the right eye is rather less near sighted than it was when I was last consulted.

The three cases of *muscæ volitantes*, which have been now described, may be considered as examples of a considerable number of the same kind, which, I do not doubt, have



fallen under the observation of many gentlemen in this Society. It is not easy to ascertain the proximate cause of these moats; but from the constancy in their figure, and their frequently long continuance, it seems probable that they depend on a steady pressure on one or more minute points of the retina, which are situated near the axis of vision, but not exactly in it. The pressure must be near this axis, because the moats always appear near the objects that are looked at; but it cannot be in the axis, because the moats do not injure or impair their natural appearance. As the pressure is not in the axis, the outline of the moats is always somewhat obscure; and the exertion that is made to bring the moats into the axis by moving the eye, gives them an apparent motion, which is sometimes upward and downward, and sometimes from side to side.\* That the tunica retina is liable to be

\* The sudden and irregular change which occasionally takes place both in the figure and position of the muscæ volitantes, may be supposed to militate against the opinion I have here advanced, that they are occasioned by a mor-

affected by this partial pressure, may be fairly inferred from an examination of the structure of this tunic, in connexion with that of the parts which are contiguous to it. The retina in a recent human eye has the appearance of a plain uniform transparent pulpy membrane, which surrounds the vitreous humour, but is unconnected with it. On a close examination it is discovered to be composed of two substances. One of these is an exquisitely thin membrane, on the inner side of which, in the foetal subject, bid pressure on some fixed points of the retina. This changeableness in their appearance has induced some to suppose that they are produced by opaque particles floating in the aqueous humour. Many objections, however, may be made to this supposition. But I shall only here mention that small specks on the cornea do not occasion these appearances; and a case still more applicable to my purpose came under my notice a short time ago, in which, after the removal of a cataract, a white opaque particle, about the size of the head of a small pin, moved continually upward and downward near the centre of the pupil; but though very perceptible to observers, it was wholly unperceived by the patient, and neither interfered with vision nor occasioned the smallest appearance of a *musca volitans*.

many blood-vessels may be traced; and on the outer, a medulla is spread, which lies in contact with the inner concave surface of the tunica choroides. This concave surface of the choroides when well injected, has been said by Zinn\* to have a villous appearance, produced by innumerable short flocculi, which are exquisitely minute; and, indeed, they are imperceptible to the naked eye. They are covered by a black mucous substance, called pigmentum nigrum, which is so equally spread over the retina, that when the person is in health, it only serves to render the retina duly susceptible of the impressions made upon it by the light transmitted from external objects. When, however, a morbid sensibility is excited, like that which general debility or much anxiety is apt to occasion, the retina, (which has a larger quantity of nervous medulla spread over it,

\* Si lente faciem concavam choroidis examinamus apparet illam ubique obduci villositate quâdam quæ undique emittit flocculos innumerabiles in aqua fluitantes, et brevissimè eminentes. Zinni Descriptio anatomica oculi humani, cap. ii. sect. vi.

in proportion to its dimensions, than any other part of the body) becomes morbidly impressed by any little points or projections that happen to be in contact with it. This morbid impression may be occasioned either by the pressure of small portions of lymph diffused irregularly between the choroid coat and retina; by some minute particle of the pigmentum nigrum, larger or more uneven than the rest, or by one or more of the minute villi of the choroides itself; and such a pressure, however it be occasioned, is sufficient, in my apprehension, to produce the image of an object, similar in every respect to that of a real object, so situated that light proceeding from it would have produced a similar impression upon the retina. The imaginary object is seen in a right line continued from the point, where the impression is made on the retina, through the centre of the eye, conformably to a known law in optics; and the distance at which it is seen from the eye is that at which objects of a similar size are in general most distinctly perceived. The difference between the

structure of the retina and choroides, when capable of producing these morbid sensations, and that of these parts when in perfect health, is, however, exquisitely minute; and the morbid impressions made on the retina are so much out of the line of the axis of the eye, that the imaginary moats they occasion do not interfere with the sight of external objects; these moats being in general so faint and undefined that they can only be perceived when the light is strong, and the attention is directed particularly to them.

It is difficult to ascertain the size of the particles that is sufficient to *stimulate* the retina, so as to produce the perception of these moats; but when the minute size of the image which visible objects make on the retina is considered: for instance, that a line of the length of a quarter of an inch, viewed at the distance of eighteen inches from the eye, makes an impression on the retina, no longer than the 144th part of an inch, some notion may hence be formed of the size of a particle, which, by morbidly acting on the retina, shall cause the appearance of a moat,

which sometimes is no larger than a pin's head, when imagined at the above-mentioned distance from it.\*

It has been commonly supposed that these moats are certain symptoms either of an incipient cataract, or an incipient gutta serena; and their occasional appearance in company with these disorders, has tended to confirm this distressing apprehension. It is hoped that the description of the cases that has been given in the beginning of this paper, together with that of the most probable immediate cause of the moats, may contribute to remove this erroneous opinion; and the observations that have been offered will

\* The magnitude of the picture made by an external object on the retina, may be determined by considering the angle that is formed by two right lines drawn from the two extremes of the object to the centre of the eye, (which angle is commonly called the optic or visual angle,) and continuing these lines beyond the center until they reach the retina, which, in the human eye, is a distance of half an inch. The size of the image impressed on the retina bears the same proportion to half an inch, that the size of the external object bears to its distance from the centre of the eye.

be strengthened by attending to the following brief description of the cataract and gutta serena, and the manner in which these disorders affect the sight.

Though the opacity of the crystalline humour, which constitutes a cataract, is sometimes formed rapidly; this is a rare occurrence, the disorder in general being slow in its progress. It is first discovered by a sense of confusion in the appearance of small objects. These, after a little time, are seen through a mist. As the mist increases, objects become more and more confused, until at length the power is lost of distinguishing even their outline; and afterwards of seeing any thing more than the difference between light and darkness. The mist, however, in these cases, is always extended universally, and does not appear in detached points; and in the same degree of light it increases progressively, until the distinctness of vision is destroyed by it. In the commencement of the disorder the thickness of the mist is not so great when the light is weak as when as it is strong, in consequence

of the pupils being dilated in a weak light, by which dilatation the circumference of the crystalline, which is always somewhat less opaque than the centre, is more open to the passage of the light through it. I have taken pains to learn whether persons who are deprived of their sight by cataracts, perceive these *muscæ volitantes*; and, after an inquiry of no small extent, I think myself justified in asserting, that if the opacity of the crystalline humour has not been preceded by internal inflammation of the eye, or by great nervous debility, these moats are very rarely perceived. It must not be forgotten, however, that the opacity of the crystalline is sometimes accompanied with an opacity of the capsule that contains it. Such a complication is very frequent when infants are born with this disorder; but it seldom takes place in an after period of life without being preceded by an inflammation in the internal parts of the eye; and this inflammation is fully sufficient to occasion such an alteration in the structure of the choroides, as may, by making more or less of unequal pressure on



the retina, excite the sensation of the moats which have been above described. In these instances, no less than in those which have been preceded by nervous debility, the moats are most strongly perceived when the light is strong; and it is not unworthy a remark, that in cases where the sense of sight is wholly extinguished, the imaginary appearance of moats ceases with it.

The gutta serena is not always complete any more than the cataract. When complete, the pupil is in general much dilated, though this may be hindered by different circumstances, particularly by the adhesion of the posterior part of the iris to the capsule of the crystalline humour. Such an adhesion is not unfrequent when the internal parts of the eye have been inflamed. But whether the pupil in this disorder be dilated or contracted, its size is always unchangeably fixed, both in a weak and strong light; and this forms the characteristic difference between the gutta serena, which is so alarming, and too often so destructive to the sight, and that comparatively harmless affection of the

eye which occasions the *muscæ volitantes*. However numerous these moats may be, and however distressing to the persons who behold them, if the power of the pupil to dilate and contract in different degrees of light remain perfect, and if the eye be able to distinguish minute characters as accurately as it did before the moats were perceived, it may be safely inferred, not only that the optic nerve retains its due degree of sensibility, but that the tunica choroides also is uninjured; since the iris, the membrane in which the aperture of the pupil is situated, is a continuation of the choroides; and therefore the pupil cannot be freely acted upon if the choroides be in a state of disease, or if the connexion between the retina and choroides be not perfect.

From the observations that have been now made, it follows, that whenever the appearance of *muscæ volitantes* is unaccompanied with the sensation of a mist, which more or less obscures the appearance of objects, the conclusion may be safely drawn, that it is not a symptom of a cataract; and whenever their

appearance is not accompanied with a fixed state of the pupil, it may as safely be inferred that it is not a symptom of the gutta serena.

In making this remark, however, I do not mean that the appearance of these moats is not occasionally observed by persons who have an incipient gutta serena, as well as by those who have an incipient cataract; but in such cases other symptoms denoting these different disorders are always present with them.

It has by some been supposed that the muscæ volitantes are induced by too great a determination of blood to the vessels of the eyes; and, under the influence of this opinion, powerfully evacuating remedies have occasionally been employed for the purpose of removing them. But, though it cannot be denied that a plethoric state of the system is capable of occasioning these appearances, it is a fact, that very few instances have come under my notice in which a debilitating treatment has afforded any kind of assistance; and, on the contrary, many cases have occurred in which the strength

and number of the moats have appeared to be much increased by it.

