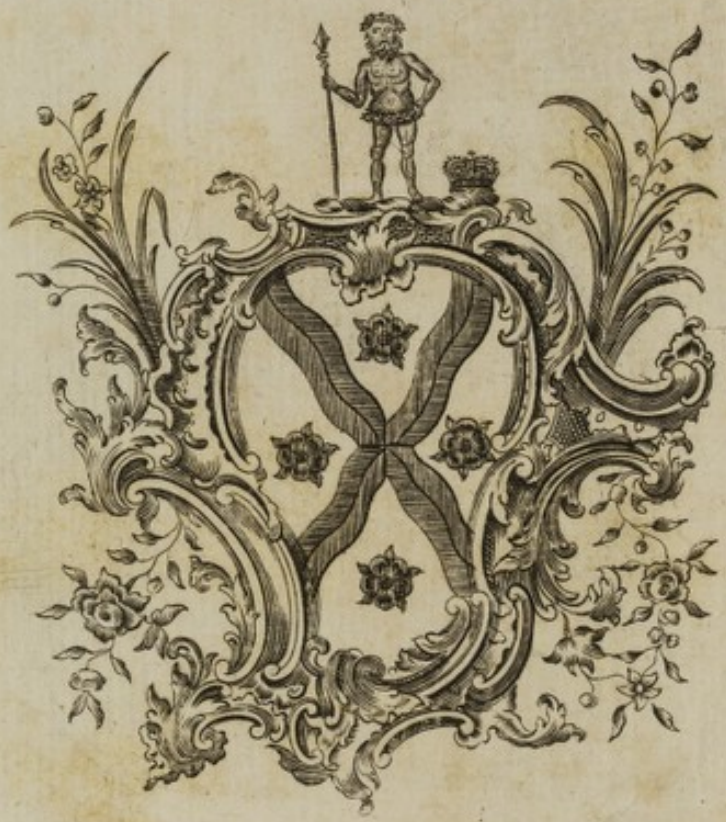
A critical enquiry into the present state of surgery / by Samuel Sharp.

11/4



Bequeathed to the Library of
the Army Medical Department
by Nivian Bruce Esq.r Deputy
Insp.r Gen.l of Hospitals. —

1832.

CRITICAL ENQUIRY

INTO THE

PRESENT STATE

OF

SURGERY.

By SAMUEL SHARP, F.R.S.

The THIRD EDITION.

LONDON:

Printed for R. and J. Dodsley in Pall-Mall.

MDCCLIV.

A

CRITICAL ENQUIRY

INTO THE

PRESENT STATE

OF

SURGERY.

By *SAMUEL SHARP*, F.R.S.
And Surgeon to *Guy*'s Hoſpital.

The THIRD EDITION.

LONDON:

Printed for J. and R. TONSON and S. DRAPER
in the *Strand.*

MDCCLIV.

PREFACE.

FROM the Title I have given to the following Sheets, it may possibly be expected that I should have passed some Judgment on every Branch of Surgery; but as the greater Part of that Work would have been a mere Repetition of what is to be found in the most approved Writers, I have only considered either such Doctrines, which, though generally received, are in my Opinion ill-grounded, or such Improvements as are yet but little known.

The Treatment of Tumors, Wounds, Abscesses and Ulcers, seems to be fundamentally

damentally the ſame in every Country of Europe; *for if the topical Remedies made uſe of on theſe Occaſions are different, their Tendency and Effect are the ſame. I think too, that all eminent Surgeons are agreed on the Method of treating Luxations and Fractures, for which reaſon I have not made any Obſervations on theſe Articles.*

Perhaps there never was a Period of Time in which any Art was more cultivated than Surgery has been for theſe laſt thirty Years, and I believe few have more contributed to its Perfection than the Authors to whoſe Works I have referr'd in ſome of the following Criticiſms; and therefore if I am right in my Remarks, I would not have it imagined that the Errors I have pointed out, are Specimens of the other Parts of their Works.

Monſieur

PREFACE.

Monſieur Le Dran, (*to whoſe Labours the World is exceedingly indebted*) *hath in his Obſervations of Surgery, and his Treatiſe of Operations, furniſhed us with Inſtructions which will inform the moſt skilful Proficients. Monſieur* de la Faye, *the ingenious Commentator on* Dionis, *has likewiſe given us in his Notes, not only what his own Experience and Reflections have ſuggeſted, but alſo, as he ſays, the Opinions and Obſervations of the greateſt Surgeons of* Paris; *and indeed the frequent mention he makes of Meſſieurs* Morand, Petit, de la Peyronie, *and others, are ſufficient Proofs that his Comments are an exact Repreſentation of the preſent State of Surgery in* France. *Monſieur* Garengeot's *Treatiſe on the Operations of Surgery, lies under the diſadvantage of having been publiſhed ſome Years ſince, and before many of thoſe Improvements were made, which are*

now

now universally known: Nevertheless it contains several Cases and Remarks well worth the Attention of a studious Reader. Heister's *Surgery is in every Body's Hands, and the Character of* Heister *is so well established in* England, *that any Account of that Work is needless.*

These are the principal Authors amongst the Moderns who have wrote on Operations in general; but notwithstanding the Merit of their Performances, it is to be hoped, there is still room for farther Improvements; and I shall esteem it my greatest Happiness, should it appear that in this Enquiry I have done any thing which may tend to promote an Art, in the advancement of which, the Good of Mankind is so nearly concerned.

CON-

CONTENTS.

SECT.

CONTENTS.

A

CRITICAL ENQUIRY, &c.

CHAP. I.

Of HERNIAS.

THE ſeveral Kinds of *Hernias* form'd by the Protruſion of the Inteſtines and *Omentum* from the *Abdomen*, are named either from the Parts through which they fall, or the Parts contain'd in the *Hernia*; and is a Branch of Surgery, which ſeems to have received very great Improvements from the Moderns, particularly in what regards the Operation for theſe Diſorders. I ſhall therefore endeavour to point out theſe Improvements, and, in order to make them more intelligible, ſhall firſt give an anatomical Deſcription of the Seat of each particular *Hernia*.

THE Parts through which theſe *Viſcera* protrude, are ſometimes the Navel, when it is

called an *Exomphalos*, or *Hernia Umbilicalis*; ſometimes the Rings of the Abdominal Muſcles, when it is called a *Hernia Inguinalis*, if the Tumour be only in the Groin; a *Hernia Scrotalis*, if it reach to the *Scrotum*; and in both Caſes more commonly a *Bubonocele*. When there is only *Inteſtine*, it is alſo called an *Enterocele*; when *Omentum* only, *Epiplocele*; and when both, *Entero Epiplocele*: Sometimes they paſs under the *Ligamentum Poupartii* with the Femoral Artery and Vein into the Thigh; in which Circumſtance it is called a *Hernia Femoralis*; ſometimes through various Interſtices of the Abdominal Muſcles, when it is called a *Hernia Ventralis*; and, laſtly, ſometimes through the great *Foramen* of the *Iſchium*. The *Inteſtines* and *Omentum* are the *Viſcera*, which generally form the *Hernia*: But there are a few Examples where the Stomach and the Bladder make the whole, or a part of the *Hernia*.

The *Inteſtines* and *Omentum* are contain'd within the *Peritonæum*, ſo that whenever they protrude from the *Abdomen*, they muſt either carry the *Peritonæum* along with them, or burſt through it: The Ancients admitted of both Caſes, believing that when the deſcent of the *Viſcera* was no lower than the Groin, the *Peritonæum*

was

was only dilated; when it push'd down into the *Scrotum*, it was ruptur'd: and from this last Supposition, the Distemper itself was called a *Rupture:* The Moderns deny the Rupture of the *Peritonæum*, not so much as granting it possible on any Occasion whatsoever, except where there may have been a previous Wound of the *Peritonæum*, in which Circumstance they believe the *Cicatrix* may open, and admit of the Insinuation of the *Viscera* through it; but though this be the generally receiv'd Opinion at present, it is evident to me, that notwithstanding the *Peritonæum* may at first fall down with the *Viscera*, yet in length of time it may also be ruptur'd; because I have found the *Intestine* and *Omentum* within the *Tunica Vaginalis* of the Testicle, and in contact with the Testicle itself, which they could not possibly have been, if they were invelop'd in a portion of the *Peritonæum:* However this Circumstance occurs but rarely; for we usually find the *Viscera* within a *Prolapsus* of the *Peritonæum*, which *Prolapsus* is now known by the Name of the *Herniary Sac.* Amongst the several Species of *Hernias*, the *Bubonocele* seems to be the most common; I shall therefore begin with the Examination of that particular kind; and the rather, because the right Understand-

ing of this one Species of *Hernia*, will open the way to our conceiving rightly of all the others.

THE *Bubonocele* is form'd by the deſcent of the *Inteſtine*, or *Omentum*, or Both, through the *Rings* of the Abdominal Muſcles into the *Tunica Vaginalis* of the Spermatic Cord, and ſometimes even into the *Tunica Vaginalis* of the Teſticle: But as this Diſtinction between the two *Tunicæ Vaginales* of the Cord and Teſticle, is not univerſally well known, it may be proper before I enter into the farther Conſideration of this Diſorder, to give an Anatomical Idea of theſe Parts.

THE Spermatic Artery and Vein lie contiguous to the back part and outſide of the *Peritonæum:* they, in common with the Ureters and Kidneys, are contained in a cellular Membrane, which is continued all along the Spermatic Cord down to the Teſticle, and is covered externally with a thin *Aponeuroſis* ariſing from the parts ſurrounding the Ring of the Abdominal Muſcles; this external Covering is alſo enveloped with the Cremaſter Muſcle, and was formerly conſidered as a *Tunica Vaginalis* common to both the Cord and the Teſticle, but the Moderns have divided it into two; ſo much of it as inveſts the Cord, they call the *Tunica Vaginalis* of

of the Cord, and that which contains the Teſticle, the *Tunica Vaginalis* of the Teſticle. They imagine the *Tunica Vaginalis* of the Cord, to be a looſe Sheath framed for the reception of the Spermatic Veſſels and *Vas deferens*; but the Notion of a Vacuity in this part is groundleſs, thoſe Veſſels being evidently connected with one another and with the Inveſting Membrane, by the Intervention of the cellular Membrane: Nevertheleſs, when the *Herniary Sac* falls into the Groin or *Scrotum*, theſe Cells give way as it advances, and the Inveſting Membrane together with the Cremaſter Muſcle which covers it, become diſtended, and form in conſequence of that Violence an abſolute *Vagina*; which Circumſtance may poſſibly have given riſe to the Opinion of a natural Vacuity in the *Tunica Vaginalis* of the Cord.

THE *Tunica Vaginalis* of the Teſticle is a looſe Sheath formed to contain not only the Teſticle itſelf, but a ſmall quantity of Water for lubricating the Teſticle. Its external Coat is a continuation of the Inveſting Membrane of the Cord, but its internal one is proper to the Teſticle, being in its upper Part connected with the Spermatic Cord, ſo as to make it a diſtinct Bag: This upper part of the Bag which embraces

the Cord, being conſidered as dividing the *Tunica Vaginalis* of the Teſticle from the *Tunica Vaginalis* of the Cord, is therefore named the *Septum* of the *Tunicæ Vaginales:* And as theſe Coats have been ſuppoſed to ariſe from the *Peritonæum*, they have in all Ages, been likewiſe called the *Proceſſus Peritonæi.*

SOME[1] of the Moderns knowing that the *Tunica Vaginalis* ariſes abſolutely on the Outſide of the *Peritonæum*, have thought it improbable that the *Viſcera* ſhould inſinuate themſelves within its Cavity, and have imagin'd that the *Herniary Sac* lies on the Outſide of the *Tunica Vaginalis* between it and the *Membrana adipoſa*; but they are miſtaken, if not always, at leaſt for the moſt part, becauſe the inveſting Membrane of the *Tunica Vaginalis*, ariſing from the Circumference of the *Rings* of the Abdominal Muſcles, as I have juſt now mentioned, does neceſſarily by that Situation lie open to receive the deſcending *Viſcera*; in conſequence of which, the *Viſcera* and *Sac* inſinuate themſelves within the *Tunica Vaginalis* of the Cord, lying upon the *Tunica Vaginalis* of the Teſticle. This is the uſual ſeat of the *Hernia Scrotalis*, as is evident not only

[1] *Vide* Verduc's *Operations, Chapter on the* Bubonocele. Sharp's *Operations, Chapter on the* Bubonocele.

from

from Diſſection, but alſo from the Diſtinctneſs of the *Hernia Inteſtinalis*, and the *Hernia Aquoſa*, when they happen to be complicated on the ſame Side of the *Scrotum*: Nevertheleſs, as I have already aſſerted, it ſometimes happens that the *Inteſtine* or *Omentum* are found within the *Tunica Vaginalis* of the Teſticle, not contained in a Sac, but lying immediately in contact with the body of the Teſticle: This perhaps may appear ſurpriſing, not only becauſe it neceſſarily implies a Rupture of the *Peritonæum*, but becauſe the *Viſcera* muſt alſo be forced through the Part, which I have juſt deſcribed as the *Septum* of the *Tunicæ Vaginales*.

EVERY *Hernia* ariſes from a Relaxation of the Parts through which the *Inteſtine* and *Omentum* paſs, and is therefore generally occaſioned by violent Efforts of the *Viſcera* againſt the abdominal Muſcles, but ſometimes the Relaxation is ſo great, that the Deſcent happens at a certain Period of Time, without any other evident Cauſe to produce it: Some aſſign the [2] Thinneſs of that particular Portion of the *Peritonæum* which covers the ſeveral Openings of the *Abdomen*, as another Cauſe of *Hernias*; but if the *Peritonæum* was ten times thicker

[2] Wiſeman, *Vol.* 2. *Page* 241. 5*th Edit.* 8*vo.* Paulus Ægineta, 301. Straſburg *Edit.* 1542.

than it is, it would not alone prevent the Protruſion of the *Viſcera*, were the Openings of the *Abdomen* relaxed.

In Infants the *Bubonocele* is a frequent Complaint; but much the greater Part of theſe *Hernias* are recovered by the mere Strength of Nature; for as they advance from their infant State, the Muſcles of the *Abdomen*, and the Tendons of the Rings, become more rigid and reſiſt the future falling of the *Viſcera*. When the Diſorder happens to Children of about two Years of Age, the proper Bandages to ſupport the *Hernia* within the *Abdomen* are more neceſſary; not but that Nature overcomes the Illneſs in every Part of Youth, tho' the older the Patient is, the more neceſſary it will be to call in the Aſſiſtance of Art; but ſtill it muſt be remembred, that even in the moſt tender Infancy, a Truſs is uſeful, if it can be apply'd without galling the Child. Very fat People are likewiſe ſubject to this Malady, not only as a large *Omentum* conduces to ſupple the Rings, but as its very Weight may poſſibly tend to dilate them. And ſometimes this Diſpoſition to relax is ſo great, that the Rings of the Muſcles become wide enough to admit much the greater Portion of the Inteſtines and *Omentum* to fall through

through them into the *Scrotum*, and even without much Inconvenience to the Patient.

In the beginning of a *Bubonocele*, and in the generality of old *Bubonoceles*, the Inteſtine returns of itſelf into the *Abdomen* upon lying down, or at leaſt, is eaſily returned by the Hand: In this State of the Diſorder, the Moderns content themſelves with the Application of a proper Bandage, which is looked upon rather as a palliative than a radical Cure; tho' in Youth, by a conſtant uſe, it generally is attended with Succeſs, and even ſometimes in advanced Years: For by ſupporting the *Viſcera* in the *Abdomen*, the *Rings*, at length recover their tone, and contract to their former ſize, and ſometimes by long Compreſſion the two Sides of the *Tunica Vaginalis* of the Cord will poſſibly adhere, or at leaſt contract ſo much as not to admit of the future Deſcent of the *Viſcera*; or if the Inteſtine alone is reduced, and the *Omentum* remains, the *Omentum* itſelf will ſometimes adhere and become an Obſtruction to the falling down of the *Viſcera:* But there have been various Methods practiſed formerly to effect an abſolute Cure, and which, tho' diſapprov'd of by the preſent Age, are not all of them, perhaps, ſo abſurd as they are imagined.

Some

SOME of the principal Means employed for this End were Caſtration, the Cauſtic, the *Punctum Aureum*, and the Royal-ſtitch: The firſt of theſe Methods is ſo cruel an Operation, that it never found Countenance from the Learned, but was performed by [3] Itinerants only, and even amongſt them, it is ſaid, ſome were aſham'd to avow the Extraction of the Teſticle, and always endeavoured to conceal it from the Spectators: But however deſperate the Remedy be, *Dionis*, its moſt violent [4] Adverſary, grants it was effectual; and it is certain if any thing can prevent the Relapſe of the Deſcent of the *Viſcera* into the *Scrotum* or *Groin*, it muſt be the ſtopping up the Channel through which they paſs; and this is done by the Ligature of the Spermatic Cord with its *Tunica Vaginalis*, as is practiſed in Caſtration; for when the Ligature drops off, it leaves a firm Cicatrix form'd by a Conſolidation of thoſe Parts, which reſiſts the future Protruſion of the *Viſcera*.

WHEN the Cure is attempted by a Cauſtic, the Patient uſes low Diet, and is kept in Bed during the whole Courſe of the Treatment; both which Precautions are alſo neceſſary in the other Methods: When the *Hernia* is reduced, a Cauſtic of the Size of a half Crown is laid upon

3 Dionis, 337. *4th Edit.* 4 *Ibid.*

that

that Part of the Skin which covers the Rings, and ought to be of ſuch a Strength, and to lie ſo long, as to deſtroy the Skin, the *Membrana Adipoſa*, and the *Proceſſus Peritonæi*, without injuring the Spermatic Veſſels: The Slough is then either to be cut out, or left to digeſt off, after which it is preſumed, that the Adheſions formed to the Circumference of the Rings, and to the Spermatic Veſſels, will prove an Obſtruction to the Deſcent of the *Viſcera*; but from a great deal of Experience it has at laſt been diſcovered to be a very precarious Meaſure; for unleſs the *Proceſs* be deſtroyed as well as the Fat, it will ſignify nothing, and it is found very difficult to aſcertain the Strength of the Cauſtic to ſuch an Exactneſs, that it ſhall reach juſt ſo far without injuring the Veſſels themſelves; ſo that after a fair Trial it ſeems now to have fallen into general Diſcredit.