The more common exciting cause of these moats appears to me to be too close application of the mind to objects that occasion anxiety or distress; and on this account, I think it highly important to relieve the mind, as far as is possible, from intense application of every kind, and to encourage it, not only by an assurance of the absence of all danger to the sight from this symptom, when it is independent of others; but of the high probability that the moats will become less and less troublesome, in proportion as the strength and spirits can be recruited. The modes by which this object may be attained must vary in different cases. If the eyes have been weakened and are become uneasy by the frequent discharge of tears, it will be useful to foment them two or three times in the day with hot water, or a hot infusion of camomile flowers, or of the herb eyebright, and afterwards to embrocate the forehead, temples, and outside of the eyelids with camphorated spirits, eau de Cologne, Hun-

gary water, or some similar application. Small doses of the volatile tincture of valerian, or of the spiritus ammoniæ compositus, given in two or three table-spoonfuls of the camphor mixture are also often beneficial. Previous, however, to the use of volatile remedies it is always necessary to attend to the state of the bowels and of the biliary organs. These are often sluggish in their action; and the secretion of bile is sometimes very defective. In such cases a brisk dose of calomel, or some similar purgative medicine, may afford great assistance; means, however, being always taken, during the action of such medicines, to hinder the general system from being debilitated by them.

Before I conclude, I beg leave to relate a case which has been given to me by an intelligent medical friend. It appears, as he justly observes, to be an instance of suffusio scintillans, as it has been described by Sauvage; and in this instance it was evidently connected with a morbid state of the stomach and biliary secretions.

## CASE IV.

“About ten years ago,\* when about forty-eight years of age, I experienced the first attack of the malady which I mean to describe; and it has repeatedly returned at irregular periods, from that to the present time. The first notice that I have of the attack is a peculiar undescribable sensation at the bottom of the eye, which does not amount to pain, and is so slight that its reality is not to be determined, unless I direct my attention very particularly to it. After a few seconds the objects, in a small point, nearly in the centre of the field of vision, become indistinct; and, shortly afterwards, invisible; there being then no difference between this point and the other parts of the field of vision; these changes taking place in every direction in which the eyes are moved. In a few seconds more, that is, in about half a minute from the commencement of the attack, the point that was invi-

\* This account was given in the year 1813.

sible becomes lucid, appearing to be a circular spot, about the eighth of an inch in diameter; in which a yellow flame seems to undulate from the centre to the circumference with almost coruscating quickness and splendor. This spot increases by the extension of the undulating flame until it acquires an apparent diameter of about three quarters of an inch, which takes place generally in about six or eight minutes. The fiery veil, which conceals objects, becomes then thinner in the centre, and objects are there seen through it. The vision increases until at length a ring of light only remains, which continues to enlarge until it is lost by seeming to extend beyond the field of vision.

“The returns of the attack have been very irregular. Sometimes they have occurred daily for a week or ten days together; at other times more than a month has elapsed between their appearance. During one forenoon they returned almost every half hour; but of late the intervals are much lengthened; and I have been now exempted from the malady more than three months.

“ At first no pain was felt; but during the last twelve months, a slight uneasiness under the forehead, on the opposite side to that of the affected eye, has generally accompanied and succeeded the attack.

“ The disease is common to both eyes, though it has never yet occurred in both at the same time. My sight is not injured, though the sensibility of the retina appears to be morbidly increased: a strongly illuminated object producing a more brilliant spectrum than it used to do.

“ About six weeks ago I first saw the unpleasing appearance of a small dark circular spot, which, varying its situation with every motion of the eye, showed how appropriately the term *musca volitans* had been applied to it. The possibility of its being a partial paralytic affection, resulting from the frequent morbidly increased action of the retina, naturally alarmed me; but six weeks having elapsed without any return, I am become easy concerning it. In this instance the immediate cause of the affection appears to have been an irregularly increased action



of the retina; and the remote causes were an over eager exercise of the mind, joined with too long continued employment of the eyes, and a disordered state of the stomach and bowels.

“ With regard to the means of cure, reprehensible as it may appear, I for a long time employed none. About three years ago, however, having been harassed repeatedly at short intervals, and sometimes two or three times in the day, by the above-mentioned appearances, I called on you, and, by your advice, took a dose of five grains of calomel. After this the spectrum did not appear for several months; and when I again saw it, it yielded to a repetition of the same remedy. In the following year, having travelled two days together, and taken food of an improper kind, and in an irregular manner, the attacks on the third morning were so frequently repeated, that I was unable to see my way without difficulty and danger. I therefore stopped and took my dose of calomel; after which the spectrum immediately disappeared, and it did not

return for many months. That which was black, as well as those which were lucid, were equally removed by the use of this medicine; and I have not now perceived either of them for a considerable length of time."

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*Read before the Medical Society, May 8, 1810.*

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**ALTHOUGH** it be too often the melancholy province of medical men to witness disorders which cannot be removed, and in the treatment of which the utmost exertions of their art can only produce a mitigation of the symptoms, surgery nevertheless, besides affording in this way considerable benefit to mankind, is often highly serviceable in various diseases, by preventing the occurrence of greater evils than those which have already taken place. This observation is strikingly

exemplified in those disorders of the eye to which the attention of the Society is now requested; for though all of them have irrecoverably destroyed vision, yet the staphyloma and hydrophthalmia indispensably require an operation that shall cause the eye to sink in the orbit, in order to obviate constant pain and uneasiness; and the carcinoma of the eye is only capable of receiving a check, in its tendency to destroy life, by the complete extirpation of that organ.

The term staphyloma is sometimes used to designate the protrusion of a part of the iris through a wound or ulcer of the cornea. This is perhaps its most correct meaning, the Greek word, from which it is derived, implying similitude to a raisin or dried grape. But various authors have also used the term to denote a projecting opaque cornea; and in this sense I propose more particularly to employ it at this time. When the projection is very considerable, the disorder is sometimes also called proptosis; and in those cases where the projection is not confined to the cornea, but occupies also a portion of the

sclerotica, as sometimes happens, this latter appellation is peculiarly appropriate.

It has been disputed by authors whether the projection of the opaque cornea, in the staphyloma, is occasioned by a thickening of this tunic, or by a morbid accumulation of aqueous humour behind it. I believe, in general, both these circumstances combine to produce the disorder; the cornea becoming not only opaque, but both softer and thicker than in its natural texture; and, in consequence of this, the aqueous humour behind the cornea pushes it forward, and thus enlarges the anterior chamber of this humour. I have sometimes seen the whole cornea sloughed off during an acute purulent ophthalmia, and a white opaque substance gradually effused from the ulcerated surface, sufficient to form a complete cover to the iris; after which this opaque body has gradually projected in a conical shape, until at length it has become so prominent as to hinder the eyelids from closing over it. I have at other times seen the projecting cornea partly opaque, and partly transparent; the pupil



being distinctly visible through the transparent part, but the power of vision wholly destroyed. Sometimes the circumference of the opaque cornea projects, its central part appearing depressed, and resembling the bottom of a plate or dish; and sometimes, near to the centre of the opacity, in the case last mentioned, there is an irregular black appearance, which a cursory observer might mistake for a pupil. No part of this aperture, however, is perceptible on a careful inspection, and the eye of course is deprived of all useful vision.\*

\* The cornea not unfrequently projects without losing its transparency, assuming a conical shape instead of that which is spherical; in consequence of which change, the eye at first becomes myopic; but when the projection is more advanced, it causes so unequal a refraction in the rays of light as to destroy correct vision. In cases of this description, I have repeatedly discharged the aqueous humour, and endeavoured afterwards, by moderate pressure, to prevent the return of the projection; but on the reproduction of the aqueous humour, the conical projection has always reappeared. If only one eye be thus affected, the sight of the other remaining perfect, all the purposes of vision will be obtained from this alone; but, if the cornea of both eyes be conical, much

So long as the projection of the opaque cornea can be covered by the eyelids without painfully stretching them, if it be not accompanied with an irregularity in the surface of the cornea, and the sight of the other eye continue perfect, the only inconvenience the projection occasions is produced by the unseemly appearance it presents to observers. This may in some degree be prevented by wearing a pair of spectacles containing plain window glass in the ring opposite the sound eye, and glass that is ground in a slight degree opaque, or even similar plain window

advantage may be obtained from wearing spectacles, the rings of which are filled with an opaque substance that has a small hole in its centre, not more than the tenth or twelfth part of an inch in diameter, the smallness of which aperture, by lessening the pencils of the rays of light, will prevent the confusion that must otherwise be occasioned by their unequal refraction. Persons who have a projecting cornea should be particularly careful to avoid blows on the eye; since the projection is usually accompanied with a preternatural thinness of this tunic, which renders it easily ruptured: when this happens, the iris is liable to be involved in the wound, and the sight to be more or less injured by the derangement that takes place in the figure and size of the pupil.

glass, in the ring opposite the affected eye. In some instances, however, a consciousness of the appearance produced by a projecting opaque cornea has occasioned so much distress of mind, that I have been requested to sink the eye, solely for the purpose of getting rid of the deformity. I wish I could say that milder means have been found sufficient to accomplish the object. Various applications have been proposed for this purpose at different times by different authors. By some, strong caustics have been recommended for the express purpose of producing an excoriation, and even an ulceration, on the surface of the projecting substance. Both Janin\* and Richter† have said that they not only removed the projection of an opaque cornea, but even reproduced its transparency, by the application of the butter of antimony. Janin has recommended this application, for the purpose also of removing that other species of the staphyloma in which there is a protrusion of part of the

\* Janin sur l'Œil, sect. 8, page 389, et sequent.