THE *Punctum Aureum* was perform'd in the following manner. The Patient being laid on his Back, and the Contents of the *Hernia* returned into the *Abdomen*, as is always done before any of theſe Operations are undertaken, the Surgeon makes a tranſverſe Inciſion through the Skin and Fat, down to the *Proceſſus Peritonæi*; then with a crooked Needle he carries a golden

Wire

Wire under the Cord close to the Rings, and with a Pair of Pincers twists the two Ends of the Wire so as to prevent any Communication of the Channel below the Wire, with the Channel above the Wire: But it required great Skill to execute this Process of the Operation with due Exactness; for if the Stricture was made too tight, the Circulation of the Blood in the Spermatic Vessels was obstructed, and consequently the procreative Faculty destroyed; if it was not made tight enough, the Purpose of the Operation was not answered. Upon these Accounts it came at length into disuse, though it was at first approved of by some regular Practitioners.

[5] The Royal Suture was performed by laying bare the *Processus Peritonæi* a considerable Length from the *Rings* downwards, and then with a straight Needle and wax'd Thread, sewing it up by the Glover's Stitch, in such a manner as to leave the Spermatic Vessels free, at the same time that the Channel of the *Process* is shut up; by which means the Return of the *Omentum* or Intestine was prevented: The Conceit of saving many of the King's Subjects by this means, without impairing the propagating Powers, gave the Name of Royal Suture to the

[5] Dionis, 334.——Aquapendente, 274. Padua *Edit.* 1666.

Method

Method. This Operation is likewiſe abſolutely exploded by the Moderns, but I am inclin'd to think it would generally prove ſucceſsful, if it was practiſed with the following Improvements, which is very little different from the Method followed by *Parey* [6], *Wiſeman* [7], and others, who ſeem to favour this Operation.

When the *Proceſſus Peritonæi* is laid bare by the longitudinal Inciſion, and the *Membrana Adipoſa* a little diſſected away, ſo that the *Proceſs* may be freely taken up between the Finger and Thumb of the left Hand, I would adviſe the ſame kind of Suture with the abovementioned one, only, that every Stitch ſhould be carried from the *Proceſs* through the Skin on that Side next the *Penis*, and be again returned from the Skin through the *Proceſs*; whether the Suture be carried from above downwards, or from below upwards, that Portion of the *Proceſs* cloſe to the *Rings*, muſt be ſewed in almoſt its whole Diameter to the Skin, otherwiſe the *Viſcera* may ſtill protrude. When the *Proceſs* is thus attach'd in its lower Part to the Skin, all that Portion of it above the Courſe of the Suture (which I preſume ſhould be an Inch and a half long) may be cut off

[6] *Book* 8. *Chap.* 16. Engliſh *Edit.* 1678. [7] *Page* 250.

with

with a Pair of Sciſſars, which will facilitate the Digeſtion of the Wound. I will not take upon me without Experience, to recommend this Method of Cure very ſtrongly; but if in the imperfect Manner it was formerly practiſed, they found ſome Succeſs, which is not deny'd, I ſuppoſe with the Advantages here propoſed, it would be much more certain; though, to ſpeak my Opinion on this Subject, I would never perſuade any Patients to undergo an Operation for a *Bubonocele*, whilſt in this moveable State, but rather to acquieſce under the Relief procured by a Truſs: However, as ſome People are ſo uneaſy, that they will expoſe themſelves to any Meaſure in this Circumſtance, for the hopes of a radical Cure, I ſhould prefer, upon ſuch an Emergency, the Operation here propoſed to the Methods now employ'd. It muſt in its Nature be more effectual than the Cauſtic, and I think leſs dangerous than the common Operation for the *Bubonocele*, and beſides, it will be much leſs liable to a Relapſe, which the uſual Operation for the *Bubonocele* is very ſubject to. Perhaps it may be objected, that there is great danger of wounding or ſewing up the Spermatic Veſſels; but as they run along the back Part of the *Proceſs*, both the one and

the

the other will be eaſily avoided, though indeed, it is not a Species of Suture that will conſtringe the Veſſels, nor do I imagine it would be hurtful, if by chance any of them ſhould be punctured.

I HAVE thus far conſidered the *Bubonocele*, as being moveable at pleaſure into the *Abdomen*; but there are an infinity of Inſtances, where it remains perpetually in the *Scrotum*; this generally ariſes either from the Adheſion of one Inteſtine to another, and of the Inteſtine to the *Omentum*, or elſe from the Adheſion of the *Viſcera* to the *Sac*, and of the *Sac* to the *Tunica Vaginalis*. In both theſe Caſes it is uſual to ſuſpend the *Scrotum* with a Bag-Truſs, and make no farther Attempts; but it having [8] frequently happen'd to People afflicted with monſtrous *Bubonoceles*, that the *Hernia* has intirely diſappear'd, after a long Illneſs which has confin'd them to their Beds, and greatly emaciated them; Some of the Moderns have imitated this Operation of Nature, and by frequent Bleedings and repeated Purges have ſo far reduced the Size of the *Hernia*, that it has been return'd into the *Abdomen*, and there eaſily ſupported by a proper Truſs. It muſt be obſerv'd, however, that this Method cannot prove ſucceſsful, but when the *Viſcera* adhere only to

[8] Le Dran, 114. French *Edit.* Arnaud, 292,

one

one another; for where they adhere to the *Sac*, and the *Sac* to the *Tunica Vaginalis*, or where they adhere to the *Peritonæum* juſt within the *Abdomen*, as is ſometimes the Caſe, the Attempt will be fruitleſs. It is alſo worth remarking, that as the Cure depends upon emaciating the Parts, the more *Omentum* there is in the *Hernia*, the more probable the Succeſs will be, becauſe *Omentum* will waſte in a greater Proportion than the other Parts: Though if the *Hernia* be form'd of *Inteſtine* only, it may likewiſe ſucceed, eſpecially if the Glands of that Part of the *Meſentery* which is in the *Scrotum* happen to be enlarg'd; for by theſe Evacuations they will be exceedingly diminiſhed, and [9] conſequently make room for the return of the obſtructed Inteſtine.

From the Principle juſt laid down, it ſhould ſeem that when the *Hernia* is compoſed of *Omentum* only, the Probability of a Cure ſhould increaſe; but if I judge rightly, it is an Inſtance where the Experiment is not worth making, I mean if the *Hernia* be large; for though by this means you do reſtore the *Omentum* into the *Abdomen*, yet when it repleniſhes again, as it will do when the Patient returns to

[9] Arnaud, 291.

his

his former manner of living, it will be apt to fall down again into the *Scrotum*, or lye uneaſily preſſing againſt the Cuſhion of the Truſs: But the greateſt Exception to this Method of Cure in every Species of *Hernia*, is the want of an abſolute Criterion, by which to diſtinguiſh when the Parts do or do not adhere to the Herniary *Sac*; and in advanced Years, though one was ſure that the *Viſcera* were free from the *Sac*, the Poſſibility of hurting the Habit of Body by the neceſſary Evacuations, is alſo another Objection to the Experiment.

I SHALL come now to the Examination of the *Bubonocele*, in that Stage of the Complaint where the *Viſcera* are inflam'd, and at the ſame time, ſtrangulated by the Rings of the Muſcles. This is a very dangerous Situation, and though often reliev'd by medical Means, yet it alſo often ends in a Gangrene of the Parts, unleſs the *Stricture* be removed by the dilatation of the *Abdominal Rings*, which Proceſs is call'd the Operation for the *Bubonocele*.

SOME Surgeons of the greateſt Judgment, believing there is no danger in the Operation itſelf, impute the frequent Miſcarriages after the Operation merely to the deſperate Circumſtances of the Patient before he will undergo it: But

though it is true, that the Event of the Operation would not be ſo often fatal as it now is, were Patients to ſubmit ſoon after the Beginning of a Strangulation; yet I cannot but judge the Opinion of its innocence to be ill-grounded; and to me it appears a little ſtrange, the Notion ſhould be ſo univerſal, when it is known that thick Membranes ſeldom digeſt but with ſome hazard: And in this Caſe, not only the thickened *Tunica Vaginalis*, but the *Peritonæum* are laid open, and the tendinous *Rings* of the Muſcles muſt be digeſted before the Wound can be healed; beſides, that the expoſing the *Viſcera* to the Air, and handling them in the manner we are obliged to do in the Operation, when we return them into the *Abdomen*, may probably ſometimes be miſchievous; but what is ſtill a more convincing Argument of its precarioufneſs is, that many have died after the Operation, though perform'd long before the Symptoms of an approaching Mortification would probably have appeared. It becomes therefore a Matter of the greateſt Concern, to try firſt the moſt effectual Methods for reſtoring the *Viſcera* into the *Abdomen*, without the Aſſiſtance of the Operation, till an approaching Gangrene, or at leaſt, ſome other urgent Symptoms compel us to it; though

though it must be confess'd, that to determine rightly upon the critical Time when to perform the Operation, is a very delicate Point, and requires the utmost Discernment.

As the Inflammation of the *Viscera*, and all the other Symptoms attendant upon a strangulated *Bubonocele*, seem evidently to arise from a stricture of the *Rings* including the Parts, the Intention of Surgeons in all Ages has been directed to the removal of the *Stricture*, and Discussion of the Inflammation. To this end, plentiful Bleedings and repeated Clysters have been universally approv'd of; and [1] some lay great Stress on Clysters of the Smoke of strong Tobacco. Emollient oily Cataplasms for the Relaxation of the Tendinous *Rings*, have also been generally apply'd; and, previous to these, emollient Fomentations; but some eminent [2] Practitioners have rejected all warm Applications, supposing that in an Inflammation the Vessels are already expanded by the rarified Blood, and that hot Stupes must therefore aggravate the Disorder. Upon this Principle, they have run into another Extreme, and recommended the Application of cold Water,

1 Heister, 807. 2 Belloste, *Chirurgien d'Hôpital.* Vol. II. page 156. *Edit. tertia.* Paris.

imagining it will condenſe the Fluids, and by thus diminiſhing the bulk of the Part, make it capable of being reduced: But I believe I may venture to ſay, that cold Water apply'd to this Species of Inflammation has a dangerous Tendency; and there are others beſides myſelf, who (however they approve of it in the Beginning of the Strangulation) [3] diſſuade us from the Uſe of it in a great Degree of Inflammation. Nevertheleſs, it muſt be obſerv'd, that the Advocates for this Doctrine quote their Experience for the Truth of it; but I ſuppoſe, Experience in this, as well as many other Caſes, may be a fallacious Guide; for if the Inflammation ſubſiſts ſeveral Days, in that Time the *Hernia*, as well as every other Part of the Body, is ſo leſſen'd by the Evacuations and Symptomatic Fever, that the *Viſcera* may be readily returned; and this we ſee is a very common Event, not only after the uſual Methods of Treatment, but even where all Applications have been neglected.

PURGING in this Diſorder is almoſt univerſally condemned, or rather in theſe Days not ſo much as mentioned. [4] *Celſus* has ſaid, that

[3] Heiſter, 807. Gorter, 352. [4] *Lib.* 7. *cap.* 20. Leyd. *Edit.* 1730.

Purging

Purging may increaſe but cannot diminiſh the *Hernia*, and perhaps it may be true: However, I have often ſeen ſmall Doſes, ſuch as the Stomach could bear, given every two or three Hours, and I think with good Succeſs. I will not pretend to account for the Operation, as I am not quite ſure of the Fact; but poſſibly the Periſtaltic Motion of the Guts may be ſo augmented, as to make the Inteſtine next to the *Sac* draw out forcibly a part of the *Inteſtine* from within the *Sac*, and in that manner make room for the reſt to follow.

But theſe Methods will generally avail but little, without the Surgeon's Endeavour to puſh the *Hernia* from the *Scrotum* back into the *Abdomen*; and indeed we depend ſo much on this Attempt, that we always uſe our utmoſt Efforts for that Purpoſe, before we employ the Meaſures I have already mentioned. To effect the Reduction more certainly, it is admitted by all Surgeons, that the Buttocks of the Patient ſhou'd be rais'd higher than his Head, and his Knees bent, that the reclining Poſture of the *Abdomen* may favour the return of the *Viſcera*, though they [5] always order the Cheſt to be bent a little forwards, that the Abdominal Muſcles

[5] Le Dran, 116.

may be in a lax State, imagining that if they were upon the Stretch, the *Rings* would be more contracted and conſequently increaſe the Strangulation; but I have ſo often, immediately after having try'd this Method in vain, ſucceeded in the Reduction by ſuſpending the Patient with his Head downwards, and his Hams bent upon the Shoulders of a ſtrong Man, that I am inclin'd to believe the Extenſion of the Abdominal Muſcles is no impediment to the return of the *Viſcera*, and it is very probable, that the whole Weight of all the *Viſcera* in the *Abdomen* drawing the *Viſcera* within the *Sac* perpendicularly downwards, may greatly contribute to diſlodge them from that Part; eſpecially if it be true, that when we find it difficult to reduce all the *Inteſtines*, we may upon this Principle finiſh the Reduction by placing the Patient on his [6] oppoſite Side.

The Reduction by the Hand ſhould be performed with great Caution, and in the *Bubonocele* we ſhould always endeavour to puſh the Parts towards the *Ilium*, that being the Direction in which the *Hernia* lies: We muſt not compreſs too rudely, nor muſt we ſoon deſiſt from the Attempt; for by long handling

[6] Le Dran, 117.

it

it we frequently at length ſucceed. Perhaps the *Fæces* are inſenſibly propelled by this means from the *Hernia* into the *Abdomen*, which rendring the Volume of the Tumor leſs, may make it moveable: Perhaps, by Compreſſion the Fat may be gradually puſh'd forward out of the Cells of the *Omentum* below the *Rings* into the Cells above the *Rings*, which will leſſen the *Hernia*; or perhaps ſometimes a Portion of the Inteſtine entangled in the *Omentum* may be diſengaged, which ſlipping up may make room for the reſt to follow. Some employ a hot Stupe, in which they incloſe the *Scrotum* when they attempt the Reduction; but I think we have a better Management of the Part when it is dry and we uſe our bare Hand: We are not to deſpair of Succeſs tho' we ſhould at firſt be baffled in our Endeavours, but muſt renew our Efforts from time to time, unleſs we perceive the Symptoms of an approaching *Gangrene*; and it will be always right to take the Advantage of a Bleeding, for if by chance the Patient ſhould faint, the Relaxation of the *Rings*, and abatement of the Tenſion in the *Hernia*, during the *Deliquium*, furniſh an Opportunity which ought not to be neglected; on this

Account the Patient ſhould ſit up when he is blooded, becauſe in this Poſture he will be more liable to faint.

THE Method of pricking the Inteſtines with a Glover's large Needle in order to reſtore them, by diſcharging the Wind, and diminiſhing their Bulk, is condemned by all the Moderns, tho' not upon unexceptionable Grounds; for I think it is not true, that a Number of Punctures, ſufficient to evacuate a Quantity of Air, will [7] be pernicious to the Inteſtines: But as it can only be practiſed with Benefit in a *Hernia Inteſtinalis*, and no body has had much Experience of the Method, except the [8] Writer who recommends it, we muſt wait for further Experiments, before we either peremptorily approve or explode it.

IF all theſe Meaſures fail, the Operation becomes the only Reſource; but, as I have mentioned before, it is very difficult to determine exactly upon the moſt expedient time. It is [9] ſaid by ſome, that if there be Inteſtine only, the Operation ſhould not be deferr'd longer than Twenty-four Hours; by others, longer than Forty-eight Hours; eſpecially in young People, where the Mortification is ſaid to

[7] Dionis 86. [8] Peter Lowe.
[9] Gorter, 352, 790.

come

come on faſter than in advanced Years : [1] But if the *Omentum* accompany the Inteſtine, all agree it may be poſtponed with Safety: For the *Omentum* ſurrounding the Inteſtine and ſerving as a ſoft Bed for it, prevents that Exceſs of Strangulation, which the *Hernia Inteſtinalis* is incident to: This Remark is ſo far true, that it were to be wiſh'd the Rules laid down for diſtinguiſhing the one Species of *Hernia* from the other, were more certain; but the uſual Thickneſs and Tenſion of the *Herniary Sac* is ſo great, that we cannot always evidently diſcover what are the Contents, when the *Hernia* is in an inflamed State: And as to the different Symptoms, excited by the different *Hernias*, I believe they are as little to be depended upon; for though the Symptons of a *Hernia Inteſtinalis* are in general, as I have hinted, more preſſing than thoſe of the other *Hernias*, yet even here we meet with numberleſs Exceptions. In ſome, that have died in a ſhort time after the Strangulation, great Quantities of *Omentum* have been found in the *Sac* with the *Inteſtine*; and in others, who have lain languiſhing many Days with an *Enterocele*, upon performing the Operation, the *Inteſtine* has been found very little injured; nay, it is ſometimes hard to

[1] Heiſter, 790.

diſtinguiſh

diſtinguiſh betwixt an *Epiplocele* and an *Entero Epiplocele*; for, if a free Paſſage from the Stomach to the *Anus* is the Characteriſtic of an *Epiplocele*, there are Examples where only a part of the Circumference of the *Inteſtine* has been nich'd into the *Rings*, and admitted of the Progreſs of the *Fæces*: On the contrary, there have likewiſe been Inſtances, where all the Symptoms of a ſtrangulated *Inteſtine* have appeared, and upon performing the Operation [2] it has been diſcovered to be a mere *Epiplocele*.

I AM of Opinion therefore, that the exact knowledge of the Contents of a *Hernia* (ſuppoſing we could know them) is not the ſufficient Guide it has been commonly repreſented to be; and that it muſt depend upon the Surgeon's Skill to determine alſo by other Symptoms, whether from a farther delay of the Operation, the Patient may not be too much exhauſted, and a Gangrene of the Parts be endangered, which laſt Circumſtance is uſually mortal; tho' every Man of great Practice has met with Exceptions to this Rule, and indeed the Moderns have, from the poſſible occurrence of this [3] Exception, made very ſingular Improvements in the Operation.

[2] Garengeot. *Vol.* II. *p.* 257, 258. *Edit.* 2. [3] Heiſter, 808. Le Dran, 123.

THE

THE common way of beginning the Operation is by pinching up the Skin tranſverſly in that part which covers the *Rings*; and then, by inſinuating a Director between the Fat and the *Tunica Vaginalis*, to extend the Inciſion an Inch above the *Rings*, and a conſiderable Length below them towards the bottom of the *Scrotum*; but it is a much eaſier and quicker Method to begin your Inciſion at once, an Inch or two above the *Rings*, and continue it at one Stroke as far as you propoſe to carry it, which may be executed without any risk, by a Man accuſtomed to Diſſections.

WHEN you have thus cut through the *Membrana adipoſa*, you muſt clear it away with your Knife from the *Tunica Vaginalis*, which will then give you an opportunity of opening that Membrane and the *Herniary Sac*, in the manner that ſhall beſt ſuit the Circumſtance of the Caſe: When the *Hernia* is recent, it is ſaid the *Sac* is thin, ſo that you may pinch it up a little between your Finger and Thumb, and make a ſmall Orifice into it either with a Knife or Sciſſars, without any risk of wounding the *Inteſtine*; after which, either a Director may be introduced to cut upon with a Knife, or the Inciſion may be dilated with a Pair of Probe-Sciſſars:

Sciſſars: But when the *Hernia* is old, the *Laminæ* of its Membranes are exceedingly thickned, and ſo tenſe, that they cannot be pinch'd up for this Proceſs: Under ſuch a Circumſtance, we are ordered to puſh a pointed Director obliquely forward between *Lamina* and *Lamina*, cutting them as it advances, till we arrive within the *Herniary Sac*, and then to proceed in the manner juſt now deſcribed: This Meaſure is calculated to obviate the Danger of wounding the *Inteſtines*; but it is a tedious Proceſs, and I queſtion whether it be more ſafe than cutting gradually a ſmall Orifice through the ſeveral *Laminæ* with the Point of the Knife. It is hardly of any importance how ſmall the Orifice is, for if it admit only the blunt End of a Probe into the *Sac*, you may, by lifting it up, enlarge the Orifice at Pleaſure, tho' ſometimes there is Water in the *Sac* which ruſhes out at the Orifice, and ſhews evidently there is Space for the ſafe dilatation of the Wound. Yet it muſt be confeſs'd, this is a part of the Operation, which perhaps demands the moſt Delicacy in operating of any other.

When the *Herniary Sac* is laid open from its very Bottom up to the *Rings* of the Muſcles, and the Blood-Veſſels tied, if any *Hæmorrhage* has

has enſued, we are then to proſecute the Operation according to the State of the *Viſcera:* In an *Entero Epiplocele*, if the *Omentum* be not mortified, it is adviſeable to return it entire into the *Abdomen* with the *Inteſtine*, but it ſeldom happens that People ſubmit to the Operation before ſome part of the *Omentum* is gangren'd: To make way for the return of the *Inteſtine* and *Omentum* the *Rings* muſt be dilated, for which purpoſe the Moderns have devis'd a great variety of Inſtruments; but however ingenious their ſeveral Inventions may appear, as I am perſuaded they are none of them ſo handy as the crooked Knife with a blunted Point, I ſhall not enter into the Examination of their particular Merits or Defects, but ſhall recommend this Inſtrument only, with which I have always dilated the *Rings* of the Muſcles without pricking the *Inteſtines:* The manner of performing this Proceſs, is by preſſing down the *Inteſtines* with the Fore-finger, and then introducing the Knife between it and the *Rings* of the Muſcles, to dilate them a little obliquely upwards and outwards about an Inch, which will be a Wound large enough.

I HAVE here propoſed the opening of the *Herniary Sac* previous to the Dilatation of the *Rings*;

Rings; though to avoid the leaſt risk of wounding the *Inteſtines* in the Dilatation of the *Rings*, it may be perform'd as ſoon as the Skin and *Membrana Adipoſa* are cleared away from the *Tunica Vaginalis*, that is, before you open the *Sac*, in which Circumſtance it is almoſt impoſſible to incur this Danger; but I cannot recommend this Proceſs for ſeveral Reaſons: Firſt, it is not impoſſible, that upon freeing the Strangulation, the *Viſcera* may ſuddenly return into the *Abdomen*, and carry with them a mortify'd Portion of the *Omentum*, or a mortify'd Part of the *Inteſtine*, both of which ſhould neceſſarily be cut off before the ſound Parts are reduced. Secondly, the *Hernia* may be of a Nature not to require the Dilatation of the *Rings*; for [4] it is ſaid, that by drawing a little more *Inteſtine* from the *Abdomen* into the *Hernia*, it will ſometimes diſingage the Strangulation, and render the Reduction eaſy, without dilating the *Rings*; and laſtly the *Herniary Sac* may happen to be ſo contracted as to require abſolutely a Dilatation, which will be farther explained.

Most Writers ſpeak of the Danger of wounding the *Epigaſtrick Artery* in the Dila-

[4] Le Dran, 126. Verduc, *p.* 24. *Edit.* 1693. Paris.

tation

tation of the Rings, and recommend different Methods of ſtopping the *Hæmorrhage*; but the Courſe of that Artery is generally ſo much nearer to the *Linea Alba* of the *Abdomen*, than where this Inciſion is made, and ſo much beneath the *Hernia*, that it is not expoſed in the manner they repreſent: Though ſhould a Veſſel as large as the *Epigaſtrick Artery* be wounded, it would give little or no Trouble to a Surgeon who underſtood the uſe of the Crooked Needle.

I HAVE hitherto ſpoke of dilating the *Sac* as far as the *Rings*, and then of dilating the *Rings* in order to free the Strangulation; but it has been lately diſcovered, that the Stricture of the *Rings* is not the only Cauſe of a ſtrangulated *Inteſtine*; and this Diſcovery has open'd a new Scene of Improvements. It is now univerſally acknowledged, ſince the [5] firſt Hint was given about Twenty-five Years ago, that the Entrance into the *Herniary Sac* is capable of ſo great a Contraction as to compreſs the *Inteſtine*, and excite the ſame Symptoms with a Stricture of the *Rings*. [6] There are Examples where the *Hernia* has been reduced into the *Abdomen*, and notwithſtanding the Reduction,

[5] Le Dran, *Obſerv.* 58. — Arnaud, 382.
[6] *Obſerv.* 58. Le Dran. — Arnaud, 372, *&c.* Dionis, 324.

all

all the Complaints have continued as before: In ſome of the Inſtances the Patient has dy'd, and upon opening the Body, it has appear'd that the *Herniary Sac* was returned with the *Viſcera* into the *Abdomen*, where ſtill continuing to conſtringe them as much as it did when in the Groin, it at length proved mortal. In others, the ſame thing has been proved by the Operation; and it is worth obſerving, that the Hardneſs of the Tumor is ſenſible to the Finger, when it is introduc'd through the Paſſage by which the *Hernia* was formed, and will help to inform us of the State of the Caſe: Beſides, when the *Sac* is returned with the *Inteſtine*, it is done without any Noiſe, whereas when the *Inteſtine* is returned alone, it may be heard to move; which Circumſtance will help to diſtinguiſh the one from the other.

It is hardly to be doubted, that this Stricture in the Entrance or Neck of the *Herniary Sac*, ariſes generally from the Preſſure of a Truſs, which bringing the two Sides almoſt into Contact with one another in that part near the *Rings of* the *Abdomen*, at laſt determines it into that Shape. But though I have here ſpoken of the Return of the *Sac* with the *Viſcera*, when the *Hernia* is reduced, it muſt be remarked that the Caſe is not

not very common; for in moſt *Hernias* the *Viſcera* only are reduced, and the *Sac* remains in the Groin or *Scrotum*; at leaſt it has ſo happen'd that in all the Inſtances, where I have either perform'd the Operation, or examin'd the Caſe in a dead Body, the *Herniary Sac* has adhered intimately to the internal Surface of the *Tunica Vaginalis*, and has not preſented the Idea of one Bag within another, but of a Bag with one denſe ſtrong Coat: So that it is not the *Herniary Sac* alone, but the *Tunica Vaginalis* alſo which undergoes this Alteration, whenever it happens on the Outſide of the *Abdomen*.

The greateſt Uſe however, reſulting from knowing the poſſibility of this Shape of the *Herniary Sac*, is the Inſtruction we receive from it to carry the Inciſion of the *Sac* as far as the Inciſion of the *Rings*, that is, about an Inch, which will uſually be a ſufficient Extent, though there ſhould be a Stricture in that Place; but ſure as this Rule may appear, it is always adviſeable for greater Certainty, to introduce the Fore-finger of the Left-hand up the *Sac*, from which we may learn whether there be any part of the Stricture yet unopened.

Before this Circumſtance was attended to, and when it was believed that the Stricture

of the *Rings*, and the Adheſion of the *Viſcera* to the *Sac* were the only Impediments in Nature to the return of the *Inteſtines*, if by Chance ſuch a Caſe occurr'd, and the *Rings* only were dilated, the Patient neceſſarily died; becauſe the Strangulation was not reliev'd. However it muſt be confeſs'd, that an ample Enlargement of the *Rings* and *Sac* was formerly recommended by [7] *Cyprianus*, though he was not appris'd of this Accident; he ſays, a large Opening of the *Rings* and *Sac* is of great Service in facilitating the Return of the *Viſcera*. But I think this Doctrine of a large Inciſion, though there be no Stricture of the *Sac*, cannot be inculcated too ſtrongly; for when the Inciſion is large, we not only handle the inflamed and almoſt mortify'd *Inteſtines* with leſs Roughneſs in order to reduce them, but alſo eſcape the Conſequence which follows upon wounding tendinous Parts without dividing them; as poſſibly may ſometimes happen in this Caſe to timorous Operators, who juſt make a ſlight Inciſion into the Edges of the *Rings*, without carrying it through them.

The Dilatation of the *Rings*, and Neck of the *Herniary Sac*, is a Proceſs in the Operation which takes place in the order I have mentioned,

[7] *Epiſtola de fœtu ex Uteri tuba exciſo*, p. 82.

tioned, if the Parts in the *Hernia* are ſound; but if any Portion of them is gangren'd, the Gangrene is firſt to be cut away, whether it be *Omentum* or *Inteſtine*. Where the *Omentum* is mortify'd, the uſual Method of treating it, is by tying a Ligature round the ſound Part near the Extremity of the Mortification, and cutting it a little below the Ligature, the String is to be left hanging out of the Wound, that what remains may be taken away when it drops from the ſound *Omentum:* The Deſign of this Ligature is to prevent the *Hæmorrhage*, which it is ſuppoſed might enſue. But there is one Objection to this Method; for if the *Colon* falls down in a conſiderable Quantity, and you tie the *Omentum* near its Inſertion, when that *Inteſtine* returns into the *Abdomen* it cannot be reſtored to its former Situation, becauſe of the Confinement from the Ligature; and the Miſchief, which may flow from its conſtant endeavour to poſſeſs its former Figure, may poſſibly be great. It is true that this Conſequence may in ſome meaſure be obviated by making ſeveral Ligatures of the *Omentum*; but it is a tedious Proceſs: And upon the whole, I believe this Apprehenſion of Danger from the Bleeding is groundleſs; for I have never found the leaſt Inconvenience from cutting

off the diſeaſed Part cloſe to the ſound Part, with a Pair of Sciſſars, as you would a Piece of Cloth, that is, not in the Maſs as it lies in the *Scrotum*, but by ſpreading it in order to cut it. Beſides, by cutting it in this manner you act with a Caution, that cannot be too much recommended in certain Species of *Hernias* where but a little of the *Inteſtine* is fallen below the *Rings*: I have perform'd the Operation, where ſo ſmall a Quantity of *Inteſtine* was buried in a great Quantity of *Omentum*, that had I not disintangled it by ſeparating the *Omentum* very carefully, I might poſſibly have included it within the Ligature.

I DO not deny however, that when the Symptoms of a ſtrangulated *Inteſtine* are pretty evident, we are ordered to be careful in our Search for it; but ſtill, I think the Method I have here adviſed of cutting off the *Omentum* will be the moſt effectual Means of diſcovering the *Inteſtine*, and by making a conſtant Practice of acting in this manner, it points out to us our Miſtake before any Miſchief is done, when there happens to be a Portion of the *Inteſtine* in what we have had reaſon to ſuppoſe a ſimple *Hernia Omentalis*, and which we ſhould in conſequence have treated accordingly.

THE

THE Advocates for the Ligature will no doubt alledge, that as the *Omentum* is not cut off in the ſound Part, when it is retired into the *Abdomen* its mortify'd Extremity will ſlough off, and, floating in the *Abdomen*, prove pernicious to the *Viſcera:* But I ſuppoſe, that being very inconſiderable in Quantity, it either waſtes or is diſcharged by the Wound; for as I have ſaid before, I never found any bad Conſequence from it.

SOME Surgeons have practiſed the Extirpation of all the *Omentum* in the *Hernia*, tho' it was not gangrened; but I believe it is a raſh Meaſure, and I am far from being ſingular in this Opinion, for a [8] celebrated Practitioner not only prohibits the Extirpation, but even orders it rather to be left in the Wound than cut off, tho' it cannot be returned into the *Abdomen:* He ſays that in two or three Days it will reſtore itſelf; but I am not ſure that in ſuch an Inſtance the Exciſion would be improper, for in all probability, after being expos'd to the Air, it may be mortified at the time that it withdraws into the *Abdomen*.

THE manner of reducing the *Viſcera* when they are neither mortified, wounded, nor ad-

[8] Le Dran, 132.

herent, is every where ſufficiently explained; but in theſe three Caſes the Moderns only are worth conſulting. A Mortification of the *Inteſtines* in the *Hernia* was till lately utterly deſpair'd of. [9] It is recorded of *Rau*, that upon opening a *Hernia*, and finding a Gangrene of the Parts, he lay'd down his Knife and proceeded no farther in the Operation, abandoning his Patient, who died the next Day.

THE Surgeons of the preſent Age have ſurmounted this Prejudice; they ſaw ſmall Gangrenes do well after the Operation, and ſometimes they met with Inſtances of Recoveries, where the *Scrotum* ſloughing away of itſelf, had made room for the Evacuation of the *Fæces*; they concluded therefore, that if the mortified Part was cut off, the Strangulation remov'd, and a free iſſue given to the *Fæces*, the Patient might probably ſurvive, who otherwiſe would periſh without this Aſſiſtance.

[1] THE Collection of Caſes where a great length of mortify'd *Inteſtine* has been cut out of the *Hernia*, is now become very large: Amongſt them there are Inſtances where five or ſix feet of the Gut have been taken away,

[9] Heiſter, 816. [1] Dionis, 352, 354. Heiſter, 818. Cheſelden, 170. *Edit. 3tia.*

and

and the Patient has recovered; but notwithſtanding theſe Examples of Cure, the Surgeon is ſtill to remember that Mortifications of the Bowels are very dangerous, and though the Attempt to relieve this Species of it be ſometimes crown'd with Succeſs, it is never to be depended upon: It is always a doubtful Enterpriſe, though ſome of the moſt deſperate have prov'd proſperous, even in Caſes where the Patient would have died in a few Hours if the Strangulation had not been removed, and a free diſcharge procured for the *Fæces*.

When the mortify'd *Inteſtine* is cut away from the live *Inteſtine* at each of its mortify'd Extremities, the two Openings of the live Gut are to be ſew'd together, if it can be done without too much Violence; but ſometimes it happens that they adhere, or lie ſo unaptly, that they cannot be brought into contact, in which Caſe they are by a ſtitch to be tied to the Borders of the Wound, in order to prevent the Evacuation of the *Fæces* into the *Abdomen*, and from that time, the extremity of the upper one becomes an artificial *Anus*; though it has been found that notwithſtanding the *Inteſtine* is left open in the *Abdomen*, it may poſſibly be ſo compreſſed near the *Rings*, that the *Fæces* cannot

be diſcharged unleſs the Extremity of the Gut be dilated; but this Inconvenience will be avoided, if the Inciſion of the *Rings* be made large [2].

THERE are various kinds of *Suture* propoſed for the union of the two Ends of the live Gut; but I queſtion whether any of them all be preferable to the *interrupted Suture:* One Extremity ſhould be placed half a quarter of an Inch within the other, and be held there by three or four of theſe Stitches, one of which may alſo be carried through the *Peritonæum* near to the Edges of the Wound, which, by holding it in contiguity to the Wound, will conduce to form that Adheſion we find ſo abſolutely neceſſary for the Conſolidation of Membranes. This union of the two Ends of the living *Inteſtine* ſeems to have been perform'd upon Beaſts, in Mortifications of their Bowels, ſome Years before it was introduced into the Practice of Surgery, as we read in [3] *Cheſelden*, who is one of the firſt, who has hinted this remarkable Improvement.

THE Danger which is apprehended to ariſe from the Evacuation of the *Fæces* into the *Abdomen*, has led the Moderns into the Practice

[2] Arnaud, 344. [3] *Edit.* 3. 172.

of

of cutting away a certain Length of the *Inteſtine*, where it is not totally gangren'd, but only here and there in certain detach'd Spots: They ſay, that ſhould the *Inteſtine* be return'd, the *Fæces* would be empty'd into the Cavity whenever the *Eſchars* ſhould be ſeparated; and therefore if the Number of *Eſchars* be great, the Method here propoſed is adviſeable; but if there be only one or two *Eſchars*, it is recommended either to wait ſome Days for the Separation of the *Eſchar*, or to puncture them with a Lancet, in order to diſcharge the Contents of the Bowels, and to keep the *Inteſtines* in the *Scrotum* till the next Day, when it is preſumed the greater Part of the *Fæces* will be diſcharged, and we may reduce the *Hernia* ſafely; after which the Wound of the *Inteſtine* muſt be ſew'd to the *Peritonæum*. By taking this Meaſure, it is thought the Wound or Wounds of the Gut will more readily adhere to the neighbouring Parts, than if there was a continual Flow of the *Fæces* through the Wound, but the right Management of this Proceſs requires the moſt conſummate Judgment. For [5] though it is not true what has been anciently taught, that the *Inteſtines* cor-

5 Celſus. Lib. 7. Cap. 16.

rupt

rupt immediately after they are expoſed to the Air; yet that they are liable to ſuffer from being expoſed, is beyond all Controverſy; and I am a little apprehenſive, that a ſtrong Belief in the Innocence of this Meaſure, may make us ſometimes too precipitate in judging the *Inteſtines* to be mortify'd when they are not really ſo; for though they are cold and almoſt black, they often recover their natural Warmth and Colour, ſoon after they are return'd into the *Abdomen*. But what more particularly demands our Attention upon this Subject, is the great Number of Caſes, where the *Fæces* have been ſafely diſcharged through the Wound from a gangren'd *Inteſtine*; and on the other hand, the few Examples, that are yet produc'd, of keeping a gangrened *Inteſtine* many Days in the *Scrotum* without any bad Conſequence.

HOWEVER, keeping the *Inteſtines* out of the *Abdomen* for a time after the Operation, ſeems to be ſo little dangerous in the Eſtimation of the Moderns, compar'd with the Diſcharge of the *Fæces* into the Abdomen, that [6] ſome of them do not admit of immediately ſewing up the Wound of the *Inteſtine* made by Accident in the Operation, but adviſe us to wait

[6] Le Dran, 130.

till

till the next Day, when they approve of the Reduction. In this and the preceding Caſe, they order a String to be paſſed through the *Meſentery*, near its Inſertion into the *Inteſtine*, which is to be carry'd round the *Inteſtine*, (and I ſuppoſe through the Skin of the Wound too) in order to retain it in the *Scrotum*, otherwiſe after the Dilatation of the *Rings*, it would return of itſelf into the *Abdomen*.