† Richter, fasciculus 2, page 105, et sequent.

iris through an ulcer of the cornea. But I beg leave to observe that caustic applications of every kind should be used with great caution in all diseases of the eye. I have known them occasion violent and long continued inflammations; and, so far from reproducing vision, they have very rarely reduced the prominence of the staphyloma so as to preclude the need of other means to take away the deformity. Scarpa, in his chapter on the staphyloma, expresses himself in a similar way; and has adduced several cases of this disorder in children, in whom an ulceration on the surface of the cornea was kept up by escharotic applications several weeks, and yet no diminution was obtained by it, either in the projection or opacity. If such be the result of the experiment on the eyes of children, it certainly is less likely to succeed on those of adults. The other mode which has been proposed by authors, viz. that of compressing the tumor, and thus restraining it from interfering with the motion of the eyelids, is so difficult to be accomplished with the

necessary accuracy, that I remember only one case in which it afforded any advantage. In this instance a poor man who had a staphyloma of one eye many years, and could not be prevailed on to submit to have the eye sunk, was kept easy by wearing a bandage round his head, not unlike to the spring truss that is used for an inguinal hernia. The bolster of the instrument made a pressure on the outside of the eyelids, which kept them constantly closed, and hindered the eye from moving. In consequence of this, the projection gave no pain; and, by the aid of the other eye, the patient was enabled to work at a common handicraft business without inconvenience.

The more direct way of affording relief in the staphyloma is by removing the whole of the projecting substance; in consequence of which the humours of the eye are discharged, and the posterior part of its tunics collapse, so as to form a kind of button at the bottom of the orbit. On this button, when the wound is healed, an artificial enamelled eye is capable of resting; by which the uniform

appearance of the face may be restored. Authors are not agreed on the best mode of performing the operation. Heister, St. Yves, and others, have proposed to pass a double ligature through the middle of the tumor, and then to separate the threads, and tie the tumor on each side, so that the compression made by the ligature may cause it to mortify and slough off. But this is so painful, and so indirect a mode of accomplishing the object, that I believe it has not been practised for many years. Scarpa, in more modern times, has recommended to us to remove a small portion only of the projecting cornea (agreeable to a mode first proposed by Celsus in his book *De Medicina*, lib. vii. cap. 7 \*), and to force out the crystalline and vitreous humours through the opening; after which, he says, the wound will close, and the tunics

\* The words of Celsus are, "in summa parte ejus ad lenticulæ magnitudinem excindere." Scarpa proposes to make an opening "two, three, or four lines in diameter, according to the size of the "staphyloma;" but the largest of these dimensions being only one-third of an inch, is barely sufficient to allow the crystalline to come through it, without forcibly compressing the iris.

of the eye collapse to a small size, without occasioning any considerable degree either of pain or inflammation. This mode of performing the operation appears to me, however, to be liable to considerable objections. If the opening in the cornea be not larger than the size of the crystalline humour (which not unfrequently, in cases of the staphyloma, is without disease), this humour, in passing through the aperture, is very liable to bruise the iris, and to bring on pain and inflammation, that are both violent and tedious; and if, on the contrary, the opening be so large as to allow the crystalline and vitreous humours to be discharged, without doing violence to the iris, though the pain and inflammation, consequent on the operation, may not be considerable, yet the place of the evacuated humours will be supplied by a watery humour, which will speedily distend the tunics of the eye to their former size, will do away the possibility of inserting an artificial eye, and will hazard the return of all the old symptoms. Scarpa, aware of these circumstances, mentions ex-

pressly, that he has been obliged to irritate the wound three or four different times, after the operation, in order to bring on a sufficient degree of inflammation to cause the eye to collapse. Influenced by these considerations, I have never performed the operation according to this method; and having uniformly succeeded in a considerable number of cases, during a practice of more than thirty years, by performing it in the following manner, I trust that I am justified in recommending my mode of operating to the attention of this Society.

The operator will find it more convenient to stand behind the patient than before him; and the patient should be placed on a chair sufficiently low to allow the operator to carry his hand with ease over the patient's head. A large crooked needle, armed with a strong thread, should then be passed through the opaque projecting cornea, and, after separating the needle from the thread, a knot should be tied in the latter, at a small distance from the eye, in order to hinder the thread from slipping. The operator having



thus obtained by means of the thread a secure hold of the eye, a knife similar to that which is used to divide the cornea in extracting the cataract, or, if this be not at hand, a long sharp-pointed lancet, should be pushed through the sclerotic coat, about a quarter of an inch from its connexion with the cornea, and be carried quickly, but accurately, round the cornea, as nearly parallel to it as can be accomplished. Sometimes, as soon as a puncture is made through the sclerotica, so large a portion of the vitreous humour escapes as to cause the cornea to become flaccid; in consequence of which the operator may find it difficult to complete the incision round this tunic with either the lancet or the knife: and in this case a curved blunt-pointed scissars will be found useful to finish the operation. The only objection to the use of the scissars is drawn from the additional pain which it is supposed to give; but the duration of the operation is so short, that the difference between the pain produced by the instruments is scarcely worthy to be named. The hæmorrhage that suc-

ceeds is seldom considerable; and the less the eye is examined afterwards, the less danger will there be of pain and inflammation. A compress wet with a saturnine lotion should be applied over the eye, and it should be moistened with this liquor, without being removed, as often as it becomes dry; but no lint or any other application should be put within the lids, since this has been known to give great pain, and in one instance to occasion alarming symptoms. An anodyne should be given after the operation, of greater or less strength according to the age of the patient; but it is seldom necessary to repeat this medicine, since the patient has usually more sound and quiet sleep after the operation than he had for a long time previous to its performance. At the end of about a fortnight that part of the sclerotica which remained in the orbit will be found to have collapsed, and sometimes a small fungous substance will then protrude through the wound. This in the course of time would subside of itself; but as the delay may be irksome, the fungus may be easily

removed, and with very little pain, by snipping it off with a pair of sharp scissars. The fungus is usually smaller in its neck, where it joins the sclerotica, than in its top; in consequence of which its removal is effected with very little difficulty; and though it sometimes reappears, it may be snipped off again and again, until at length the wound will completely close, the inflammation cease, and the orbit become fit to receive an artificial eye. This, however, ought not to be introduced until the inflammation be perfectly removed; and when such an eye is used, it is advisable to withdraw it every night, and replace it in the morning, which may be effected with ease by the patient himself, after a short experience. In the choice of the artificial eye, it is not only important that the colour of the iris resemble accurately that of the sound eye, but the size of the eye should be well adapted to that of the orbit, and the dimensions of the cornea be rather smaller than that of the natural eye. If these rules be not regarded, the artificial eye will give an

unsightly stare to the countenance; it will not move, as it ought to do, in unison with the sound eye; and it will be liable to occasion both pain and inflammation. It is of consequence also to know that an artificial eye is apt to irritate after it has been used about a year and a half or two years, and must then be either disused entirely, or its place be supplied by a new one: and it may not be improper to remark, that when an eye has been sunk, if an artificial eye be not introduced, the appearance of the countenance may be much improved by wearing a pair of spectacles with either plain window glass in the circles, or glass that is tinged in a slight manner with a green or blue colour. The reflection from the glass in the spectacle frame will prevent the deficiency from being noticed, or will only give rise to the supposition of the eye being weak.

I next proceed to consider the disorder called *Hydrophthalmia*. By this term authors do not in general mean an accumulation merely of the aqueous humour, but so great an enlargement of the whole eye, pro-

duced by an increase of the vitreous humour as well as the aqueous, as to cause the eye to occupy an undue portion of the orbit, and to occasion difficulty and pain when the eyelids are closed over it. Thus defined, it may perhaps with more propriety be denominated Exophthalmia than Hydrophthalmia.\* In describing this disorder a greater discrimination is required than seemed necessary in the former part of this paper. In the staphyloma, for instance, the opaque

\* Scarpa is of opinion that an accumulation of water between the choroid coat and retina is a common cause of the hydrophthalmia, and he minutely describes a case of this kind which occurred in a child three years and a half old, in which the eye was a third larger than its natural size, the cornea partaking of the increase, in the same proportion as the sclerotica. I have several times observed, on dissecting the eye after death, that there has been an effused fluid between the choroid coat and retina, the vitreous humour being wholly absorbed, and the retina collapsed into a cylindrical, or rather a conical, chord-like substance, its apex arising from the optic nerve, and its basis surrounding the crystalline humour: but, though this effusion had produced a fixed dilatation of the pupil, an opacity of the crystalline, and sometimes a violent deep-seated pain in the eye, I have never known it to occasion an enlargement of this organ.

projecting cornea designates the nature of the disorder in so plain a manner, that it seems impossible to make a mistake with regard to its nature. But in the hydrophthalmia, which implies an universal enlargement of the eye, some examination is requisite in order to ascertain what occasions the enlargement; whether there be an equal enlargement of all the different parts of the eye; a morbid enlargement of one particular part only; the formation of an adventitious body within the eye; or a projection of the eye in consequence of a substance formed behind it.