When a large Portion of mortify'd *Inteſtine* is cut away, it is ſaid that the Veſſels of the *Meſentery* may poſſibly bleed: I ſuppoſe this is an Event that will ſeldom occur, but when it happens, the Ligature muſt be repeated as often as ſhall be neceſſary.

It now remains to be conſider'd, in what manner we ought to act when Adheſions prevent the Return of the *Viſcera*. In this Caſe the Adheſion is ſometimes recent, ariſing from the preſent inflam'd State of the Parts, and when this happens, the *Viſcera* eaſily ſeparate from the *Sac*, and from one another, by a gentle Laceration with the Fingers. Sometimes the *Viſcera* adhere to each other ſo firmly from an ancient Agglutination, that the Separation would be very tedious, if not impracticable. In this Circumſtance, if they do not adhere

adhere to the *Sac*, they ſhould be all reduced in their adherent State, which may be eaſily done, provided the Dilatation of the *Rings* be made very large: But when the Adheſion to the *Sac* is old, we are order'd by moſt of the preſent Writers to abandon the Reduction. Our Predeceſſors, in this Situation endeavour'd by Diſſection to clear away the *Viſcera* from the *Sac* and the Teſticle, and very often with Succeſs: But the Moderns ſpeak of the Danger of wounding the *Inteſtines* in the Attempt, and recommend only the Relief of the Strangulation, by dilating the *Rings*, and leaving the *Viſcera* in the *Scrotum*, unleſs there be a great Quantity of *Omentum*, in which Caſe all of it which is not adherent may be cut away. In theſe old adherent *Hernias* a freſh Portion of *Inteſtine* ſometimes falls down, and becomes [7] ſtrangulated; when this occurs, the Operation conſiſts in the Dilatation of the *Rings*, and the Reduction of that Portion of *Inteſtine* only: I mean upon the Suppoſition that the Adherences are really inſeparable, for I have found myſelf, as a late [8] Writer has remarked, that the Adheſions ſometimes are not univerſal, but form'd by a certain Number of *Frænula*, which may be

[7] Dionis, 348. [8] Arnaud, 316.

eaſily

eaſily ſnipt with a Pair of Sciſſars, whether they be in the *Sac* itſelf, or the Neck of the *Sac* within the *Abdomen*, after which the Reduction may take place. Separating Adherences from the *Peritonæum* within the *Abdomen*, is not a new Thought; for it is one of the principal Motives which induced *Cyprianus* to adviſe ſo large a Dilatation of the *Rings*.

[9] AMONGST other Improvements of the Operation for the *Bubonocele*, it has been recommended in recent *Hernias*, to return the *Viſcera* into the *Abdomen* without opening the *Sac*, from a Perſuaſion that the Patient would be leſs liable to a Relapſe: But I do not find the Propoſal has met with a favourable Reception. And indeed the Objections to this new Method ſeem unanſwerable: For frequently there is a fetid Water in the *Sac*, which may prove pernicious when voided in the *Abdomen*: Frequently the *Omentum* and *Inteſtine* are mortified though the *Hernia* be recent, and if the diſeas'd *Omentum* is not remov'd, nor an Opening made for the Iſſue of the Excrements, when the *Eſchar* drops from the *Inteſtine*, the Event muſt in all Probability be mortal.

THERE have been great Diſputes what

[9] Dionis, 344.

Form

Form of Application would beſt ſuit the Wound. The Uſe of long thick Tents has formerly been celebrated, but at length Tents are exploded in favour of thick Doſſils or Pledgits; though, if the *Inteſtine* after the Reduction, makes an Effort to ſtart through the Wound, it may be confin'd more effectually by a Stitch or two carried only throngh the Lips of the Skin. As to the manner of treating the Patient after the Operation, all Writers are nearly unanimous.

THE Operation for the *Bubonocele* in Women does not differ very much from that performed on Men, notwithſtanding that the *Herniary Sac* is more ſimple, having no *Tunica Vaginalis* to incloſe it as in Men. The *Viſcera* in this Species of *Hernia*, fall into the Groin or *Labia Pudendi*, through the Paſſages made for the Tranſmiſſion of the *Ligamentum Rotundum* of the *Uterus*; and the Strangulation in them is removed by an Enlargement of thoſe Openings. [2] It has been ſuggeſted as an Improvement of the Operation after the *Viſcera* are returned, to make a Ligature round the *Sac*, that when it ſhall be healed, there may be no Communication left open with the *Abdomen* for the future Deſcent of the *Hernia*.

[2] Le Dran, 132.

For

For the ſame Reaſon it might likewiſe be recommended in all *Femoral Hernias*; but it is forbid in the *Bubonocele* of Men, becauſe the Spermatic Veſſels would be conſtringed by the Ligature: However, I am afraid it would be injudicious in any of theſe Caſes, as the Obſtruction of thoſe Diſcharges, which ſometimes follow the Reduction of the *Hernia*, might poſſibly be running too great a Risk for the Benefit of preventing a Diſorder, which, ſhould it happen, is ſo manageable by a Truſs.

The *Hernia Femoralis* is form'd by the Deſcent of the *Inteſtine* or *Omentum* into the Inſide of the Thigh, through the Opening made by the Arch of the *Os Pubis* and the *Ligamentum Poupartii*, ſo that the Situation of the Tumor will be on the *Femoral* Artery and Vein. The Symptoms excited by this Species of *Hernia* are very nearly the ſame with thoſe of the *Bubonocele*, and require nearly the ſame Treatment; only, that in our Endeavour to reduce it, we ſhould puſh the *Inteſtine* towards the *Linea Alba*, whereas in the other Caſe the Direction ſhould be towards the *Ilium*.

The *Hernia Femoralis* is much more frequent in Women than in Men, which Singularity is imputed to the Breadth of their *Oſſa Innominata*,

nata, which allow Room for the Reception of the *Viſcera* whenever they are violently compreſs'd; but I muſt own I do not ſee the Force of the Concluſion. I have heard indeed, of an habitual *Bubonocele* having been cured by a Pregnancy; and was the *Uterus* always diſtended, as it is in Pregnancy, it might poſſibly puſh away the *Viſcera* from the *Rings* towards the *Ilia*; tho' even then, I imagine it would equally prevent a *Hernia Femoralis*, and a *Hernia Inguinalis*; ſo that this Situation of the *Viſcera* does not account for the more frequent Occurrence of a *Hernia Femoralis*. I ſuppoſe therefore the true Reaſon why Women are more ſubject to the *Hernia Femoralis* than Men, is, that in general the Paſſages for the *Spermatic Cords* in Men, are, from their Wideneſs, more ſubject to Dilatation than the Openings for the Femoral Veſſels, and the Paſſages for the *Ligamenta Rotunda* in Women, are, from their Narrowneſs, leſs liable to Dilatation than the other Openings.

It is very remarkable, that, common as this Diſorder is, no Body ever deſcribed it before [3] *Verheyn*; or if they did, it was in ſuch obſcure Terms as not to be underſtood. The

[3] Ejus Anatomica, Cap. de Periton. *Edit. Poſtrema.*

Operation

Operation conſiſts principally in removing the Strangulation by dividing the *Ligament*. But to obſerve upon all the Particulars relating to it, would be, with very little Variation, to repeat what I have ſaid on the *Bubonocele*. I ſhall therefore only point out the moſt extraordinary Circumſtance in this Operation. The obvious Method of cutting up the *Ligamentum Poupartii*, would be perpendicularly upwards, through the Middle of the Ligament; and following the Rule of making a large Wound, the Inciſion would be an Inch long: But this Rule, ſo uſeful in the Operation of the *Bubonocele*, would be pernicious here, ſuppoſing the Subject to be a Male, for it happens that the Spermatic Veſſels, in their Progreſs to the *Scrotum*, lie ſo directly acroſs the Inciſion, that they would be neceſſarily divided. To avoid therefore ſo great an Inconvenience, I would adviſe the Inciſion to be made Obliquely outwards, by which the Spermatic Veſſels will not be offended. But ſome Surgeons, who do not ſeem to be aware of the [4] Objection I have ſtated, provide rather againſt the Danger of dividing the *Epigaſtric Artery*, which wou'd be poſſibly wounded by the Meaſure I have preſcribed; however I ſhall be bold to ſay, it

[4] Le Dran, 138.

is an Accident that ought not in the leaſt to embarraſs an Operator, for, was the *Epigaſtric Artery* much larger than it is, we might inſtantly take it up, now the Uſe of the crooked Needle is become ſo familiar.

Both in the *Bubonocele* and the *Hernia Femoralis*, ſometimes the ſmall *Inteſtines*, and ſometimes the *Colon* or *Cæcum* form the Tumor, but the *Cæcum* is more frequent in this Species of *Hernia* than in the other.

EXOMPHALOS.

It is a Queſtion diſcuſs'd by [5] ſome of the Moderns, Whether the *Viſcera* are contained within a *Herniary Sac*, when they protrude out of the Navel; whilſt others ſpeak of the *Herniary Sac* without Heſitation. But it is no Wonder there ſhould be a Variety of Sentiments, becauſe the Caſe differs in different Subjects, and Surgeons judge from thoſe which have fallen under their own Obſervation. In performing the Operation for this Species of *Hernia*, I myſelf have met with a *Sac* exceedingly thickned; but it's poſſible that had I perform'd it in a much more advanced Stage of the Diſorder, I might not have found a *Sac*: And what ſeems to confirm this Opinion is, that in another

[5] Dionis, 107.

another Operation I performed for an *Exomphalos*, I found the *Peritonæum* burſt through in certain Places, whilſt ſome Threads of it remained entire in others; and thoſe Threads or Filaments of the *Peritonæum*, wherever they ſtretched, evidently bound down the *Inteſtines*, ſo as to make thoſe Depreſſions and Eminences, which appear'd in this Caſe, and often occur in the *Hernia Umbilicalis*. It is the Nature of Membranes to thicken as they extend to a certain Period, after which they grow thinner as they are ſtretched, and at laſt burſt. This is the Caſe of an *Aneuriſm*, and I ſuppoſe of ſeveral *Hernias*. I preſume too it is only by this kind of Reaſoning we can account for that ſurpriſing *Phænomenon*, the Contact of the *Viſcera* with the Teſticle, in one Species of *Bubonocele*; in which Circumſtance it is probable, that not only the *Herniary Sac* itſelf, but alſo the Bottom of the *Tunica Vaginalis* of the Cord (*Septum tunicarum Vaginalium*) have been perforated by the *Viſcera*, after which the *Viſcera* fall ino the *Tunica Vaginalis* of the Teſticle.

When the *Exomphalos* is ſmall and reducible at Pleaſure, the radical Cure may be effected in all Probability, by deſtroying the pro-

minent Bag of Skin, either by a Ligature carried round its Basis, or by a double Ligature carried through the middle of it, and tied above and below; which kind of Ligature will be less apt to slip. By this Measure, the upper Portion of the Bag perishes, and the lower Part becomes a firm Cicatrix adhering to the Navel, which resists the future *Prolapsus* of the *Hernia*. Several of the Ancients recommend this Practice: Amongst the Moderns there is no one Writer advises it except [6] *Saviard*, who perform'd it twice with good Success, but his Patients were young. [7] *Heister* seems to lament this Method should have fallen so absolutely into Disuse, though he says it is questionable, whether a proper Bandage would not have work'd a Cure in both these Cases: And I am so far of his Opinion, with Regard to the Efficacy of a Truss, that I should never think of the Operation where it could be properly applied [8].

[6] Observ. 9. [7] Heister, 788.

[8] *In regard to the great Improvement of Surgery from the Use of Trusses*, Fabricius ab Aquapendente *records a very remarkable Anecdote of* Fabricio de Norna, *the most eminent Surgeon for Ruptures in his Time. He says, that formerly he had operated every Year on about two Hundred Patients, but that now he scarcely cut Twenty; having found by Experience, that a Truss, with an astringent Application, would cure a* Hernia. Page 247.

THE Operation for the *Exomphalos* is more rarely performed, than for either of the Species of *Hernias* I have deſcribed; and of thoſe which are performed, a much leſs Proportion of them is ſucceſsful. They generally happen to very corpulent People, ſo that there is uſually a great Quantity of *Omentum* in the *Hernia*, and as it either adheres or is mortify'd, it becomes neceſſary to cut away a large Portion of it; which being taken from its Middle, and not at the Extremity, as in the other *Hernias*, may, in all Probability, render it more unfit to heal. Beſides, the Situation of the Navel does not favour the Iſſue of the Matter and Sloughs, as the Bottom of the *Abdomen* does, ſo that they ſpread about the *Abdomen*, and bring on a fatal Event in the End, however flattering the Proſpect may be for ſome time.

THE uſual Method of performing the Operation when the *Viſcera* are inflam'd, is by making a crucial Inciſion through the Skin, and laying the *Sac* bare; after which it is open'd with the ſame Precautions, as practis'd in the other *Hernias*. But though I have done it in this manner myſelf, yet I think it a tedious and unneceſſary meaſure; for it is as eaſy to make a ſmall Opening through the Skin and *Sac*

at once, as to do it through the Skin only; therefore when once you can introduce your Finger or Director, you may with a Knife or Probe-Sciſſars cut out a circular Piece of Skin and *Sac* large enough to expoſe the *Viſcera*: After which, with your Fore-finger preſſing down the *Inteſtine*, if there be any, dilate the Orifice about half an Inch or more on the left Side, a little Obliquely upwards; and in this manner I have lately done it myſelf.

THE other Proceſſes of the Operation have an exact Affinity with thoſe already deſcribed in the other *Hernias*: I have pointed out the left Side of the *Ring*, as the moſt eligible Place for the Dilatation, becauſe the Ligaments of the Umbilical Arteries and Vein would be leſs liable to be wounded, than if the Inciſion was made in another Direction.

THERE have been ſeveral Inſtances, where in an *Exomphalos*, a great length of the *Inteſtine* has mortify'd, and ſeparating from the ſound Part, the Navel has become an artificial *Anus*. I ſuppoſe therefore, if it was more frequently practiſed to cut away the gangren'd *Inteſtine*, and to dilate the *Ring* in order to make Room for the Diſcharge of the *Fæces*, ſome People who now periſh, might be preſerved;

ſerved; and perhaps too, in ſome Caſes, the Extremities of the ſound *Inteſtine* might be brought into Union, as is done in the *Bubonocele*. To attempt ſuch an Operation, almoſt in the Agonies of Death, may perhaps have the Air of a fondneſs for Cutting; but, as in the Circumſtance of an advanced Mortification, there would be very little Pain from the Inciſion, I ſhould think it, though a deſperate Remedy, ſtill proper for ſo deſperate a Caſe.

HERNIA VENTRALIS

Is a Diſorder, where the *Viſcera* protrude between the Interſtices of the Fibres of the Muſcles in any part of the *Abdomen*; though the moſt remarkable *Hernias* of this kind are between the *Recti* Muſcles, in ſome part of the *Linea Alba*. [9] *Celſus* deſcribes this *Hernia*, and recommends the ſame method of Radical Cure, as is propoſed for the *Exomphalos*; but the Moderns confine the Treatment of them to Truſſes, unleſs when they are accompany'd with a Strangulation, in which Circumſtance the dilatation of the Orifice through which the *Viſcera* paſs, is to be made as in the other *Hernias*. It is very neceſſary to obviate the Increaſe

[9] Cap. 17.

of this *Hernia* between the *Recti* Muſcles whilſt it is ſmall; for if the Patient neglects to wear a Truſs, the Tumor becomes enormous; though indeed the ſame thing happens in ſome degree under all the Species of *Hernias*: And we have not a ſtronger Proof of the Diſpoſition of an Animal Fibre to ſtretch, under a gradual Extenſion, than that ſuch compact Subſtances as the tendinous Circumferences of theſe Orifices, ſhould, in length of time, be ſo monſtrouſly widened by the Inſinuation of ſuch ſoft Bodies as *Omentum* and *Inteſtine*.

HERNIA FORAMINIS OVALIS.

THE deſcent of the *Viſcera* through the *Foramen Ovale* of the *Os Pubis* (or as ſome call it the great *Foramen* of the *Iſchium*) is another Species of *Hernia* firſt obſerv'd by the Moderns: the Caſe is rare, but it ſometimes occurs. The Tumor in Men is formed near the *Perinæum*; in Women, near one of the *Labia Pudendi*: In both Sexes it lies on the *Obturator externus*, between the *Pectineus* Muſcle and the firſt Head of the *Triceps Femoris*. It is generally ſaid to be form'd by the Relaxation of the Ligament and *Obturatores* Muſcles, which fill up the *Foramen*; but it is now known, that

that the Ligament is [1] deficient in one Part of the Circumference of the Bone, for the Tranſmiſſion of ſome large Veſſels, and that the *Viſcera* inſinuate themſelves through that Deficiency, dilating it as they advance.

WHEN the *Inteſtine* is ſtrangulated in this *Hernia*, the Symptoms are the ſame with thoſe already deſcrib'd of the other *Hernias*, and require the ſame Treatment in order to reduce them. After the Reduction, a particular kind of Truſs muſt be contriv'd, that may be accommodated to the Situation of the Tumor. But, if after a fruitleſs Attempt to reduce the *Hernia*, a Mortification ſhould be coming on, the Operation muſt be perform'd in order to make way for the return of the *Viſcera*; and ſhould any one be enterpriſing enough to undertake it, he muſt dilate the Ligament from without inwards, the natural Defect of Ligament being in that Part of the *Foramen* next to the *Acetabulum* of the *Os Innominatum*; but I believe, hitherto no one has ever performed it in all its [2] Proceſſes.

[1] *Memoires de Chirurgie*, 709. Vol. I. [2] *Memoires*, 715. Vol. I.

HER-

HERNIA VENTRICULI.

HERNIAS of the *Stomach* appear just under, or a little on one side of the *Cartilago Xiphoides*, in the *Linea Alba*, between the *Recti* Muscles. It has never been fully describ'd till within these few Years; but now there are several Histories of this Case. It [3] often happens upon lying down that the Stomach returns into its true Place, so that the Patient is easy in that Posture; but the continual Reachings, with other consequential Symptoms, which accompany its displacement, at length destroy him. The only Remedy necessary in this Disorder is a proper Bandage, which is always effectual.

HERNIA INTESTINALIS VAGINÆ.

THERE is another Species of *Hernia*, where the *Vagina* becomes so thin after much Child-Bearing, that it yields to the Impulsion of the *Intestines*, and admits of their descent below the external Orifice of the *Vagina*. This I presume is a very rare Case; but it is well worth attending to, because it may so naturally be

[3] *Memoires*, 702. Vol. I. Arnaud's *Preface*, 32.

mistaken

miſtaken for a *Prolapſus Vaginæ*. It has been found by Experience, that the Application of a common *Peſſary* is injurious, but one made of a globular Form ſits eaſy, and ſupports the *Hernia* [4].

HERNIA CYSTICA: or *Hernia* of the Urinary Bladder.