Infants are sometimes born with eyes remarkably large and prominent. But if they do not give pain by their pressure, nor interfere with the free motion of the eyelids, and if at the same time the cornea be transparent and the sight perfect, the mere circumstance of their prominence does not call for any particular attention. Sometimes, however, the eyes of infants, at the time of their birth, are not only remarkably prominent, but the cornea of one or both is uni-

versally opaque, without any accompanying inflammation in the conjunctiva, or any morbid discharge from the eyes. Of this I have seen several instances, three of which happened in one family. These were more directly under the care of Mr. Farrer, a surgeon, resident at that time at Deptford. He has described them with accuracy in the second volume of *Medical Communications*, page 463, published in London in 1790. The opacity gradually diminished; and in less than a year, in two of them it was quite removed. In the third the cornea did not resume its transparency until the end of the second year. The amendment in these instances cannot be attributed to any particular remedies, since none were used; but it was owing to the *vis naturæ medicatrix*, which in infants, in this disorder, as it also is in many others, is often effectual to restore a healthy state. Mr. Farrer does not mention any particular prominence in the eyes of these children; but, having seen two of them shortly after the time when Mr. Farrer drew up the account of the

cases, I find, by a minute I then made, that the cornea appeared to me remarkably prominent; and that, though the children had recovered a distinct vision, they were all short sighted.—Another case of a similar kind came under my notice about three years ago, in the new-born infant of a respectable farmer in Essex. Both corneæ were completely opaque, and both were large and prominent. In this instance, as in those last mentioned, no applications were used with sufficient steadiness to allow me to attribute any considerable degree of efficacy to them; notwithstanding which, when, about four months ago, the child was again brought to me, I had the satisfaction to see the left cornea sufficiently clear to allow the perception of all large objects; the opacity of the right cornea being also diminished round its outer edge, though the greatest part of the pupil was still obscured. I was consulted in a fifth case of the same kind about a year ago. It occurred in the infant of a gentleman in Portman Square. Here, as in the other instances, the corneæ of both eyes, at



the time of birth, were large and prominent, and they were at the same time completely opaque; the child, in other respects, being healthy, and suffering no pain from the state of the eyes. Sanctioned by the successful issue of the preceding cases, no particular remedies were employed; and at the time of my writing this paragraph, which is just a year from the birth of the child, the cornea of one eye is not only perfectly transparent for a considerable space round its circumference, but the pupil can be seen through the diminished opacity that remains in its centre; and though the cornea of the other eye has improved less in its appearance, the transparency of this also is evidently increased, and the iris is visible through it for the space of a line at least round its rim.

In all these instances, the enlargement of the eye was not sufficient to be of serious consequence independent of the opacity of the cornea; and, when this opacity was dissipated, the power of vision was restored. But when, on the contrary, the enlargement is not confined to the cornea, but extends to

the sclerotica, and is so considerable that the eyelids cannot be closed without difficulty, the patient being not only blind, but unable to sleep without the aid of opiates; the prospect of restoring sight is wholly lost, and the only question is, in what way ease may be obtained, and deformity obviated. It does not appear possible to do more than this; nor can even this be accomplished by any other mode than that of diminishing the size of the eye: and the best manner of doing it I believe to be by means of the operation which has been recommended above in cases of the staphyloma.

Before an operation of so much importance be performed, it is, however, essentially requisite to ascertain that the disease consists solely in an enlargement of the different parts of the eye; and that it is not produced by the formation of purulent matter within the eye; by a morbid alteration in the structure of either its coats or humours; nor by the undue accumulation of aëps, nor of any other substance, behind this organ.

When purulent matter is accumulated

within the eye, the inflammation and pain, which both precede and accompany the enlargement, seem fully sufficient to distinguish the peculiar nature of the disorder; and they at the same time point out the necessity of procuring an adequate aperture in the tunics of the eye, through which the matter may be discharged. In a case of this kind, which I was desired to see at a small distance from London, in which a young lady nine years of age had suffered agonizing pain several days, the sight of the eye having been lost many years, and the cornea being both opaque and prominent, an aperture had taken place spontaneously on the side of the eye next the temple, just in that part where the cornea is joined to the sclerotic, and through it a small portion of matter had escaped; but the tension of the eye continued, and the wound was only large enough to admit the blunt end of a probe. The propriety of enlarging the aperture naturally suggested itself; and as the eye had not been useful for a long time as an organ of vision, a small blunt-pointed bis-

toury was immediately introduced through the wound, to the depth of at least a quarter of an inch, and the incision was carried three quarters of an inch in a direction towards the temple, dividing at the same time the sclerotica choroides and retina, and making a large opening into the body of the vitreous humour. No part of this humour, however, nor any sort of fluid, issued through the wound at the time of the operation. The eyelids were immediately closed, without any pressure being made on the eye, and directions were given to apply an anodyne fomentation, in the same way in which it had been frequently before used. An anodyne draught was intended to be given; but within half an hour the patient fell into a sound sleep, which lasted several hours. She awoke much refreshed and perfectly easy. The wound discharged more or less of matter for a fortnight; the pain did not return; and the eye gradually diminished, so that in a short time it did not appear to be more than one half of its natural size.

Purulent matter is sometimes also formed behind the eye in the adipose substance that supports this organ in the orbit. If the suppuration be quick in its progress, and be not situated deep, the fluctuation of the matter may be easily felt, and the propriety of discharging it be determined at once; but if, as I have occasionally found, the suppuration be slow, and the matter lie considerably below the surface, the eye will be protruded before any fluctuation can be discovered; and the existence of the matter will only be learned by paying attention to the accompanying symptoms, such as a quick pulse, white tongue, shiverings, &c. In a case of this kind, which occurred in a child six years old, which was attended also by Mr. Hill, in Bedford-row, I passed a lancet, on the side of the eye next the nose, a little below the commissure of the eyelids, at least an inch into the orbit, before I reached the matter. On withdrawing the instrument its point was evidently marked with pus. I therefore enlarged the aperture with a blunt-pointed bistoury, and discharged a consider-

able quantity, which was thick and putrid. It was necessary to preserve the opening by the insertion of a small dossil of lint; on the removal of which, a vent was given daily to new matter for a fortnight. Its quantity gradually decreased, together with the prominence of the eye; and at length it wholly ceased, the wound healed, and the child became well. The motion of the affected eye, however, was not quite free toward the nose for several months afterward.

Encysted tumors are sometimes also found in the adipose substance that supports the eye. A melancholy instance of this kind came under my notice a short time ago. The tumor was first perceived between the orbital process of the os frontis and the globe of the eye, and it gradually increased in size. An attempt had been made to extirpate it; but the greater part was situated so deep, that it was not possible wholly to remove it; and, after a short period, it reappeared, and in a few months completely pushed the eye out of the orbit; after which vision was destroyed, and the eye and the

tumor became so blended as to render it impossible to distinguish one from the other. The united mass increased continually in size, until, before the child's death, it was literally larger than his head.\* Another case of this kind came under my care, about the same time, in a girl about five years of age, who was a patient of Mr. Drew, in Gower-street. The tumor had been perceived several months, and, when I first saw it, projected under the upper and outer edge of the orbit, and began to push the eye out of its place. In this instance I made an incision through the eyelid, parallel to the edge of the orbit, sufficiently deep to expose the whole of the fore part of the cyst. I then separated the cyst from the orbit, and, embracing it with a hook, drew it forward, and, dissecting it from all its attachments, brought it away entire. The

\* I presume that this may be considered a case of fungus hæmatodes; though it originated in an encysted tumor situated between the bony orbit and globe of the eye, and did not affect the sight until the eye was thrust out of the orbit.

sides of the wound were afterwards kept together by the use of adhesive plaster, and the cure completed in a few days.

In some instances, again, a projection of the eye appears to be occasioned solely by a morbid accumulation of the substance on which the eye rests in the orbit. The repeated application of leeches, on the temple and forehead, has been found of great use in subduing this morbid tendency. In one case, that came under my own care, the projection was speedily diminished by opening the temporal artery; and, after the hæmorrhage had ceased, by converting the orifice into an issue, the discharge from which became soon very considerable. In another case, in which the protrusion occasioned great pain, and nearly destroyed vision, a perfect cure was accomplished by the application of a large caustic behind the ear. The discharge which it occasioned, when the eschar separated, was profuse; and it was kept up nearly a month, by the insertion of a dozen peas daily.

Another disorder of the eye, which gra-



dually occasions its enlargement, has by some been called fungus hæmatodes; and by others medullary sarcoma, spongoid inflammation, and soft cancer. This differs so much, both in progress and appearance, from the hydrophthalmia, that it cannot easily be mistaken for it. It more nearly resembles the disorder which I proposed to consider last in this paper, the carcinoma of the eye, having many symptoms in common with it. The fungus hæmatodes seldom attacks the eyes of adults, and is most commonly discovered at an early period of an infant's life. The first symptom that is noticed is a white shining substance in the posterior part of the eye, visible through the pupil in some particular positions of the head, but not in all. One eye is generally attacked some time before it appears in the other. As soon as the whiteness is perceived in the eye, the sight is impaired, and, in a short time it is wholly lost. At its commencement it bears a slight resemblance to a cataract; but an attentive person will at once discover the difference between the two disorders; the

opacity in the cataract lying close behind the pupil, whilst in the fungus hæmatodes it is situated deep in the posterior part of the eye. In the cataract, the pupil retains the power of dilating and contracting in different degrees of light; but in the fungus hæmatodes the pupil never varies its size, and is usually dilated. When the disorder has so much advanced as to destroy the figure of the eye, and to make it protrude beyond the rim of the orbit, it is more difficult to distinguish it from what has usually been called a carcinoma of this organ. There is still greater difficulty, when, after extracting an eye that contains a fungus hæmatodes, a fresh tumor arises from the bottom of the orbit, which fills this cavity, and continues increasing, until it becomes, as has sometimes happened, as large as the whole head. This difficulty of distinguishing between the carcinoma of the eye and the fungus hæmatodes is, however, the less to be regretted, since the proper treatment of both disorders seems nearly alike; the only known mode of checking the progress, in

both, appearing to be the complete extirpation of every part that is diseased. Before recourse be had to the operation, it is necessary to ascertain, as far as possible, that every such part is capable of being removed; since, in both disorders, if the smallest portion that has been contaminated remain, whether it join the organ that is extirpated, or be at a distance from it, the diseased part will infallibly increase, and all the old symptoms be reproduced. The fungus hæmatodes is not always confined to one eye, nor even to both, but sometimes occupies a large portion of the orbit exterior to the tunics of the eye. It is also accompanied not unfrequently with abscesses and tumors in different parts of the head; sometimes between the pericranium and cranium; and at other times between the cranium and dura mater. These abscesses are not confined to the fore part of the head, having sometimes been found both on the outside and inside of the os occipitis. Distinct portions of matter, and sometimes hard tumors, have also been formed in the dura mater, and even in the

substance of the cerebrum; and sometimes under the anterior lobes of the cerebrum, making a compression on the thalami nervorum opticorum. A disease of this kind is by no means new. It has occasionally come under my notice ever since I was a boy, and it has been described by many of our ancestors under the common name of carcinoma or cancer. It may be more correct, however, to distinguish it by the term fungus hæmatodes, or medullary sarcoma, though it does not appear to me to be always easy to ascertain the difference between the two disorders. It has been said that carcinomatous affections are always preceded by a hard circumscribed tumor, and that, after an ulceration has been produced, if it be followed by a fungous excrescence, this is of a cauliflower figure, and a hard firm texture; but such cannot be admitted to be the universal progress of these affections, nor is it unlike to that which the fungus hæmatodes sometimes assumes. It may be said with greater correctness that the carcinoma of the eye is a disease to which persons are most

subject in the middle or latter part of their lives, whereas the fungus hæmatodes appears in early life, and most commonly in infancy.

The following is the progress of a disorder which I have also repeatedly seen in persons advanced in life, but do not remember in any who were young. By some it may be called fungus hæmatodes, and by others carcinoma, but I shall content myself with describing it. The sight is lost before any change takes place in the appearance of the eye: after this the pupil becomes dilated without any visible opacity in the crystalline humour. This description designates a gutta serena; but the disorder does not stop here. After a little time the crystalline humour becomes opaque; and soon afterwards shooting pains are experienced, which dart suddenly through the eye in different directions, rarely continuing long at one time. At this period, if the sclerotica be carefully examined, a bluish, or rather a dusky leaden coloured, spot, of greater or smaller extent, will be discovered in it, on one side of the cornea,

and sometimes on both. These bluish or leaden coloured spots gradually spread; the eye enlarges either partially or generally; and in a short time it pushes forwards the eyelids, and fills the whole of the orbit. In some instances the bluish enlargements appear as if they were affections of the outer surface of the sclerotica, and only covered by the tunica conjunctiva. In others they are evidently produced by a distention of the whole substance of the sclerotica, which is pushed out and thinned, where the projection appears by the accumulation of a morbid substance within the eye. A few of the blood-vessels of the conjunctiva are usually enlarged, and have a purplish red appearance, very different from that which is produced by a common inflammation. On examining the internal state of these tumors, after their extirpation, the whole of the eye has been found full of the leaden coloured substance I have described; divided, in an irregular manner, by membranous laminæ into separate cells, the contents of which have varied much, even in the same eye, in

their degrees of consistence. They are usually firm and solid, but sometimes contain pus in separate cyst, and sometimes also osseous particles that differ much in their shape and size. These tumors are in general produced by an irregular enlargement of the whole eye, involving both its coats and humours; but sometimes the humours are very little altered, the disease seeming to originate in an affection of the tunica sclerotica, which spreads outwards rather than inwards. Sometimes the tumor is confined to one side of the eye, its other side being unaffected. At other times it occupies both sides; and, occasionally, there have been three tumors annexed to the eye, one on each side and one above, all as large as the eye; this organ being unaltered in size, though deprived of sight.

The progress which the disorder makes is very various. Sometimes a prominence of a leaden colour has continued in the substance of the sclerotica, on one side of the cornea, many years, without giving pain, or occasioning any sort of trouble; and, on the

contrary, it has at other times increased rapidly, and the enlarged organ in a few months has completely filled the orbit.\* It does not appear that medicines or applications have the power of checking or controuling this malignant disorder; and when-

\* Since these papers were put together I have extirpated an enlarged eye from a gentleman, thirty years of age, who had lost the sight of it many years; but it occasioned no pain or inconvenience until about six months ago, when it began to enlarge, and an increase in its size had afterwards been perceived almost every week. The enlargement of the eye was universal; the bloodvessels had a purplish red appearance; there were three bluish spots on the sclerotica, one of which was as large as a sixpence; and the pressure of the eye against the eyelid kept up a constant uneasiness. In a consultation with Mr. Cline, it was judged advisable, as the increase of the tumor was rapid, to recommend the extirpation of it without delay; and, the patient giving his consent, I performed the operation, in presence of Mr. Cline, a few days after the consultation. Nothing unusual occurred at the time; and on examining the tumor afterwards, the humours of the eye were found to be no otherwise affected than by their enlargement, the blue appearances being occasioned solely by an affection of the sclerotica. No accident happened after the operation, and, in less than a month, the wound was healed, and the patient returned, perfectly well, to his home in Kent.



ever its nature can be clearly ascertained, the only question is, whether it be possible to extirpate completely every part that partakes of the poison. Although it be a melancholy truth that the operation has too often failed, this does not lead to the conclusion that its performance is always improper, since it certainly has not unfrequently succeeded; and I have the satisfaction to say, though I have sometimes failed, I have several times performed it with complete success.

With regard to the mode of performing the operation, I would advise it to be done in the following manner.

The patient should be seated in a clear light, on a chair of a suitable height to bring his eye on a level with the breast of the operator; and the operator should either sit or stand before him, as is most easy to himself. The patient's head should rest against the breast of an assistant, whose left hand should support the upper eyelid by means of a double blunt-pointed hook, the points of which are seven eighths of an inch distant from each other, and his right hand should

be at liberty to do any thing that may be desired by the operator. The hands of the patient should be held by two assistants that sit one on each side, and an assistant should be ready to give the operator instruments, sponges, &c. A crooked needle armed with a strong thread, and well waxed, should then be passed through the whole of the cornea; after which, the needle being cut off, a knot should be tied in the thread, at the distance of about an inch from the eye, to hinder it from slipping. This thread is more useful in cases where the eye is so much enlarged as nearly to fill the orbit, than when it is smaller; the finger alone, in the former case, being insufficient to incline the tumor from one side to the other, so as to make the room that is required for the proper use of the knife. If the tumor be considerable, the upper and lower eyelids should next be separated, by dividing with the knife the integuments which unite them on the side next the temple. This will give much additional room for the introduction of the knife to dissect the diseased organ from

its attachments. The conjunctiva should then be divided round the whole globe of the eye; and afterwards the knife be carried downwards, on that side where it passes with the greatest ease. It is not possible to give precise directions as to the mode in which the dissection should be conducted; but great care should be taken to avoid wounding the tumor until the point of the instrument has reached the bottom of the orbit. If it be possible, the operator should introduce his finger with the knife so as to feel the optic nerve, which, together with the muscles of the eye, should be divided as close to the foramen opticum as the instrument can be carried. In general the common straight scalpel may be so directed as to perform this part of the operation with accuracy; but if the tumor completely fill the orbit, it may be useful, in this part of the operation, to substitute for the straight scalpel one that is a little curved. As soon as the optic nerve and muscles of the eye have been divided, the tumor becomes loose, and may be easily drawn out of the orbit, either

by the fingers, or by the ligature that was passed through the cornea at the beginning of the operation. The tumor, when removed, should be carefully examined, in order to ascertain if it be entire, or if it be wounded in any part. In the latter case, the orbit should be carefully examined, both with the eye and the finger; and if any portion of the tumor be seen or felt, it should be dissected away. The state of the nerve should also be examined. If this appear white, and of its natural size, a hope may be entertained that the operation will prove successful; but if it appear of a leaden colour, or be altered in shape or size, there is too much reason to fear that the disease has passed beyond the part which has been removed, and that, sooner or later, a fungus will arise in the orbit, and all the old symptoms be reproduced. The hæmorrhage consequent on the operation is seldom considerable. The arteries that supply the eye with blood are not large; and if a little time be allowed, those that are wounded will contract of themselves. It is desirable to avoid

the application of lint or of any other substance within the lids, since it sometimes has given considerable pain; and, in one instance, in which the operation was performed by an eminent surgeon, it was supposed to occasion violent convulsions by its pressure against the divided end of the nerve. It is sufficient to apply over the eyelids a compress of old linen, folded six or eight times, and moistened with the liquor plumbi acetatis dilutus; and to direct the compress to be remoistened, without removing it, as often as it becomes dry. If by accident the eyelid be wounded during the operation, care should be taken to bring the divided ends together, and to confine them in their natural position either by means of sticking plaister, or of a suture with a small needle and thread. Care should also be taken, before the compress be applied, to adjust the edges of the upper and lower eyelids, so as to hinder one from lapping over the other. If, after the operation, the pain continue violent, an anodyne should be given; and, if necessary, it should

be repeated after three or four hours; but its repetition, I believe, will seldom be required. Sometimes, after a week or ten days, the upper eyelid is observed to tuck in under the lower; in consequence of which the upper lashes, by rubbing against the inside of the lower lid, have been known to keep up a painful irritation. This may be obviated by fixing the end of a slip of adhesive plaister on the upper lid, and continuing it lengthways on the forehead, sufficiently tight to make a fold in the skin and hinder the edge of the lid from turning inwards. Cooling medicines, and a spare diet, are necessary for a few days; but afterwards a light preparation of cinchona, together with a nutritious diet, will be required. As the wound heals, an adhesion usually takes place between the inside of the eyelid and the bottom of the orbit; and when this happens, it is not possible to give the patient the benefit of an artificial eye, as is done after the operation for the staphyloma or the hydrophthalmia; and he must be contented either to wear a compress, bound by a ribband over the orbit,

or a pair of spectacles, having plain glass in the ring, before the good eye; and glass that is either plain, or in a slight degree opaque, before the affected eye.