THIS Diſorder is a Deſcent of a Portion of the Bladder, either through the *Rings* of the Abdominal Muſcles into the *Groin* and *Scrotum*, or elſe, under the *Ligamentum Poupartii* into the thigh. It was firſt obſerved by *Johannes Dominicus Sala* [5] who lived about the Year 1520, but it never was much attended to till about the latter end of the laſt Century, when *Ruyſch* [6] publiſhed a Hiſtory of this Caſe, and ſays he had met with one more ſuch Inſtance. After him Monſ. *Mery* [7] gave the Hiſtory of three Caſes which fell under his Obſervation. Since his Time, moſt Writers ſpeak of the *Hernia Cyſtica*, and I believe at preſent, we are very well acquainted with its Nature and Situation.

THERE are various Proofs of the Exiſtence of this *Hernia*, ſome taken from Inciſions un-

4 *Memoires*, 707. Vol. I. 5 *Sepulchretum Anatomicum* Boneti, *Vol.* III. *Obſerv.* 18. 6 *Obſerv.* 98. *Centuriæ.* 7 *Hiſtoire de l'Academie de Sciences*, 1713.

warily

warily made into the Tumor upon the Suppoſition of its being a *Hydrocele*, when the Diſcharge of Urine has evidently pointed out the miſtake; others, from Stones being found in the Tumor, an additional Evidence to the Evacuation of the Urine; and laſtly others, from the Diſſection of ſeveral Patients who have died under this Circumſtance. It appears from theſe Examinations, that the *Hernia* of the Bladder may be either ſingle, or complicated with a *Bubonocele*; and that each of them may produce the other; that is, the *Bubonocele* may ſometimes precede and occaſion the *Hernia Cyſtica*, and at other times be the Conſequence of a *Hernia Cyſtica*.

To comprehend rightly the Nature of theſe two *Hernias*, it muſt be remembred, that the *Peritonæum* terminates at the inferior Part of the Bladder near to the Inſertion of the Ureters, ſo that the *Fundus* of the Bladder, which by its Nearneſs to the *Rings* of the Abdominal Muſcles is moſt expoſed to the Protruſion, falls down firſt, and draws after it the *Peritonæum*; whereas when the *Buvonocele* falls into the *Groin* or *Scrotum*, the *Peritonæum* precedes the *Inteſtine*, and forms the Bag which contains it.

In the *Hernia Cyſtica* the Bladder inſinuates itſelf between the *Peritonæum* and Abdominal Muſcles, in order to puſh through the *Rings*, and if the *Hernia* be conſiderable, it will draw after it a Portion of the *Peritonæum*, which will form a ſmall Bag, that opens towards the *Abdomen*; and it is from this Circumſtance, together with the Dilatation of the *Rings*, that we may conceive, how a previous *Hernia Cyſtica* may conduce to the Invitation of a *Bubonocele*. On the other Hand, when a *Bubonocele* is large, and in an augmenting State, the continual Stretching of the *Peritonæum* may, by Degrees, draw down into the Tumor that Part of the Bladder where the *Peritonæum* is inſerted, and in this manner produce a *Hernia Cyſtica*.

In the ſimple *Hernia Cyſtica* the Bladder lies upon the Spermatic Cord; in the complicated *Hernias*, it lies between the *Bubonocele* and the Spermatic Cord; and in both, the Bag of the *Peritonæum* lies upon the anterior Part of the Bladder. In recent *Hernias*, the Bladder is moveable, in old ones it generally adheres.

The Symptoms of this *Hernia*, are a Tumor with Fluctuation, which entirely ſubſides when the Patient urines, who for that purpoſe is generally

nerally obliged to elevate and preſs the Swelling. If the Bladder is not much conſtringed by the *Rings*, the Patient can urine without compreſſing it. In Women, the *Hernia* appears ſometimes in both Groins. In Conſequence of the Preſſure of a diſtended *Uterus*, which divides the Bladder into two [8] diſtinct Cavities, giving them by that Means a Diſpoſition to enter through the *Rings:* though it is to be remarked that the *Rings* in Women are ſo narrow that the Bladder as well as the *Inteſtine*, in that Sex, much more frequently falls under the *Ligamentum Poupartii* into the Thigh.

In Women the Bladder is liable to fall from its natural Situation by two more ways than thoſe already mentioned: for there are ſome Inſtances, where it has inſinuated itſelf between the *Anus* and *Vagina* in *Perinæo* [9]; and others, where in a *Prolapſus Vaginæ* it has accompany'd the *Vagina*, [1] ſo far as to appear without the Body. The Knowledge of the Poſſibility of theſe Caſes will be a uſeful Precaution againſt raſhly opening Tumors of theſe Parts though there be an evident Fluctuation; for if

[8] Palfin's *Anatomy*. 152. [9] *Memoires de l'Academie Royale des Sciences*, 1713. [1] Tolet. Peyerus. Ruyſch. *Obſerv. Anat, Chir. Obſ.* 1.

upon

upon preſſure, the Tumor recedes, it is moſt probably the Bladder itſelf, and the Inciſion will not only be needleſs, but perhaps dangerous.

IT is now generally acknowledged that the *Hernia Cyſtica* is derived either from a Suppreſſion of Urine, which diſtending the Bladder, and deſtroying its Tone, may render it flaccid, and ſo make it capable of paſſing through the *Rings*; or elſe from the incumbent Weight of the *Uterus* in pregnant Women preſſing it on each Side, as I have before mentioned; but ſuppoſing the Bladder to be in a flaccid floating State; it muſt ſtill appear amazing how it ſhould be forced through the *Rings*, as it does not ſeem circumſtanced to make any Effort of that Nature: Was it indeed always complicated with a *Hernia Inteſtinalis*, one might readily conceive the Poſſibility of its being drawn down by the *Sac* of the *Peritonæum*, and it was the Difficulty of accounting for the Deſcent of the Bladder alone, which led Monſ. *Mery* to impute the Accident to a preternatural Formation of the Parts. I confeſs that I myſelf 'till lately could not imagine, that the Bladder was capable of falling alone through the *Rings*, or under the *Ligamentum Poupartii*, and had entertained

tertained an Opinion, it was always accompany'd with a *Bubonocele*, and that the Writers who have given us the Hiſtories of the *Hernia Cyſtica*, had overlook'd this Circumſtance; but the ingenious Monſ. *Verdier* [2] has fully proved that the Conjecture is ill grounded.

The Treatment of the *Hernia Cyſtica* turns upon this Circumſtance: If the Bladder itſelf is reducible, a Truſs will be proper to prevent the falling down of the *Hernia:* If the Bladder be adherent, a ſuſpenſory Bag only ſhould be apply'd, becauſe a Truſs will not be effectual in obſtructing the Diſtillation of the Urine into the *Hernia*, but by compreſſing the Bladder will be painful, and perhaps injurious. Should the *Hernia* be opened unwarily by a miſtaken Operator, or ſhould it be done purpoſely in order to evacuate the Urine, in conſequence of an Inflammation, and a Stricture of the *Rings*; or laſtly ſhould it be neceſſary to make an Inciſion into it, in order to take away a Stone; in all theſe Caſes it will be adviſeable afterwards to keep a Catheter in the Bladder by which the Urine may continually be carried off, as it will greatly facilitate the Cure of the

[2] Recherches *ſur la Hernia de la Veſſie, Memoires de l'Academie Royale de Chirurgie.* Vol. II.

Wound.

Wound. The Trocar will be found the moſt uſeful Inſtrument, when only the Evacuation of Urine is required. In the Operation for the *Bubonocele*, if it be complicated with a *Hernia Cyſtica*, great care muſt be taken not to cut away any Portion of the Bladder; or ſhould the Bladder by accident be opened, it muſt not be returned into the *Abdomen* (ſuppoſing it reducible) as the Diſcharge of Urine into the *Abdomen* would moſt probably be fatal.

The *Hernia Cyſtica*, when it has paſſed under the *Ligamentum Poupartii*, muſt be treated in nearly the ſame manner. When the *Hernia* happens to be formed between the *Rectum* and *Vagina*, or when it falls down with the *Vagina*, it will ſeldom admit of any other Relief than returning it by preſſure, though if it be in either Inſtance the Conſequence of Pregnancy, it may probably diſappear after Delivery: and Examples are not wanting, where a Cure [3] has been effected after the Extraction of Stones from a *Hernia* of this Part.

3 Ruyſch *Obſ. Anat. Chir. Obſ.* 1.

CHAP. II.

HYDROCELE.

IN the very Definition of this Diſorder, I think the Moderns have all run into an erroneous Diviſion, which cannot but confound a young Reader. They tell us there are two Species of *Hydroceles*, the one, by *Infiltration*; the ſecond, by *Extravaſation*: That kind of Dropſy which attacks the *Membrana Cellularis Scroti*, they ſuppoſe to be produced by *Infiltration*, and the other Collection of Water in the Membranes of the *Scrotum*, they aſcribe to an *Extravaſation*; but the Diſtinction ſeems to have no Foundation, either in Reaſon, or anatomical Diſſections; for the Water lodged in the Cells of the *Membrana Cellularis Scroti*, is as evidently extravaſated, as the Water which is contain'd in the Membranes of the *Scrotum*: So that the Circumſtance of *Extravaſation* is the ſame in both Caſes. And as to the Term *Infiltration*, by which they intend to ſignify the Increaſe of the Diſtemper Drop by Drop, or, as they expreſs it, by Diſtillation;

lation; this is likewiſe groundleſs, becauſe the ſlowneſs of Augmentation is common to both the Kinds, and therefore is improperly applied to the one in contradiſtinction to the other. And if the above-mentioned Diſtinction demands our Cenſure, I believe upon Examination it will appear, that the uſual Deſcriptions of the Diſorder itſelf are no leſs liable to Objection.

THE multiplicity of Seats aſcrib'd to this Collection of Water in the *Scrotum*, is a Doctrine without Foundation, and has therefore always render'd the Study of the *Hydrocele* very perplexed: But to explain better the Falſity of this ſuppoſed Variety of Kinds, I ſhall firſt point out the true Seats of the Waters, when from their Collection in the *Scrotum*, they form the Diſtemper call'd the *Hydrocele*, or which is likewiſe known by the Name of *Hernia Aquoſa*, *Hydrops Scroti*, and *Hydrops Teſtis*.

THERE are then but two Kinds of *Hydrocele*, the one, where the Water is lodged in the Cells of the *Membrana Cellularis Scroti*; the other, where it is contain'd within the *Tunica Vaginalis* of the Teſticle, which laſt, in that Senſe may be deem'd an *Encyſted Dropſy*; and in compliance with Cuſtom, I ſhall alſo call

it by that Name. In the firſt Caſe, the Diſorder is generally complicated with an *Anaſarca* of the whole Body, where the Water is extravaſated in the Cells of the *Membrana Adipoſa*, of which the *Membrana Cellularis Scroti* is but a Continuation; ſo that the *Scrotum* in this Inſtance is only affected in common with the *Membrana Adipoſa*; whereas in the *Hydrocele* of the *Tunica Vaginalis*, the Diſtemper is properly local, not only as being confined to that Part, but as it rarely implies any other Diſorder. However there are Exceptions to what I have here laid down; for ſometimes an adjacent Tumor, by compreſſing the Veſſels leading to the *Scrotum*, occaſions a *Hydrocele* of the *Membrana Cellularis*, independent of an *Anaſarca*; and ſometimes, a *Hydrocele* of the *Tunica Vaginalis* accompanies, and perhaps may be the Conſequence of a Scirrhous or Cancerous Teſticle.

It is to be remarked, that the Water of the *Encyſted Hydrocele*, for the moſt part preſerves all the Properties of that Water which is conſtantly found within the Cavity of the *Tunica Vaginalis*, and is allotted to the Service of the Teſticle; whereas the Waters lodged in the *Membrana Cellularis* are evidently a diſeaſed Fluid,

Fluid, or at leaſt, the Aqueous Parts of the Blood: From which Obſervation it may reaſonably be inferr'd, that the *Hydrocele* of the *Tunica Vaginalis* is nothing more than an accumulation of that Fluid, which is deſtin'd to lubricate the Teſticle.

From what immediate Cauſe this Redundancy of the Fluid may ariſe, I will not take upon me to determine: Poſſibly, it may be owing to a Rupture or a Relaxation of the Secretory Veſſels, or perhaps a Stimulus promoting a preternatural Secretion of the Fluid; or on the other hand, the Defect may be in the Abſorbent Veſſels, which have loſt their Power of circulating the proper Portion of the ſecreted Fluid back again into the Blood, whence an Accumulation muſt neceſſarily enſue; but I ſay, theſe are Conjectures by no means to be depended on, though from the Examples we now and then ſee of the ſudden Diſappearance of this Diſorder, where it has ſubſiſted for many Years before, one would be inclin'd to ſuppoſe, that as the Waters in this Caſe are evidently carried off by the Exertion of the Abſorbent Powers, they might alſo probably have been collected from a Defect in thoſe Powers; but however unſatisfactory this *Rationale* may

prove, I am perſuaded, that the *Hypotheſes* now in vogue, are far from giving us a better light into the Subject.

THE Doctrine of that Species of *Hydrocele*, which is ſeated in the *Membrana Cellularis Scroti*, ſeems to be univerſally the ſame; ſo that the Difference of Opinion on this Subject relates merely to the Dropſy of the *Tunica Vaginalis* of the Teſticle, which, inſtead of being confin'd to the Cavity of that Membrane, is by ſome aſcrib'd, at one time, to the Cavity between the *Tunica Vaginalis* and the *Dartos*; at another, to the ſuppoſed Cavity of the *Tunica Vaginalis* of the *Spermatic Cord*; ſometimes, to the Interſtices of the *Laminæ* of the *Tunica Vaginalis*; ſometimes, to the Body of the Teſticle within the *Tunica Albuginea*; and laſtly, to the Cavity of the *Tunica Vaginalis* of the Teſticle [1].

FROM this Catalogue of the ſeveral kinds of *Hydroceles*, which are admitted by ſome of the greateſt Surgeons, I believe it will hardly appear credible, that moſt of them ſhould be the Production of Fancy, and have no foundation but in the miſtaken Opinions of their firſt Inventors. However I ſhall attempt to

[1] Palfin, *Chap. of the* Hydrocele.

prove

prove it, both from the unreaſonableneſs of the Doctrine, and the little Argument they produce in ſupport of it.

To begin then with the Examination of that [2] Collection of Water, which is by ſome ſaid in general Terms to be formed in the *Scrotum*; or by others, more explicitly pointed out to be ſeated between the *Tunica Vaginalis* and the [3] *Dartos* Muſcle. The firſt Remark I ſhall make upon this Subject is, that all thoſe Writers who deſcribe only this Species of *Hydrocele*, conſtantly aſcribe the ſame Symptoms to it, as we do now to that of the *Tunica Vaginalis*: but what is ſtill more obſervable, the Writers who admit of both, ſcarcely attempt to point out the Characteriſtics denoting the difference of the two Kinds.

Now can it be ſuppoſed, that two Diſtempers ſo eſſentially different from each other in their Situation, and conſequently deriving their Origins from ſuch different Orders of Veſſels, ſhould conſtantly be endow'd with the ſame Appearances? Is it agreeable to what we ſee in the other Diſorders of an animal Body? Does not a ſmall Variation in the Seat of Diſtempers indicate ſometimes widely different

2 Garengeot, *p.* 448. Vol. I. 3 Col. de Vilars, 178.

Criterions, and always ſuch as are to be diſtinguiſhed by a diſcerning Eye? Is it not then more probable, the Seat of the Diſorder ſhould be miſtaken, and there ſhould be only one Kind, than that two Kinds ſhould ſo exactly reſemble one another?

Besides, if this Caſe was common, (and there is as good Proof of its being common, as that it exiſts at all) we ſhould have had undeniable Proofs of its Frequency; ſince the great Application of Surgeons theſe laſt fifty Years, to the Study of Anatomy and the Diſſections of Morbid Bodies, could not but have furniſh'd the Cabinets of the Curious with a number of Preparations that would have put the Doctrine quite out of Diſpute: But we ſee no ſuch Preparations, and I think, read of no Diſſections, that ſeem ſatisfactory as to this Point.

And if it be admitted, that the Water of the *Encyſted Hydrocele* is uſually of the ſame Nature with that found in a healthy *Tunica Vaginalis*, which I believe is indiſputable, it is reaſonable to infer, that the Collection is derived from thoſe Veſſels on the Internal Surface of that Membrane, which conſtantly ſupply the Cavity with Water: And if this be granted, it will follow, that ſuch Collections of Water muſt

muſt be always on the inſide, where the Source is to be found; and not on the external Part, where Nature has not aſſigned a proper Compages of Veſſels for the Separation of ſuch Fluid. And indeed from conſidering it in this Light, it appears to me almoſt as abſurd to place theſe Waters on the outſide of the *Tunica Vaginalis*, as in a *Hydrops Articuli*, (which is a preternatural Accumulation of the *Sinovia* of the Joint) to ſuppoſe the *Sinovia* is collected between the Ligaments and the Skin.

PERHAPS it may be ſuggeſted by one converſant with theſe Writers, that I have omitted to mention what they eſteem the moſt frequent Cauſe of this kind of *Hydrocele*, and which it may be ſuppoſed, will as well account for a *Hydrocele* on the outſide, as in the Cavity of the *Tunica Vaginalis*; I mean the Deſcent of Water from the *Abdomen* into the *Scrotum*, where the Patient labours under an *Aſcites* [4]. It is true, moſt of them do impute it to this Cauſe; and there could not have happened a ſtronger Caſe in Point to convince the Reader how liable we are to be miſled by Authority. An *Aſcites* is ſo common a Diſtemper, that every Practitioner becomes a Judge of this Diſpute, and I would

4 Garengeot, 445. Dionis, 365——Col de Vilars, 178.

then

then appeal to any Practitioner, whether in the Multitude of *Ascites* he has treated, he remembers any of them to be complicated with an *Encysted Hydrocele*, or, in the few *Encysted Hydroceles* he has met with, he recollects a previous *Ascites?* I dare answer, few have met with this Complication, because, as I shall explain immediately, the two Cases will never occur together, unless where the two Distempers, by great Chance, happen to be formed independently the one of the other: And it would be extraordinary indeed, that the *Encysted Hydrocele* should begin to collect just at that Juncture the Waters of the *Ascites* were gathering: Yet rare as this Accident must be, we see Mankind so prone to imitate one another, that without considering the Truth of a Fact so very notorious, they still continue to assert what every Hour's Experience contradicts.