If, unfortunately, after a careful extirpation of a carcinomatous eye, a tumor again arise in the orbit, it is vain to expect benefit from a second operation, and applications of a painful kind should be avoided as much as possible. Art does not appear to be capable of doing more than to palliate the violent symptoms, by anodyne remedies, by evacuations local or general, and by tonic medicines, when the state of the general health renders these expedient.

# I N D E X.

---

	Page.
A.	
ABSCESS within the eye relieved by an operation....	289
———— within the orbit, ditto .....	292
Anel's cure of the epiphora.....	9
B.	
Bell, Mr. advice for the fistula lachrymalis.....	65
Belladonna, different effects produced by.....	211
Blizard, Mr. (now Sir William) treatment of the epiphora.....	11
C.	
Cataract, brief description of.....	254
Catheter, male, mode of introducing.....	151
Celsus, operation for staphyloma.....	277
D.	
Description of a disease of the eye, occasionally seen by the author .....	300
E.	
Epiphora, cases of .....	13, 45, et seq.
———— causes of.....	6, 26, et seq.
———— treatment of.....	7, 34, et seq.
Excision of hæmorrhoids, danger of .....	178
Eye, artificial, rules for wearing .....	282
——, enlargement of, requiring an operation .....	289
——, extirpation of .....	304
——, glass, useful in the epiphora .....	43



	Page.
Eye, large and prominent, in infants not always diseased	285
_____ , with opacity of the cornea, Mr. Farrer's cases of .....	286
_____ , author's cases of ..	287
Eye, projection of .....	295
F.	
Fistula lachrymalis, treatment of .....	63
_____ by Mr. Pott .....	65
_____ Mr. Warner .....	69
_____ Mr. Wathen .....	73
_____ Mr. Bell .....	75
_____ Mons. Pellier .....	76
_____ New operation proposed .....	85
Fungus Hæmatodes .....	296
G.	
Glasses, convex, necessary to see near and distant ob- jects .....	219
_____ , rule for ascertaining the necessary concavity of, for near sighted persons .....	222
Gutta Serena, brief description of .....	256
H.	
Hæmorrhoids, treatment of .....	85
Heister, Mons. operation for staphyloma .....	277
Hydrophthalmia, meaning of .....	283
_____ , causes of .....	284
J.	
Janin, Mons. treatment of staphyloma .....	274
M.	
Muscæ volitantes, description of .....	235
_____ , cases of .....	236, et seq.
_____ , commonly exciting cause of .....	259
_____ , treatment of .....	258, 259
N.	
Near sightedness commonly commences in early life . . .	199

	Page.
Near sightedness more usually met with in the higher classes of society .....	202
————— increased by frequently changing the glass .....	204
————— occasioned by the cornea assuming a conical shape .....	205
————— attacks persons suddenly .....	206

## P.

Pellier, Mons. treatment of fistula lachrymalis .....	76
Pott, Mr. do. do. ....	65
Potterfield, Dr., observations on the pupils of near sighted persons .....	207
Presbytic sight usually commences in advanced age. ....	199
Procidencia ani often accompanies Hæmorhoids .....	175

## Q.

Quicksilver, injection of, in cases of epiphora .....	11
---	----

## R.

Richter, Mons. treatment of staphyloma .....	274
--	-----

## S.

Scarpa, Mons. opinion on the cause of hydrophthalmia. ....	284
Staphyloma, meaning of .....	270
—————, treatment of, by Janin and Richter. ....	274
————— by Scarpa. ....	277
————— by Heister and St. Ives ....	277
————— by author. ....	279
—————, after operation .....	281
—————, pain of, removed by pressure .....	276
Style, use of, in fistula lachrymalis .....	86
Suffusio scintillans of Sauvage, case of .....	261

## T.

Tube, objections to its use in the fistula lachrymalis. ....	80
Tumours encysted within the orbit. ....	293

## W.

Ward's paste, composition of .....	177
------------------------------------	-----

	Page.
Warner, Mr. treatment of fistula lachrymalis .....	69
Wathen, Mr. ditto, ditto .....	73
Water, injection of, in epiphora .....	12
Wells, Dr. paper on the dilatation and contraction of the pupil. ....	210