Nevertheless I must here caution the Practitioner to distinguish between the *Encysted Hydrocele*, and the *Hydrocele* of the *Membrana Cellularis:* An *Ascites* is frequently accompanied with an *Anasarca*, and in that Instance the *Scrotum* becomes enlarged; but then it is not an *Encysted Dropsy*, which is the kind of Dropsy said to be formed by the Derivation of the Water from the *Ascites*. What

WHAT ſeems to have laid the firſt Foundation of this Error, was a miſtaken Notion concerning the Origin of the *Tunica Vaginalis*, which the [5] old Surgeons imagined to ariſe from the *Peritonæum*, in the ſame manner that a Finger of a Glove does from the Cavity of a Glove, as is really the Caſe in a Dog: Indeed this Similitude was ſo apt to their Purpoſe, that they uſed it for illuſtrating the Anatomy of thoſe Parts. Now, upon the Suppoſition of this Structure, the Water of an *Aſcites* would naturally fall through the open Canal of the *Tunica Vaginalis* into the *Scrotum*, and therefore it is not wonderful, that People miſtaken in their firſt Principles, ſhould be miſled into ſuch an Opinion; but that the Doctrine ſhould be preſerved, and, contrary to all Experience, by thoſe who deny this Communication between the *Scrotum* and the Cavity of the *Peritonæum*, is leſs excuſable; tho', to ſay the Truth, nothing is more common in Science, than to retain the Inferences from falſe Principles, after the Principles themſelves are exploded,

BUT there is another Circumſtance attending this Fall of the Water from the *Abdomen* into the *Scrotum*, which has not been ſuffi-

[5] *By the old Surgeons, I mean thoſe who flouriſhed in the three laſt Centuries; and by the Moderns, thoſe of the preſent Age.*

ciently

ciently regarded; and that is the immediate Conſequence, that every ſuch *Hydrocele* muſt be a Dropſy of the *Tunica Vaginalis*, ſince it is the only Part of the *Scrotum* into which the Water could enter from the *Abdomen*, according to the above ſuppoſed Texture of theſe Organs. And *Hildanus* was ſo clear in this Point, that he not only places the *Hydrocele* within the *Tunica Vaginalis*, but, before he made an Inciſion to diſcharge the Water, he [6] paſs'd a Ligature round the upper Part of the *Tunica Vaginalis*, and tied it, with an Expectation of preventing a future Fall of Water from the *Abdomen* into that Bag: But the Moderns have not perceived how neceſſarily one Part of their Doctrine falſifies the other.

YET, it muſt be confeſs'd, there is in Nature ſuch a Diſorder as a watry Tumor either in the *Groin* or *Scrotum*, which may be derived from an *Aſcites*; but the Caſe is very rare, and when it happens, is widely different from the *Hydrocele* we are treating of. It is peculiar to thoſe *Aſcites*, which by chance are complicated with an old *Bubonocele*, where, tho' the *Inteſtine* be ſupported within the *Abdomen*, the *Herniary Sac* remains adherent without: In Conſequence of which, the Water of the *Aſ-*

[6] *Obſerv.* 66. *Cent.* 4.

cites

cites flows into the *Herniary Sac*, and forms this Species of *Hydrocele*. But this Caſe is ſo far from aiding the general Opinion of the Deſcent of the Water into the *Scrotum*, that it rather proves it cannot fall but with a Portion of the *Peritonæum*; which, in the common *Hydrocele*, I believe no one pretends to accompany the Water.

I FLATTER myſelf I have ſaid enough to ſhew, there is not any Demonſtration of the Exiſtence of this Species of *Encyſted Hydrocele*, which is ſuppos'd to be form'd between the *Dartos* and the *Tunica Vaginalis*. But, as I am aware how difficult it is to diſpoſſeſs ourſelves of Opinions, that have never before been doubted, I might in this Place produce ſome Examples to illuſtrate how little the univerſal Reception of a Doctrine is a Proof of its Infallibility: However, I ſhall only mention the two famous Caſes of a *Tympany* in the *Abdomen*, and a *Pneumatrocele* in the *Scrotum* or *Inguen*, which, after having been admitted for ſo many Centuries, to be diſtinct Diſorders of thoſe Parts, are now, by the moſt able Practitioners, ſuppoſed to be imaginary; the *Aſcites* having been miſtaken for the one, and the *Hernia Inteſtinalis* for the other.

PERHAPS,

PERHAPS, to this inquiſitive Age, it may appear ſurpriſing, that for ſo long a courſe of Time, no one ſhould have detected the Falſity of this Opinion: But it was the Fatality of thoſe Days, that Phyſicians and Philoſophers believed the Bounds of Science were fixed, and all they ſtudied was, how to accommodate their own Opinions to thoſe of *Hippocrates*, *Ariſtotle*, *Celſus* and *Galen*. It is no Wonder then, whilſt this Humour prevailed, that any particular Miſtake ſhould, under the Sanction of theſe great Men, be tranſmitted to Poſterity; and it is certain, this very Doctrine is one of thoſe Inſtances; for we read in *Celſus* ſo ample and diſtinct an Account of this ſuppoſed *Hydrocele*, that I cannot but look upon all the ſubſequent Deſcriptions of Writers ſince him, as ſo many Copies of that one Original. I believe I ſhall be pardoned, if I give the Reader an Extract of what [7] *Celſus* has advanced on this Subject, eſpecially, as it is ſo apt to the preſent Enquiry, and alſo, becauſe ſome eminent [8] Authors entirely miſapprehend him, particularly in thoſe fundamental Points, the Anatomical Deſcriptions of the Parts.

HE ſays, there are three Coats of the Teſticle, *viz.* the *Elythyroides (Tunica Vaginalis)* and

[7] Celſ. Cap. 18. [8] Fab. ab Aquapendente, 271. the

the *Dartos*, which two he ſuppoſes peculiar to each Teſticle; and the *Scrotum*, which is common to both. But in the Explanation of the different Diſorders of the *Scrotum*, he more generally diſtinguiſhes the Membranes by their Situation; for Example, the *Tunica Vaginalis* he calls the *Tunica ima*; the *Dartos*, *Tunica media*; and the *Scrotum*, *Tunica ſumma*.

IN his deſcription of the *Hydrocele*, he ſays, there are two kinds [1] of it between the Membranes of the *Scrotum*: One of them he places between the external and middle Membranes; the other, between the middle and internal Membranes. The Characteriſtics of the two, plainly denote the one to be the *Anaſarcous Dropſy* of the *Scrotum*; the other, the true *Hydrocele* of the *Tunica Vaginalis*: But he aſcribed the ſeat of the laſt kind, to the Vacuity between the *Tunica Vaginalis* and the *Dartos*; and I believe, by this Miſtake, eſtabliſhed the Error, which has prevailed ever ſince, in regard to the Doctrine on this Subject. And yet it is evident, that he was alſo appriſed of the Dropſy of the *Tunica Vaginalis* (though he ſometimes miſtook its Situation, ſuppoſing it to be placed between the *Dartos* and *Tunica Vaginalis*;) for he not only mentions it in the deſcription of

[1] *Vol. 2. Page* 457.

the

the *Hydrocele*, but, in his [2] Method of Cure, expreſly directs us to perform the ſame Operation if the Water be contained under the *Tunica Vaginalis*, as if it lay between that Coat and the *Dartos*. Indeed, his Deſcription is ſhort; but ſtill, there are very few Writers ſince *Celſus*, who ſpeak ſo diſtinctly of this Species of *Hydrocele*. They have unfortunately overlooked that part of his Doctrine which is true, and copied that only which is falſe.

I SHALL diſmiſs the Examination of this Species of *Hydrocele*, with obſerving, that though the *Dartos* is ſpoken of with ſo much Familiarity, that one would imagine it was a conſiderable Muſcle, yet there are ſome Anatomiſts, who even deny its Exiſtence; and the moſt accurate diſcover it only in plethoric Bodies, where its Fibres are ſpread thinly on the internal Surface of the *Scrotum*, and by no means anſwering to the Idea of a compact Subſtance fit to contain a Quantity of extravaſated Water. Though, in Extenuation of what the Ancients teach on this Subject, it may be remarked, that they were permitted to diſſect Brutes only, and were miſled into this formal Doctrine of the *Dartos*, by the *Panniculus Carnoſus*, which is a large Muſcle found in moſt Ani-

[2] *Vol. 2. Page* 468.

Animals, immediately under the Skin in many Parts of their Bodies.

THE next Enquiry I make, ſhall be into that kind of *Hydrocele*, which is ſaid to poſſeſs the *Tunica Vaginalis* of the *Spermatic Cord*. It has been already obſerv'd, that the internal Coat of the *Tunica Vaginalis* of the Teſticle, is, in its upper Part, connected very cloſely with the *Spermatic Cord*, ſo as to form a diſtinct Bag for the Teſticle. This Inſertion of the upper Part of that Bag is by the Moderns, as I have before taken notice, conſidered as a *Septum* [9] dividing the *Tunica Vaginalis* into two Cavities, the upper one being called the *Tunica Vaginalis* of the [1] *Spermatic Cord*, the lower one, the *Tunica Vaginalis* of the Teſticle.

[2] Now it is generally aſſerted that the *Hydrocele* may be produced in one or the other of theſe Cavities, or ſometimes, in both; and there are Rules laid down for diſtinguiſhing when [3] the Water poſſeſſes the upper Cavity, and when the lower: Nay there are ſome, who ſeem to believe that the Water is [4] collected in the upper Cavity firſt, and that when there is any Collection in the lower Cavity, it is owing

[9] Dionis, 364. [1] Ibid. [2] Col de Vilars.
[3] Dionis, 364. [4] Garengeot, 455.

to a Rupture of the *Septum*, which opens a Communication from the upper Portion of the *Tunica Vaginalis* into the lower. It may perhaps deſerve our Notice, that the Doctrine of this Species of *Hydrocele* is of modern Invention, and wanting that Stamp of Authority, which is ſometimes deriv'd from Antiquity, it is not taught in the ſame Terms by different Writers, nor conceiv'd of in the ſame manner; though in general, they conſider the *Tunica Vaginalis* of the *Cord*, as a looſe Sheath, like the *Tunica Vaginalis* of the Teſticle; and in the *Hydrocele* of the upper Part, they apprehend the Water is contained in one large Cyſt, as it is in the *Tunica Vaginalis* of the Teſticle. But ſome of [5] them admit, that when there is Water collected in the upper Part, it is not contained in one Cavity, but in the Cellular Subſtance of the *Tunica Vaginalis* amongſt the *Spermatic Veſſels*; and they grant, that in order to empty it, an Inciſion ſhould be made the whole Length of the Tumor into the Cellular Subſtance, as a Puncture by the Lancet or Trocar would be inſufficient.

I AM inclined to believe, that the longitudinal Shape of ſome *Hydroceles* gave riſe to this Opinion; for when it was conſidered, how low

5 Gareng. 449.

in

in the *Scrotum* the upper part of the *Tunica Vaginalis* of the Teſticle lies, it hardly appeared credible, that by a Collection of Waters within the Cavity, it ſhould be elongated to ſo conſiderable a Height in the Groin: And hence aroſe the Diſtinction [6] amongſt ſome, that, if the *Hydrocele* be round, the Water is in the *Tunica Vaginalis* of the Teſticle; if it be longitudinal, it is in the *Tunica Vaginalis* of the *Cord.*

I WOULD not however be miſunderſtood ſo far, as to have it imagined, I diſpute the Poſſibility of a watry Tumor or Tumors forming in this Part. It muſt be granted that the *Tunica Vaginalis* of the *Spermatic Cord* is not exempt from the common Fate of every other part of the Body: It is ſubject to Diſeaſes of different Appearances, and, amongſt others, to ſmall Collections of Encyſted Water between the *Laminæ* of its Membranes: But by what I can learn, in no degree peculiar to itſelf. I have myſelf ſeen two or three ſuch Caſes, and I have read of one or two more: If ſuch rare Appearances as theſe may be deemed a *Hydrocele* of the *Tunica Vaginalis* of the *Cord*, I ſhall not oppoſe it; but what I contend for is, that thoſe *Hydroceles*, which occur in Practice every Day, and are many of them aſcribed to

[6] Dionis, 64.

this Part, are falſly ſo aſcribed, being generally, if not always, *Hydroceles* of the *Tunica Vaginalis* of the Teſticle; and I will be bold to ſay, that a Man who does not look for ſuch an Appearance will never find it; ſince one of the ableſt Surgeons in *Europe* confeſſes, that notwithſtanding he has carefully enquired for this Species of *Hydrocele*, he has never met with one Example of it, amongſt the great Numbers of *Hydroceles* that occur'd in his Practice [7].

I SHALL now examine the two remaining Species of *Hydroceles*; I mean that *Hydrocele*, which is ſaid to be form'd between the *Laminæ* of the *Tunica Vaginalis* of the Teſticle, and that which is ſuppoſed to be placed under the *Tunica Albuginea*. Neither of theſe are pretended to be common by thoſe Writers who mention them; nay, ſo far from it, that the Poſſibility of the two kinds ſeems to be ſupported chiefly by the Hiſtories of two or three ſingle Caſes: The firſt is related by *Garengeot*, of an [8] eminent Surgeon who was obliged, in a certain Inſtance, to employ the Trocar twice, in order to empty the *Scrotum*, which *Garengeot* aſcribes to the Water being col-

[7] Heiſter, 842. [8] Garengeot, *Tom.* 1. *Obſerv.* 29. *2d Edit.*

lected

lected in two different Cysts between the *Laminæ* of the *Tunica Vaginalis:* And what confirm'd him in this Opinion, was a second Operation, perform'd by the same Surgeon on the same Patient some time after, when the whole Quantity of Water was evacuated by one Puncture; the absolute Evacuation of the Water at that time by one Orifice, being imputed to the Rupture of the *Septum* between the two Cysts.

THUS we see a mere Accident in one particular Operation, perform'd many Years ago, brought as an Argument for this Doctrine. I think I need not scruple to call it an Accident, since, if it was owing to the Cause which they suggest, we should not be under a Necessity of recurring to a single History; but from the Multitudes that are every Day Tapp'd, we should have continual Instances of the same Nature under our own Eyes. Besides, the whole weight of this Argument turns upon the Reasonableness of *Garengeot*'s Solution of the *Phænomenon*, which, at least, is far from being a Demonstration of what he advances; since an Advocate for the *Hydrocele* of the *Tunica Vaginalis* of the *Spermatic Cord*, might, with as good Foundation, produce

the ſame Example for an Illuſtration of his Doctrine.

[9] The ſecond Caſe is given us by *Le Dran*, but I believe, whoever conſiders how complicated that Caſe is, will hardly be convinced of the commonneſs of the *Hydrocele* between the *Laminæ* of the *Tunica Vaginalis*, from that Hiſtory.

The third Caſe [1] regards the Dropſy of the Teſticle, and, I think, is no leſs ſatisfactory in regard to the Doctrine it is deſigned to eſtabliſh. But whatever want of Proof there may be of the Exiſtence of this latter kind of Dropſy, it is not wonderful the Notion of it ſhould prevail, when, amongſt other great Authors who mention it, *Fabricius ab Aquapendente* ſpeaks of it with the ſame Peremptorineſs, as he does of the other kinds [2].

I know not whether I have ſucceeded in my Attempt to refute the above ſuppoſed Variety of *Hydroceles*; if I have not, I ſhall beg leave to call in the Authority of theſe very Writers, upon whoſe Doctrines I have animadverted; for it happens, that every thing I have aſſerted, is maintained, at leaſt Negatively, by one or another of them, though each upon the

9 Le Dran's *Obſerv. Vol. 2. Page* 159.
2 Fab. ab Aquapendente, 68.
1 Dionis, 365.

whole

whole runs into the generality of these Errors. For Example, The *Hydrocele*, between the *Dartos* and *Tunica Vaginalis*, is mentioned by *Garengeot* and *Col de Vilars*; but is denied (if Silence be a Denial) by *De la Fay*, and *Le Dran*. The *Hydrocele* of the *Tunica Vaginalis* of the *Spermatic Cord* is asserted by *De la Fay*, *Col de Vilars*, and *Garengeot*; but *Le Dran* omits the mention of it, and even *Garengeot* [3] himself describes it, as a different Disorder from the others. Again, *Le Dran* and *Garengeot* speak of the *Hydrocele* between the *Laminæ* of the *Tunica Vaginalis*, but *De la Fay* takes no notice of such a Species: On the other hand, *De la Fay* supposes the Possibility of a *Hydrocele* of the Testicle, and *Le Dran* makes no mention of it. Thus we see, that all I have laid down, singular as it may appear, is to be gathered separately from their own Writings, a Circumstance, which cannot but weigh very much in favour of the Arguments I have produced.

I HAVE now run through the Examination of the Reality of these several kinds of *Hydroceles*, and one would expect, there should remain no farther Subject for Criticism on this Distemper; but in my Opinion, their Idea of the true *Hydrocele* of the *Tunica Vaginalis* is

[3] Garengeot, 454.

almoſt as falſe as the Notions I have already combated: For, inſtead of ſimply conſidering the *Tunica Vaginalis* as a Bag diſtended by an Accumulation of Water, they ſeem many of them to conceive, that the Water is collected in an adventitious Cyſt, in the ſame manner as [4] we find in an Encyſted Dropſy of the *Abdomen*.

[5] It is true *Garengeot* admits, that the Water may be collected in the manner I ſuppoſe it to be uſually done; but then he ſpeaks of it as an extraordinary Phænomenon, and which he ſhould have eſteemed *a Fable*, if he had not once met with an Inſtance himſelf, when, upon opening a *Hydrocele* the length of the *Scrotum*, he found the Teſticle in the ſame Cavity with the Water.

LE DRAN [6] ſays poſitively, that this Species of *Hydrocele* is a Tumor or Bladder filled with Water, and placed upon one of the Teſticles to which it is adherent; but he, and *Garengeot*, and *De la Fay*, all three of them, in their Deſcription of the Operation for the radical Cure, plainly ſhew they are of this Opinion; for they recommend ſuch a rough Treatment of the Cyſt, as would be by no means ſuitable, ſuppoſing it to be the *Tunica Vaginalis*; nay, I

[4] Le Dran, 179. [5] Page 450. [6] Page 177.

think,

think, from their manner of cutting and tearing, and even tying it all round with Ligatures in order to extirpate it [7], the Teſticle itſelf would be often deſtroyed: And therefore this particular miſtake as to the Nature of the Cyſt, is of a more miſchievous tendency than any other I have obſerved upon; becauſe it not only miſguides Surgeons in their Speculations, but may fatally miſlead them in their Practice.