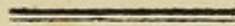
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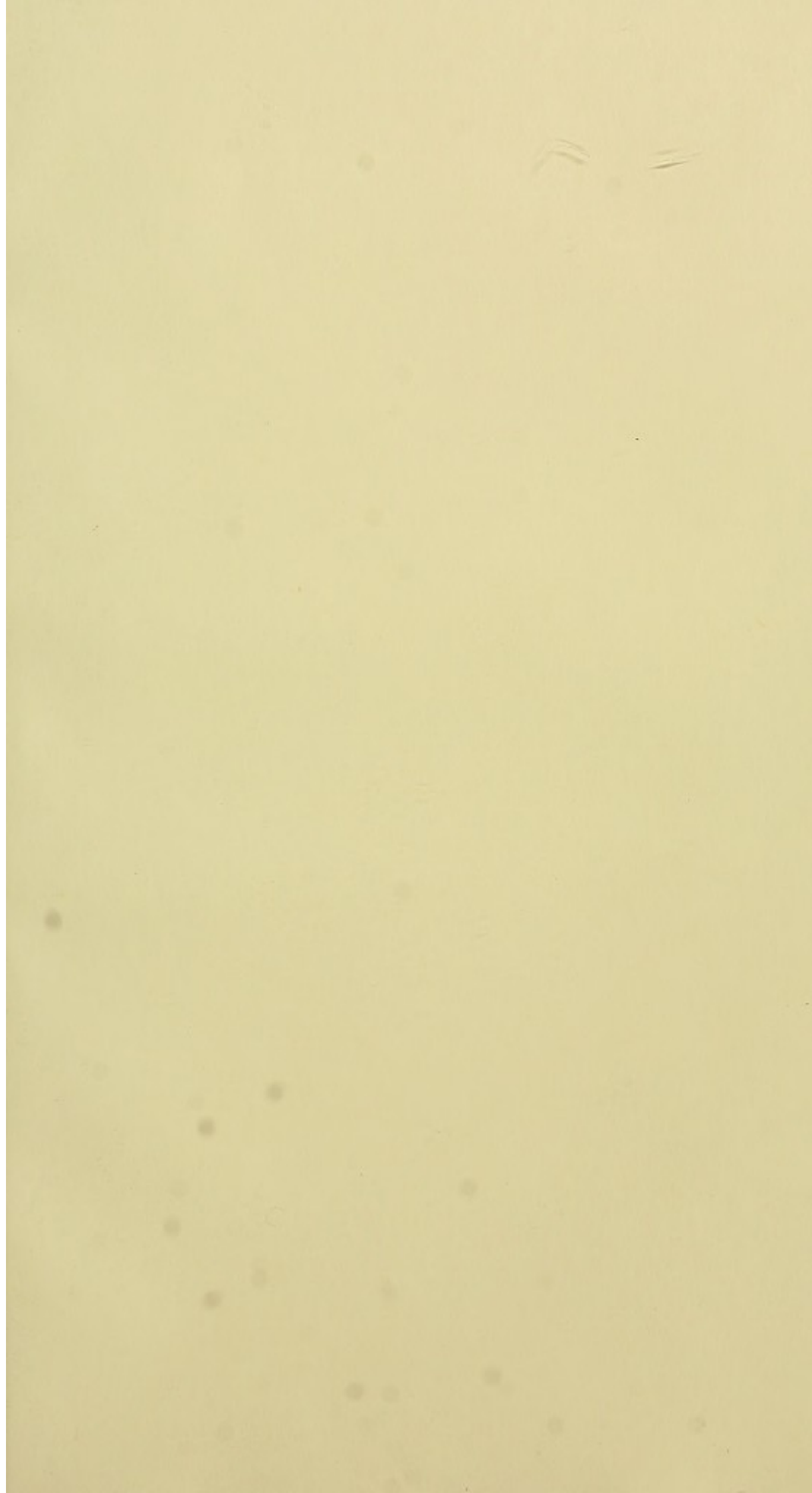
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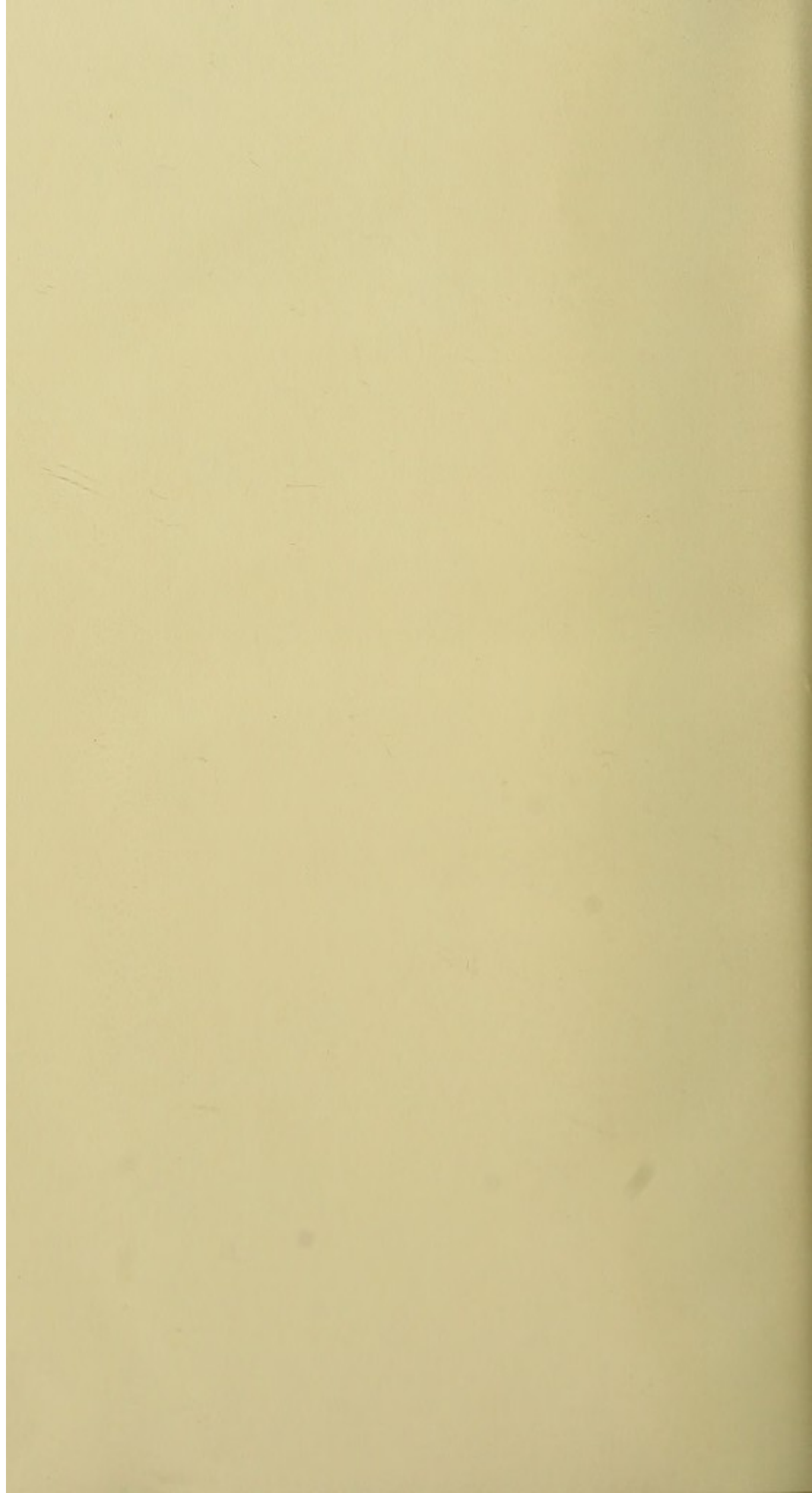
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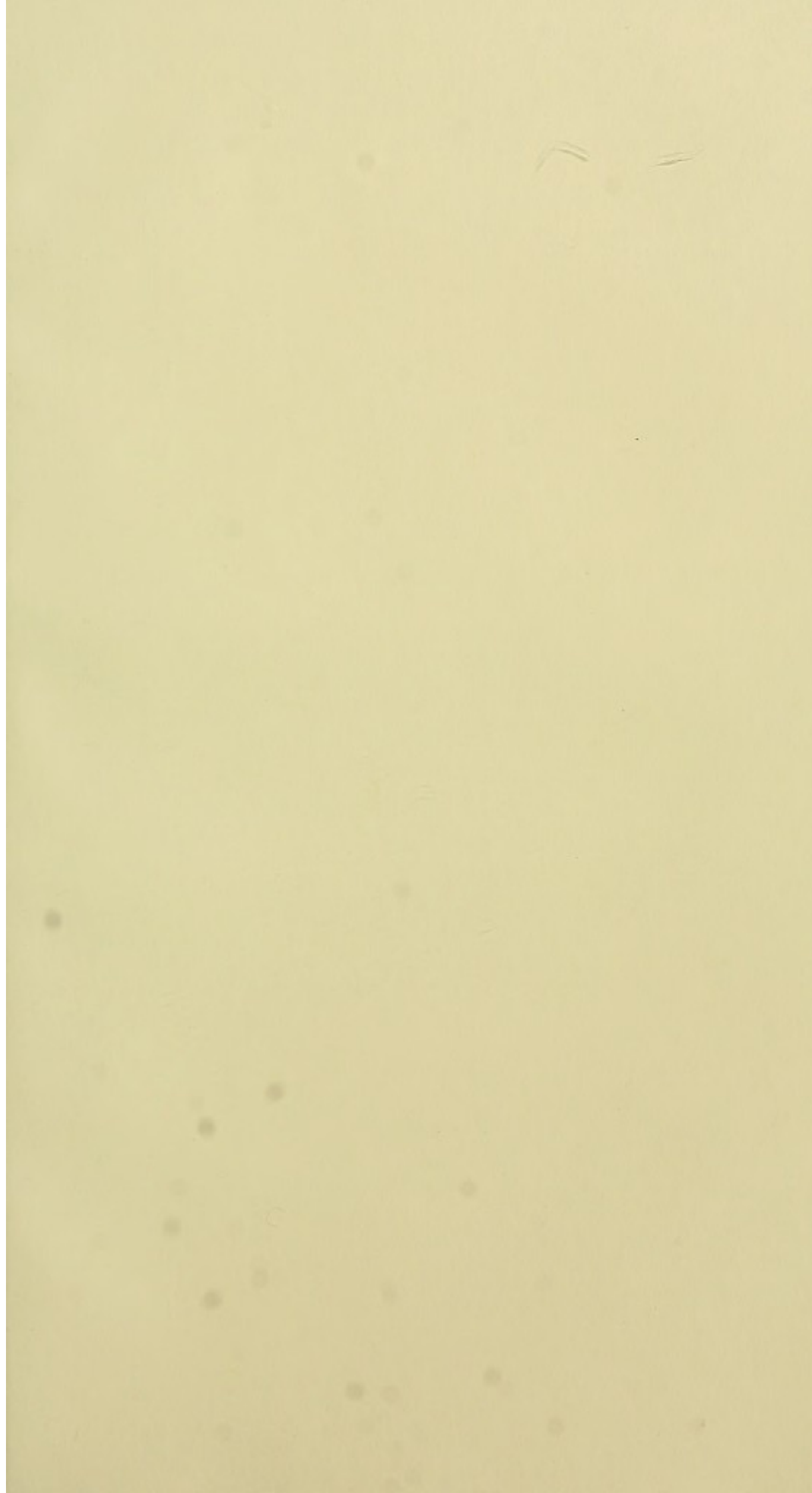
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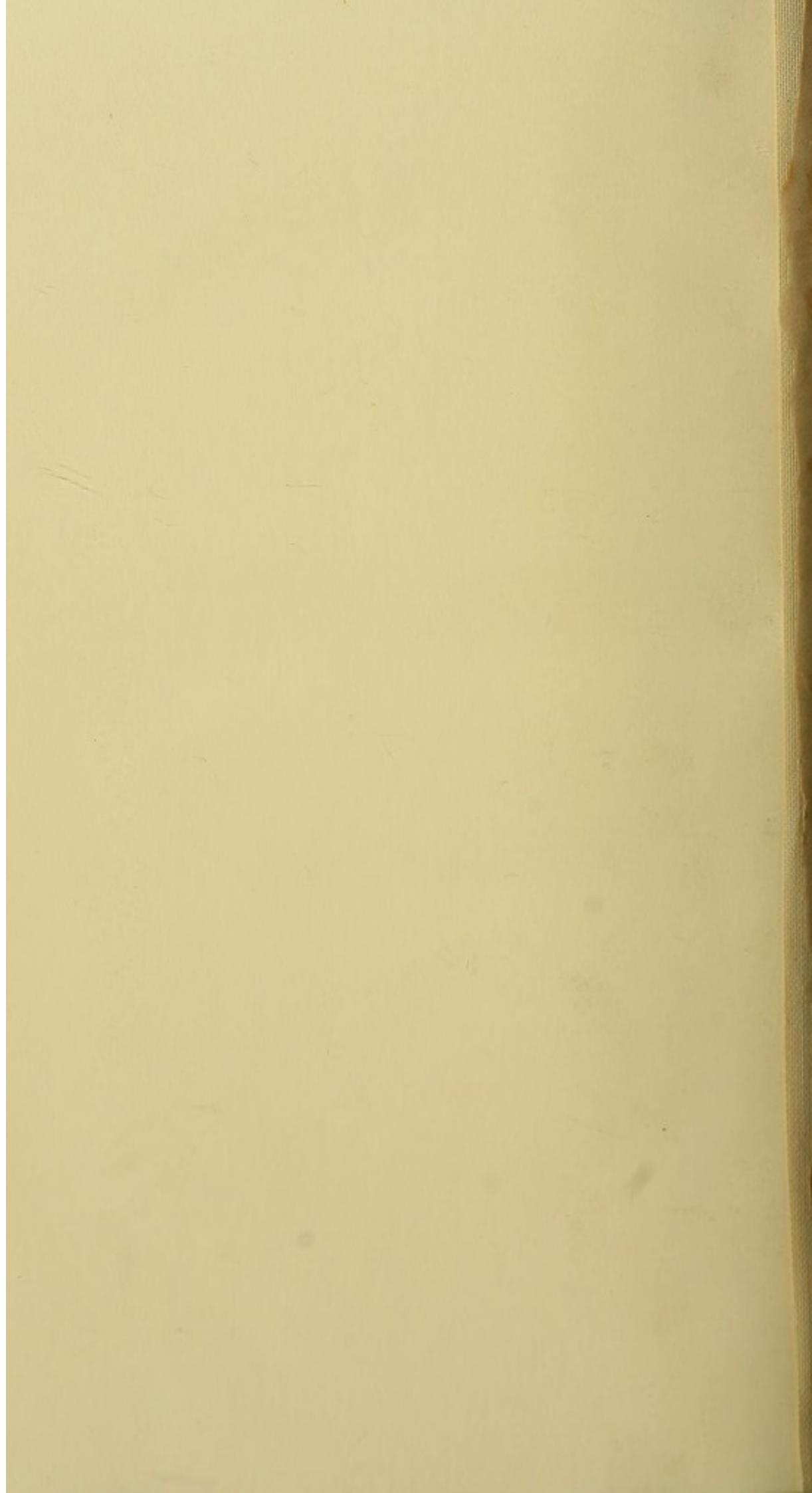
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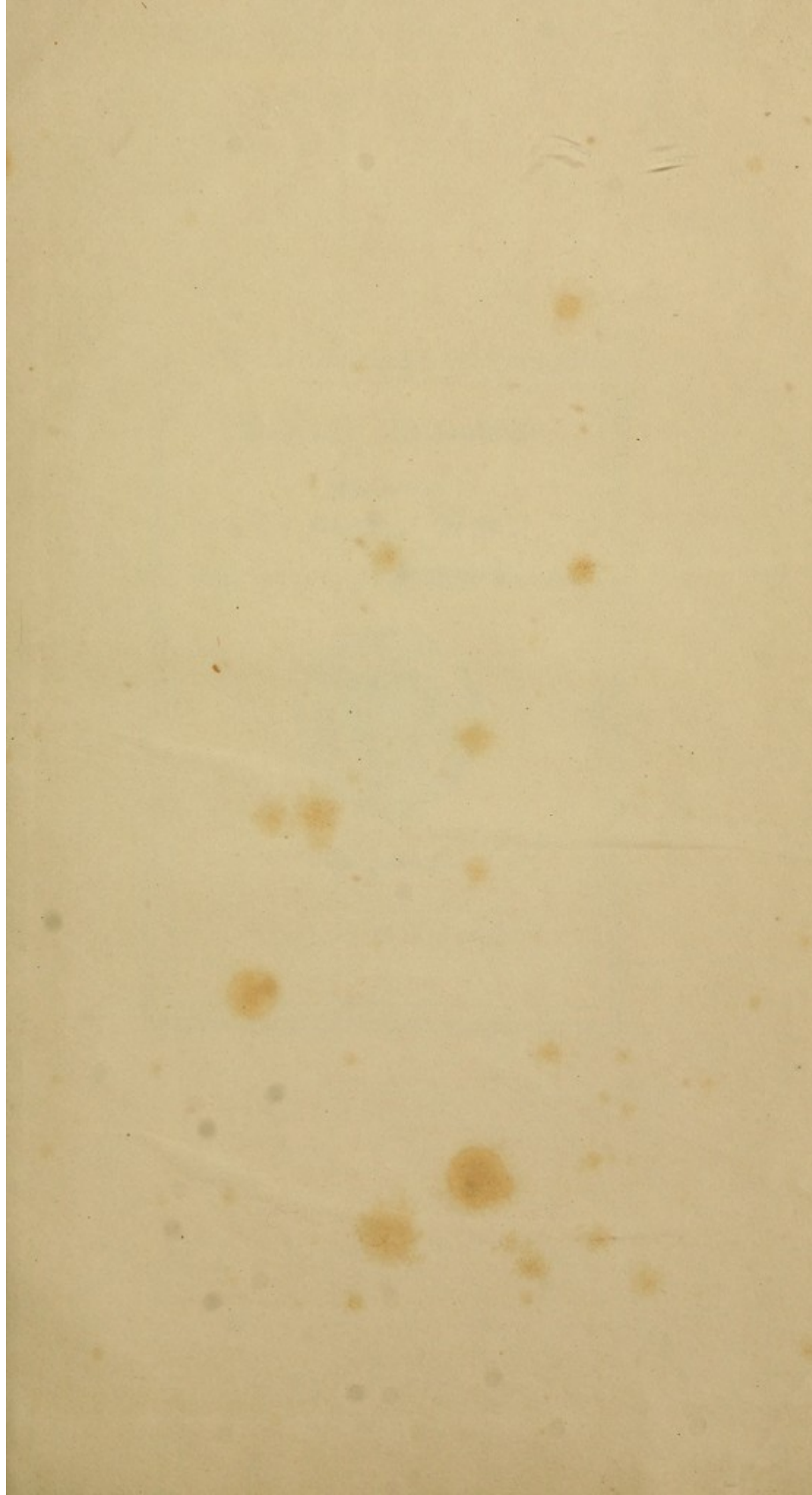