YET however I may condemn the practice of tearing away the Cyſt, as needleſs and cruel, nevertheleſs I muſt own, it becomes a Conſideration of great Importance to determine, whether a mere Inciſion through the Skin and *Tunica Vaginalis* be ſufficient, or whether the cutting a way a Portion of the *Sac* be adviſeable. It is true, the Operation in the ſecond method is more ſevere; but as the Cicatrix will be larger, it is probable the Patient will be leſs liable to a Relapſe, which happens, though very rarely, after a ſimple Inciſion: beſides, when a quantity of *Tunica Viginalis* is cut off, the remaining Portion which inflames and ſuppurates after the Operation, will poſſibly excite a leſs ſymptomatic Fever and fewer Abceſſes, than if the whole *Tunic* was left to

7 Garengeot, 471. Le Dran, 182.

inflame

inflame and digeſt: On this account, perhaps the Exciſion of an oval peice of Skin and *Tunica Vaginalis*, will always be found more eligible than the ſimple Inciſion, and where the *Hydrocele* is of a great Bulk, abſolutely neceſſary. I have done it in three or four Caſes where the *Tunica Vaginalis* was enormouſly diſtended with fleſhy Concretions exactly reſembling thoſe we find in the Interſtices of the Muſcles near an old *Aneuriſm*, and, which I make no doubt, were likewiſe a grumous Blood changed by its long continuance in that State of Extravaſation. It is a Diſorder ſpoken of by various Writers under the Title of *Hæmatocele*, though I do not know that any of them have deſcribed it with the Circumſtances I have mentioned, but rather as a bloody Water, or at leaſt, a fluid Blood; and therefore it may not be amiſs to inform the Reader, that the Fluctuation in this Species of *Hæmatocele* is ſo very obſcure, that without ſome Attention, it may be miſtaken for a ſcirrhous Teſticle.

The Maxim of cutting away a great quantity of the Teguments, in order to effect a radical Cure, is very old. *Celſus* recommends it, and what is particular, makes no mention of the Palliative Method, (Tapping) but ſpeaks of the

the Exciſion, as though it was the common Practice of thoſe Times: The Moderns too ſpeak of it very familiarly, and yet I ſuſpect this Operation has not been performed often by any one of theſe Writers; for if they had frequently practiſed it, we ſhould have had a great number of the Hiſtories of theſe Caſes: We ſhould likewiſe have been informed of the different Succeſs from the uſe of Cauſtics and the Knife, both of which are recommended for the radical Cure; but there are few or no accounts of this Natute. Beſides, in the general Preſcription laid down for the Operation, we have no Caution in regard to that remarkable Symptomatic Fever, which ſeldom fails to precede the Suppuration of the *Tunica Vaginalis*, and indeed, ſometimes riſes ſo high, as to give very great Alarms, though I have never yet ſeen it prove fatal. It is the Nature of Membranes to digeſt with more Difficulty than the fleſhy Parts, of which this is an eminent Example; for in the very Operation we are treating of, the Fever attendant upon it, is often much more terrible than that which enſues even after the Extirpation of a large Teſticle.

N o w, had the Authors who adviſed this Operation been accuſtomed to it, they could not

not have omitted to mention ſo material a Circumſtance. *Garengeot* indeed, tells us of a Caſe, where bad Symptoms aroſe after the Application of a Cauſtic, though he very injudiciouſly aſcribes them to the Salts of the Cauſtic poiſoning the Water of the *Hydrocele*. *Hildanus*, I confeſs, is more particular in the recital of this Conſequence, though he was not aware, that it would naturally follow, but imputed it in his Patients to their ill State of Body *(pravis humoribus referti erant* [8].) And I ſhould do an Injuſtice to our *Engliſh* Writer, *Wiſeman*, if I did not remark in this place, that he ſeems much better appriſed of the Nature of this Operation than any one I have met with; though his Hints upon this Subject have been overlooked by later Authors. Perhaps, there may alſo have been ſome notice taken of it by others, which has not occurred to me. Upon the whole, it appears to me from what I can learn in the writings I have examined, that there are not yet a ſufficient quantity of Obſervations, to eſtabliſh an unexceptionable method of performing this Operation: That of tearing away the *Cyſt* with the Fingers is undoubtedly to be rejected; but whether under the No-

[8] Obſ. 65. Cent. 4.

tion

tion of its being an *adventitious Bag*, the advantages from cutting away a Portion of the *Tunica Vaginalis* will, in the generality of Caſes, compenſate for the Pain, and give it a preference to the ſimple Inciſion and Cauſtic, muſt be decided by a number of Experiments, though as I mentioned before, I am at preſent inclined to that Opinion.

CHAP. III.

SARCOCELE.

THE Teſticle, like other Parts of the Body, is ſubject to Inflammations, terminating either by Diſcuſſion or Suppuration; and the Enlargement of the Teſticle under this Circumſtance, is called a *Hernia Humoralis*, whether it be a critical Tumor, or the Conſequence of a Venereal Affection. This kind of *Hernia* is ſo fully treated of by moſt Writers, that I ſhall make no Obſervation on it; but, that Species of Swelling, which is known under the Name of *Sarcocele* or *Hernia Carnoſa*, is a Subject, which I believe is not only ill deſcribed, but abſolutely miſunderſtood: I ſhall therefore

therefore examine into the Hiſtory of this Diſorder, and endeavour to put it in a clearer Light than we yet ſee it.

THE *Sarcocele* [9] is ſaid to be either a Tumor of the Teſticle itſelf, or [1] a Tumor growing on the Teſticle, formed, as they expreſs it, by vicious Juices which change into Fleſh. The firſt Deſcription, anſwers to what we now call a ſcirrhous Teſticle, and in that Senſe is proper; but the ſecond is a miſtaken Caſe; for that, which they ſuppoſe to be an adventitious Swelling, or an Excreſcence, is really an Enlargement and Induration of the *Epididymis*; and here it is, their Accounts are imperfect; for not knowing this Circumſtance, they have confounded the Natures of the two Species of *Sarcocele*; and ſuppoſing them equally malignant, they have in conſequence ſometimes acted, not only with a needleſs but a fatal Severity.

WHOEVER is curious to look into the moſt eminent [2] Authors, will find the Cautery, the Cauſtic, or the Knife, every where recommended for this ſuppoſed Excreſcence; and I believe, he will not meet with the leaſt Suggeſtion that this Species of *Sarcocele* is of a milder na-

9 Heiſter 837. Parey 211. 1 Col. de Vilars 315. All Authors.
2 Heiſter 840. Le Dran, Obſ. 72.

ture,

ture, than that, where the whole Body of the *Teſtis* is ſcirrhous: To explain therefore in the beſt manner I am able, the different Natures of theſe *Sarcoceles*, it muſt be remarked, that the Teſticle is compoſed of two diſtinct Parts, the one Glandular, which is the Body of the *Teſtis*, the other Vaſcular, which is the *Epididymis*, and what is generally believed to be the beginning of the *Vas deferens*: Now the Scirrhus, which attacks the body of the Teſticle, is uſually of a cancerous Diſpoſition; the Scirrhus, that falls on the *Epididymis* only, ſeldom or never ſo. It is ſufficient, that Experience verifies the Obſervation, for in all probability the immediate Cauſe of ſo eſſential a difference, in Tumors of equal Hardneſs, may never be exactly known. We know however, that there is a Propenſity in moſt Diſtempers, to manifeſt themſelves in particular Parts of the Body, and we ſometimes have not a better Guide, than the Seat of the Diſorder, to influence our Opinion on the Nature of the Diſorder. Thus a Scirrhus of the Breaſt or *Teſtis*, inclines us to ſuppoſe a cancerous Diſpoſition; the ſame Degree of Scirrhus in the Glands near the Jaw, a ſcrophulous Poiſon. Many more Inſtances of this kind might be pointed out, but theſe may ſuffice to illuſtrate

illuſtrate the Poſſibility of a much more innocent Diſpoſition in a Scirrhus of the *Epididymis*, than in a Scirrhus of the Teſticle itſelf.

BUT if our Theory is defective in this Article, Practice will always evince the Truth of the Aſſertion. Indurations of the *Epididymis* may reſiſt all the Methods of Diſcuſſion, and remain ſcirrhous, or perhaps ſuppurate; but they will never become cancerous, whilſt the glandular Part of the Teſticle is ſound, and therefore will not demand Extirpation, as is generally recommended upon that Preſumption. On this account they are always to be treated with Patience; for in length of Time the moſt ſtubborn are often ſubdued, and not only Health and Life leſs hazarded, but alſo the Faculties of the Organ preſerved.

WRITERS however have been ſo little appriſed of the Diſtinction I have made, that there are ſcarcely any of them who in their Accounts of this Diſorder even mention the *Epididymis*, much leſs that the *Epididymis* itſelf is the Part diſeaſed; at leaſt, it is chiefly, if not altogether after a *Hernia Humoralis* that they admit the *Epididymis* to be the Seat of the *Sarcocele*: And in that Inſtance, the moſt eminent [3] amongſt them recommend the Extirpation

[3] Aſtruc.

of

of the Tumor, in caſe it ſhould not yield to the proper Application; ſo that the moſt conſiderable Improvement [4] made by the Moderns in this Article, is the Preference given to the Knife, over the Cauſtic or Cautery, as adviſed and practiſed by the old Surgeons.

I BELIEVE ſome of the Moderns flatter themſelves, that they have mitigated the Cruelty of the Operation for this Species of *Sarcocele*, in confining the Extirpation to the Excreſcence, inſtead of Caſtrating; but it is certain, the Ancients alſo followed this Practice; for though *Celſus* does not ſeem to ſpeak with his uſual Clearneſs on the Nature of the Diſorder he treats of in his 19 *Cap. de Curat. Teſt.* yet by the Proceſſes of the Operation, I am inclined to think, he muſt mean ſome Species of *Sarcocele*, or more probably the *Circocele*, (where the *Epididymis* is uſually affected, as I ſhall deſcribe preſently) and he very diſtinctly points out the manner of cutting away the diſeaſed Parts, and preſerving the Teſticle. Perhaps too, that Deſcription which we may eſteem obſcure, might from Circumſtances we are not acquainted with, be intelligible and familiar to his Cotemporaries. *Paulus Ægineta* [5] propoſes likewiſe this partial

[4] Heiſter, 841. [5] Page 300.

Amputation, ſo that the Notion, however popular, is ill grounded. What poſſibly may have laid the Foundation for this Opinion, is the Doctrine of *Fabric. ab Aquapendente*,[6] who really does recommend Caſtration, for which he aſſigns this Reaſon; That he once ſaw a Teſticle that was rotten within, though it was extremely ſound in its outward Parts. *Fab. ab Aquapendente* having propoſed this Method, a Reader might be naturally inclined to imagine, it had alſo been propoſed by the Ancients; but the Fact is not true; though by the way, this is not the only Inſtance of a Degeneracy of Practice betwixt the Times of *Celſus*, and *Fab. ab Aquapendente*.

I SHALL cloſe this Eſſay on the Importance of diſtinguiſhing between an Induration of the *Epididymis*, and an Induration of the *Teſtis*, with obſerving, that though it be an Inſtruction with the beſt Writers, to extirpate the Excreſcence only, yet, as it often happens, that the *Epididymis* is ſo monſtrouſly enlarged as almoſt to ſurround and envelope the whole Body of the Teſticle, Surgeons are apt to proceed to Caſtration, from a Perſuaſion that too much of the whole is diſeaſed to attempt

[6] Page 275.

the

the Preſervation of a Part; and I am of opinion, nothing can effectually guard us from this Error but the Doctrine I have inculcated, *viz.* That this ſuppoſed adventitious Tumor is a *Scirrhus* of the *Epididymis*; and that a *Scirrhus* of the *Epididymis*, is not to be deſpaired of, like a *Scirrhus* of the Teſticle.

NEVERTHELESS, I would not have it underſtood, that a *Scirrhus* of the *Epididymis* cannot poſſibly degenerate into a Cancer, ſince, no Part of the Body is abſolutely exempt from this Conſequence. Indeed Cancers of the *Epididymis*, are uſually attendant on Cancers of the Teſticle; but in this Caſe, it is to be remarked, that the Poiſon is ſpread by Infection, and not derived from the natural Tendency of *Scirrhus's* of that Part.

I SHALL now enter into the Conſideration of the *Circocele* and *Varicocele*, Diſtempers we very ſeldom meet with, but which are ſtill ſpoke of by all Writers with as much Familiarity as though they occurred every Day. The *Circocele*, is deſcribed to be a Dilatation of the Veſſels of the *Spermatic Cord*; the *Varicocele*, a Dilatation of the Veins of the *Scrotum*; neither the one, nor the other, are ſuppoſed to be painful, nor, as I find, to be dangerous in the Event; but the

Cautery, or the Knife, are every where recommended; and here, as in the *Sarcocele*, ſome of the Moderns falſly aſcribe to themſelves the ſole Honour of employing the Knife, where the Ancients uſed Fire; but I believe, very few People have ſubmitted to either of theſe Methods: For, notwithſtanding the Poſitiveneſs of the Rule, we have no Hiſtories of Caſes where the Rule is authoriſed by Example; and, I think, had ſuch an extraordinary Propoſition been carried into Practice, the Iſſue of it would ſomewhere have been recorded.

With regard to the *Varicocele*, I believe it is ſcarcely ever ſeen, but where it is complicated with the Tumor of the *Scrotum*; and in this Inſtance, the Dilatation of the Veins, is a Conſequence of the Enlargement of the Part, and an Attempt to remedy a Diſorder without removing the immediate Cauſe of it, would anſwer no Purpoſe, and therefore, I preſume, has never been put in Execution: It is poſſible indeed, that an independent *Varicocele* may have exiſted. but I am rather inclined to believe, that as Surgeons have ſeen it attendant on another Complaint, they have imagined it might alſo appear alone; however it has been deſcribed by Writers, in all Ages from the Time of *Celſus*,

Celſus, who ſpeaks of it under the Head of *Circocele*, though he does not uſe the Appellation itſelf.

An Induration and Enlargement of the *ſpermatic Cord*, is a common Circumſtance in *ſcirrhous* Teſticles, and in this Senſe a *Circocele* is a common Diſtemper; but the Diſorder generally deſcribed under the Title of *Circocele*, is an Affection of the *ſpermatic Cord*, when the Teſticle is ſuppoſed to be healthy, and indeed, to the beſt of my Judgment, where the Veſſels are in a ſoft, though an enlarged State. I have already obſerved, that the Symptoms of this Illneſs, are not repreſented in ſuch Terms as ſhould ſeem to require the Operation recommended, nor indeed any violent Method of Cure; but I have two or three times met with a painful Induration of the *ſpermatic Cord* between the Teſticle and the *Abdomen*, which has very much alarmed me: However, in all the Inſtances, a Cure was effected by the uſe of Fomentations, and an Application of the Mercurial Unction, with gentle Purgatives every third or fourth Day.

The true *Circocele*, or that, which is generally underſtood by this Name, feels like the *Omentum* in the *Scrotum*; but from a more

accurate Enquiry, one may discover the Vessels to be turgid and a little tortuous. The *Epididymis* is usually flaccid and unequally soft, giving the Idea of a loose congeries of large Vessels, rather than of a compact Substance. It is likewise often something increased in its Bulk, drawing the Testicle down a little lower than the other; but with all this change of Texture I have never but once seen any Inconvenience result from it: This was in the end, a gradual wasting of the Body of the Testicle without Pain, which at length was diminish'd to the Size of a Hazel-Nut. I suppose there are but few Examples of this nature; for I don't know of any Writer who has mention'd such a Case except [7] *Celsus*, who describes it as the Effect of a *Circocele*.

I HAVE formerly put in practice several Methods for restoring a due Tone to the Vessels affected by a *Circocele*, but without Success: I suppose the Ancients may likewise have attempted it in vain, which probably led them to the recommendation of so severe a Treatment as the Cautery or Knife: But if it is our Misfortune that we cannot relieve the Malady by Medicine, on the other hand, it happily is

[7] Celsus, 459.

seldom

ſeldom followed with any fatal Circumſtance, or really, any other Inconvenience than the Diſpiritedneſs which People are ſubject to, who labour under any Species of ſecret Diſorders. However, it is not impoſſible that a *Varix* of theſe Veſſels may ſometimes be as painful as a *Varix* of any other Part of the Body. I have ſeen a Caſe, where the *Cephalic* and *Median* Veins in the Bend of the Arm were *varicous* for near two Inches in Length, and ſo extremely painful that the Patient could find no Relief, till I cut them quite away: But painful *Varices* are mention'd by all Surgeons, and I would not have ſpoke of this Caſe, but to illuſtrate the Poſſibility of the ſame Symptoms in a *Circocele*. Such a Circumſtance as this, might make it reaſonable to extirpate the *varicous* Veſſel or Veſſels, or even the *Epididymis*; but I think, nothing leſs could ever have induced either the Patient, or the Surgeon, to ſo dreadful a meaſure, unleſs we can ſuppoſe that the *Romans* carried their Notions of Delicacy ſo far, as to ſuffer any Pain for the removal of this Diſorder; though indeed, it would not have been much more extraordinary, than the Operation for the Cure of a natural *Paraphymoſis*, which [8] *Celſus*

[8] Celſus, 471.

inſinuates they ſometimes ſubmitted to in his Time, from a pure Motive of Decency.

I HAVE thus far examin'd into ſuch Maladies of the Teſticle as do not require Caſtration: There are others, where the Operation is neceſſary; but I believe, thoſe may be limited to a *Cancer* and a *Scirrhus*, which is alſo a *Cancer* in its firſt Stage; for neither an Abſceſs, nor a Mortification, if properly treated, do require this Proceſs: Abſceſſes of the Teſticle are ſo common and ſo manageable, that one would wonder the Neceſſity of Caſtration ſhould ever have been ſuggeſted; and yet ſome of the ableſt Surgeons do ſtill admit the Propriety of it in certain Abſceſſes, by guarding againſt it in others. When we are told that ſome Abſceſſes of the Teſticle have been ſeen to do well from an Opening, we are inſtructed by the Obſervation itſelf, that there are others which do not yield to this Treatment, and are conſequently led to caſtrate where the Abſceſs appears to be difficult of Cure. As to a Mortification, if it penetrates only to the *Tunica Vaginalis* (which is no uncommon critical Diſorder) the Extirpation would be abſurd: And if it even reaches to the Body of the Teſticle, it would be needleſs; becauſe Nature

Nature will perform the Separation of all the mortify'd Part with the greateſt Exactneſs, and with little Pain or Danger. Caſtration therefore in every degree of a Gangrene, ſeems to be improper.