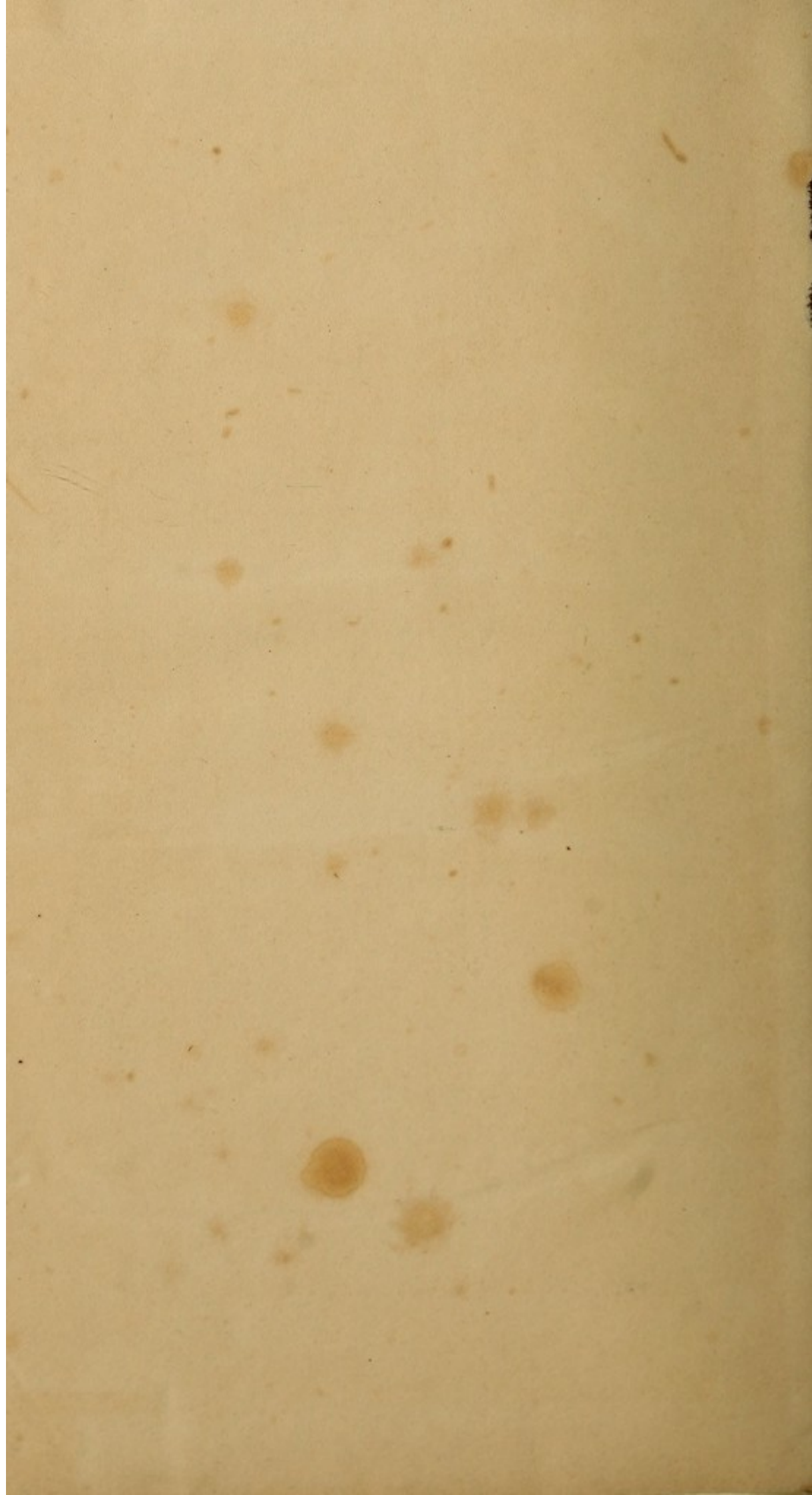












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