It remains now to be conſider'd, in what Circumſtance of a *Scirrhus*, the Operation will be adviſeable; for it is not always a ſufficient Motive, that the Tumor has hitherto reſiſted every other means of Relief, though this is the Rule laid down by moſt Writers. There are *Scirrhus's*, which remain in an indolent State for many Years, neither increaſing in Bulk, nor producing any Diſorder; nay, there have been Examples where in length of Time they have ſubſided. On theſe Accounts, I ſhould think, a *Scirrhus* in ſuch a Situation, is to be left 'till an alteration of Symptoms calls for our Aſſiſtance. I am aware it will be ſuggeſted, that we ought to pitch on that Seaſon for the Amputation, when the Tumor is ſmall, when the Diſtemper is not (as they ſuppoſe) deeply rooted in the Blood; and laſtly, when the Strength of the Patient is not impair'd by the force of the Diſeaſe; but this Reaſoning, however ſpecious, is not concluſive. Experience has ſhewn, that the Operation under all theſe Circum-

Circumſtances will often be fatal: Sometimes, after the Operation, the Wound itſelf proves Cancerous, and ſometimes, the cancerous Poiſon falls on ſome other Part of the Body; in both which Caſes, the Patient is frequently carried off with the utmoſt Rapidity. The dreadfulneſs of this Event, after the Extirpation of a ſeemingly ſlight *Scirrhus*, and where the Perſon might probably have liv'd ſome Years without the Operation, has, I ſuppoſe, deterr'd ſo many Surgeons from the Amputation of every Species of *Scirrhus* whatſoever, and led them to paſs that frightful Sentence upon them all of *Noli me tangere*. But though the Operation is not haſtily to be undertaken in every State of a *Scirrhus*, yet in ſome Inſtances, it not only is an immediate deliverance from Death, but frequently proves a radical Cure: I would therefore inculcate, that no *Scirrhus* is ſo trivial, but that the Operation may have a fatal Conſequence, and no Cancer is ſo malignant but the Event may be ſucceſsful. On theſe Accounts, Caſtration is never to be recommended without an urgent Motive, nor to be deſpair'd of, though in the laſt Extremity of the Diſeaſe.

PERHAPS theſe Maxims may appear a little contradictory, that the Operation ſhould ſo often be pernicious in a gentle degree of the *Scirrhus*, and yet ſometimes, be ſalutary in its greateſt Malignity: I own, it is a Secret I do not comprehend the reaſon of; but I think I can ſay from Experience, it is a Fact, and that Relapſes after the Operation, ariſe from Cauſes ſo much above our Knowledge, that we have no exact Criterion to lead us in our Prognoſtics: Nevertheleſs, I do not aſſert, that a mild *Scirrhus* is altogether ſo ſubject to return as a Cancer; but ſtill I think, whilſt it gives no trouble, either by its Painfulneſs or Weight, the Extirpation ſhould be poſtponed; becauſe the Advantage we have from theſe Circumſtances, do not compenſate for the risk incurr'd by the Operation: There is however a plauſible Objection to this Propoſal; it will be ſaid, that whilſt we are waiting for the period of Time, when it ſhall become abſolutely neceſſary, the Diſorder of the *Teſtis* may creep into the *Spermatic Cord*, which when once infected, renders the Operation exceſſively dangerous, and indeed quite deſperate, if the Induration be within the abdominal *Rings*. The Accident, I confeſs, is poſſible; but I believe will rarely

happen

happen under the Inſpection of a diſcerning Practitioner; for the *Cord* will hardly ever be affected by a Propagation of the Humour, till the Teſticle is in a State of Increaſe, and this is not the Circumſtance which I have ſuppos'd, but the very Stage of the Illneſs, which the Surgeon is to watch for and fix upon for the Operation.

IT is a prevalent Opinion, that the long Continuance of a *Scirrhus* is apt to taint the whole Maſs of Blood, and to render the Operation fruitleſs. This Notion has likewiſe induced Surgeons to recommend an early Extirpation, but I am very much miſtaken, if the Principle they build upon is not falſe; for whoever will make Enquiry into the Hiſtories of Cancers cur'd without Relapſes, will find a greater Proportion amongſt ſuch which were of many Years ſtanding, than amongſt thoſe that were reduced to the Operation very ſoon after their Appearance; and if this Obſervation be true, it proves, at leaſt, that the Danger which may accrue from the mere Reſidence of a *Scirrhus* for a length of time, is not of itſelf a ſufficient Motive for Caſtration. Indeed, for my own part, I am ſo far from judging unfavourably of a Cancer under this Circum-

Circumſtance, that I think we cannot have better Evidence of its Locality, than the little Injury it has already done to the Conſtitution.

ANOTHER Objection to waiting till the Teſticle ſhall have acquired more Bulk, is the greater Difficulty of performing the Operation, and the greater Danger reſulting from the Operation: But when I deſcribe the Method of extracting a Teſticle, it will be ſeen, that this Objection has not ſo much Force as one would imagine. It is peculiar to the Amputation of this Part, that the Wound does not bear a Proportion to the Size of the extirpated Tumor: The Wound made for the Extraction of a Teſticle weighing a Pound, is, or ought to be, nearly as large as that made for the Extraction of a Teſticle of three Pounds: On this Account, we ſeldom ſee worſe Symptoms after the Extirpation of a very large Teſticle, than of one of a moderate Size: But what in this Place, deſerves our Attention more, is, that few or none die of the Operation, if not attack'd again by the cancerous Poiſon; which Remark, if true, ſhews that the Enlargement of the Teſticle does not endanger Life, merely as it regards the Operation.

BEFORE I enter into an Examination of the ſeveral Proceſſes for extirpating a Teſticle, it may be proper to obſerve, that a *Scirrhus* of the Spermatic Veſſels is not always, in the Opinion of ſome, an abſolute Exception to the Amputation; for if the Affection of the *Cord* reach only to the Groin, on the outſide of the *Abdomen*, though the Operation is ſtill more dangerous than when the Veſſels are free, yet, they ſay, it is not deſperate; and there are ſome, who even think it ſafe, when the Hardneſs of the *Cord* extends to a ſmall diſtance within the *Abdomen*: But in the laſt Caſe, though it is poſſible, by dilating the Rings of the Muſcles, to paſs a Ligature round the *Cord*, above the Extremity of the Induration, [9] there are others, who eſteem it too hazardous an Undertaking, and for my own part I have very little Hopes of Succeſs whenever the Spermatic Veſſels are affected in any Degree; yet, dreadful as this Symptom is, it ſeems to have been overlook'd by Surgeons till within theſe fifty Years, or I think ſo good a Practitioner as [1] *Saviard* could not but have been appriſed of it. There are Hiſtories, which make mention of very large Tumors in the Courſe of the Spermatic Veſſels, and I myſelf

[9] Le Dran, 191. *Obſerv. Vol.* II. *page* 149. [1] *Obſerv.* 125.

once

once saw a Patient who dy'd of this Complaint, where we found a *Steatoma* reaching from the Testicle to the *Aorta*, as thick as a Man's Arm. There are likewise a few Examples, where that Portion of the *Spermatic Cord*, which lies between the Testicle and the *Abdomen*, is sound, and all [2] the superior Part within the *Abdomen* is affected. The Possibility of this Circumstance, requires the nicest Attention; but it happens, that those Indurations are generally painful, so that a Pain in the Back and Loins is a very good Criterion, by which to judge of the Impropriety of Castration; only that it must be distinguish'd, whether the Pain may not possibly proceed from the mere Weight of the Testicle distracting the Vessels; and this will be easily known, from the Relief which Rest and a Suspension of the Testicle usually procure when there is no *Scirrhus* of the *Cord*.

THERE is another Appearance of the *Spermatic Cord*, which also well deserves our Regard, though it is true, the Case occurs but rarely: This is an Enlargement of the Part without Induration, and has been found to be a *Hernia* of the *Intestines* or *Omentum*, extending itself but just into the [3] Groin. A Surgeon

[2] Le Dran, 189. [3] Dionis, 189. Garang. *Vol.* II. *p.* 325.

not

not appris'd of the Nature of such a Tumor, might possibly include an *Intestine* within the Ligature of the Spermatic Vessels, which could not but prove almost instantly fatal, and consequently renders the Observation very important.

THE manner of performing this Operation, as it is described by the best Writers, is, I think, exceptionable in several Particulars: They almost all of them agree, that the Skin should be pinch'd up transversely in the Groin by an Assistant, in order to make the Incision either with the Knife or Scissars, down to the *Spermatic Cord*. When the *Cord* is laid bare, they then separate the Skin from the *Cord*, by tearing it with the Fingers, or by introducing a Director to cut upon, or else, by a Pair of Probe-Sciffars; all which Precautions seem to arise from an ill-grounded Fear of wounding the Spermatic Vessels themselves, or some large Artery, and one would think were the Prejudices that prevailed in the time of *Celsus*, who seems to strike at them by this peremptory Injunction, *Aperiendum autem* † *audacter est*, &c. that is, an Incision should be made boldly at once through the Skin and *Membrana Cellularis*, down to the *Tunica Vaginalis*; in doing

† *Vol.* II. *p.* 460.

which,

which, there is not the leaſt Danger nor loſs of time, and indeed one might almoſt ſay, not the leaſt Pain, when compar'd to the other Method of Cutting, either by the Director or the Sciſſars.

The next Proceſs in this Operation, after laying the *Cord* bare, is, as they deſcribe it, extremely indelicate; I mean the tearing away the Teſticle from the *Membrana Cellularis*, and ſnipping or cutting the Membrane wherever there is a Reſiſtance: But the Unfitneſs of this Meaſure is moſt evident in a very large Teſticle: I ſhall therefore deſcribe what I apprehend to be the beſt Method of Extirpation in ſuch a Caſe, that the Inconvenience of the contrary Method, may be the better conceiv'd.

The manner then of caſtrating in this Inſtance is, to make an Oval Inciſion, which ſhall begin a little above the *Rings* of the Abdominal Muſcles, and extend almoſt to the bottom of the *Scrotum*; the Breadth of the Oval in its wideſt Part being at leaſt one half of the leſſer Circumference of the Teſticle. When the Inciſion is made, and the Veſſels of the *Scrotum* are tied (if any remarkable *Hæmorrhage* enſues) the Skin is to be diſſected away from the *Cord*, to make room for the Ligature or

Ligatures of the Spermatic Veſſels; after which the *Cord* is to be divided, and the Teſticle, with the oval Piece of Skin on it, is to be diſſected out of the *Scrotum*. This Proceſs of the Operation is very much facilitated by firſt dividing the *Cord*; for, by graſping the upper Part of the Teſticle in your left Hand, it turns out much more readily than when it remains ſuſpended, and you can only ſeparate it on each ſide.

I HAVE obſerved, that the Oval Inciſion is not to be carried quite to the bottom of the Teſticle; for by this Contrivance, the Time and Pain of the Operation will be diminiſhed: Becauſe, as but little Skin is to be preſerved, it will be a ſhorter, and an eaſier way, to cut out the Teſticle with a Portion of Skin on it in the lower Part, than to diſſect it out firſt, and afterwards take off the ſuperfluous Skin; therefore, when the Teſticle is cleared away from the *Scrotum* the whole length of the oval Inciſion, the Operation may be finiſhed by cutting away Teſticle and Skin at the ſame time; but what I have here ſaid, muſt be underſtood of the Extirpation of a large Teſticle.

BY taking away ſo much of the *Scrotum* with the Teſticle, as I have here recommended, you leave only a ſmall Portion of it behind, and

and consequently a small Wound; but I have already hinted, that it is always in our Power to carry off such a Quantity of the *Scrotum*, that the Wound shall be small, however large the Tumor itself be.

This is a short View of the Operation I would recommend; but the Method prescribed by the Moderns, is, to make only a longitudinal Incision to the Bottom of the *Scrotum*, and then to tear out the Testicle from the *Scrotum*. Now, the tearing of such a Quantity of Skin, as envelops a Testicle of two or three Pounds Weight, is not only painful in performing, but by the Violence used, may probably be dangerous in its Consequence: Besides, in this Case, we are afterwards obliged to cut away as much of the loose *Scrotum*, as we shall judge necessary for the better healing of the Wound, which is likewise another painful Process; so that I believe, upon a Comparison of these two Methods, there will be no Hesitation in determining which claims the Preference.

Another Circumstance consider'd in this Operation, is the Danger of a *Hæmorrhage* from the *Spermatic Artery*; but this seems to arise from a Fear of employing the necessary Means to prevent it. Some of the greatest

Surgeons [5] believe to this Day, that by tying the *Spermatic Cord* we risk a Convulſion; and to avoid this Error, the Uſe of Stypticks and Compreſs its recommended; or if we are compell'd to the Ligature, we are order'd to ſeparate the Nerve from the Spermatic Veſſels before we tye them. But this Preſcription is no better founded in Anatomy than Experience; for was it true, that the Ligature of the Nerve would bring on Convulſions, in this Caſe it is ſo ſmall, and twiſts in ſuch a manner round the Veſſels, that the Separation of it is [6] impracticable. Some of the Moderns propoſe the Separation of the *Nerve* [7] and *Vas Deferens* together from the Spermatic Veſſels, which *Celſus* and *Ægineta* do likewiſe; and perhaps it may not be an unreaſonable Conjecture, that the Rule laid down by them to ſeparate the *Vas Deferens* from the *Spermatic Artery* and *Vein*, before tying them, may have led ſome of the Moderns into the miſtaken Notion of ſeparating the Nerve; for the Ancients expreſly call the *Vas Deferens* a *Nerve*.

THIS ſtrange Apprehenſion of ill Conſequences from tying the *Cord*, has ſo far miſguided Men of the greateſt Eminence, that it

5 Le Dran, 194. 6 Heiſter, 840. 7 Le Dran, 193.

has

has been even propoſed as a Security againſt the *Hæmorrhage*, to ſeparate the Teſticle from the *Scrotum*, and after tying the *Cord*, to leave it there till it drops off by Putrefaction. One would have thought ſuch a Propoſition had come down to us from the earlieſt Ages, but it is really a modern Refinement, and ſeems to be approv'd of by one of the moſt ingenious Writers [8] now living. The ſame Apprehenſion has induced another great Man, to recommend the bruiſing of the [9] Spermatic Veſſels, by rubbing them between the Finger and the Thumb, ſo that when the *Cord* is cut they ſhould not yield any Blood: I will not take upon me to ſay the Proceſs is very pernicious, but it poſſibly may be hurtful in ſome degree. The Hint of this Practice ſeems to have been borrowed from the Ancients; for [1] *Albucaſis* deſcribes one Method of caſtrating Beaſts among the *Arabians*, to be this kind of bruiſing the Veſſels of the Teſticle and *Spermatic Cord*, in conſequence of which he ſays, they both waſted away. [2] *Ægineta* ſays alſo it was in his time one Method of making Eunuchs. Before I diſmiſs the Article of tying the *Spermatic Cord*, it may be worth

[8] Heiſter. 840. [9] Le Dran 193. [1] Albuc. *Chap.* 69 *Page* 213. [2] Ægineta, 303.

remarking, that in ſome few Caſes, I have met with ſuch an Elaſticity of the Coat ſurrounding the Veſſels, that the Knot of the Ligature has yielded to its Dilatation, and a freſh *Hæmorrhage* has enſued. In ſuch an Inſtance, it is adviſeable to carry the Needle with a double Ligature through the Middle of the *Cord*, and tie it both above and underneath the *Cord*, which will be a ſufficient Security.

I DON'T know any other Article of Improvement upon this Subject worth obſerving; unleſs it may be mentioned, as a means of a ſpeedier Cure, to paſs a Needle and Ligature from the Skin at the lower Part of the Wound, through the Skin on the oppoſite Side, in ſuch manner as to envelop in ſome Degree the ſound Teſticle; or if one Stitch will not anſwer the Purpoſe, to repeat it once or twice more, in ſuch Part of the Wound as ſhall be moſt convenient.

CHAP.

CHAP. IV.

Of the Puncture of the Perinæum, *and the Diseases of the* Urethra.

SUPPRESSIONS of Urine may arise from a *Paralysis* of the *Musculus Detrusor Urinæ*; from an obstructed Stone in the Neck of the Bladder or *Urethra*; from an Inflammation of the Neck of the Bladder accompany'd with an Enlargement and Compression of the *Prostate Gland*; and lastly, from *Strictures* or Obstructions in the *Urethra*, in consequence of a *Gonorrhœa*; and sometimes also, tho' rarely, without a previous *Gonorrhœa*.

In the first Case, a skilful Hand may always introduce the Catheter; in the second, the Stone may either by the Catheter be push'd into the Bladder, if it be lodged in its Neck, or may be safely cut out, if it lies in the *Urethra:* In the two last Cases, it sometimes happens, that the Catheter cannot be introduced into the Bladder, and it was for this Emergeney that our Predeceſſors invented the Operation of

the Puncture in *Perinæo*, which they perform'd in different manners, as they were directed by the Nature of the Malady, or, perhaps, sometimes as they were led by Opinion to prefer this, or that Method.

In all the Methods, they plac'd the Patient in the same Posture as in cutting for the Stone, that is, with his Thighs open and his Heels close to his Buttocks. Then they either push'd a common Trocar into that part of the *Perinæum*, which is wounded in cutting by the greater *Apparatus*, and so through the *Urethra* and Neck of the Bladder; or they carried it between the *Accelerator Urinæ* and *Erector Penis* Muscles, about an Inch from the Seam of the *Perinæum*, into that part of the Bladder, which lies between the *Prostate Gland* and the Insertion of the *Ureter*. When the Trocar was introduced into the Bladder, they withdrew the Perforator, and left the Canula in the Wound, till such time as they had reason to believe the Cause of the Suppression was removed.

The first of these Methods has been the most in Use, though, to all Appearance, it is liable to many more Inconveniencies than the other. For supposing the *Urethra* to be clear

of

of Obſtructions, and that the ſole Obſtacle to the egreſs of the Urine be a *Stricture* at the Neck of the Bladder, it is ſtill highly improbable, that the Inſtrument ſhould be directed though the Canal of the *Urethra* and the Neck of the Bladder, without wounding them in more parts than one; and Experience has ſhewn, that it is not only difficult to avoid this Error, but even ſometimes to puſh it into the Bladder itſelf: For the *Proſtate* lying upon the *Rectum*, if you carry the Trocar a little too obliquely downwards, you either paſs it between the Bladder and the *Rectum*, or elſe into the *Rectum* itſelf: On the other hand, if to avoid this risk, you carry it a little too obliquely upwards, you then miſs the *Proſtate Gland*, by puſhing it between the *Symphyſis* of the *Os Pubis* and the upper Part of the *Proſtate*; perhaps too, at the ſame time, wounding the Bladder in that Part, which lies contiguous to the *Os Pubis*; in conſequence of which, the Urine may poſſibly inſinuate itſelf into the neighbouring Cells, when the Canula is withdrawn, and prove very troubleſome, if not mortal.

But granting that the Operator be dexterous enough to carry the Point of the Trocar exactly oppoſite

oppoſite to the Neck of the Bladder; yet when the Neck is ſo conſtringed as not to admit the introduction of a fine Probe, we can hardly ſuppoſe it poſſible for an Inſtrument of the Thickneſs of a Trocar to be inſinuated, but by the Wound it makes through ſome Portion of the *Proſtate*: Now the Diſeaſe, producing the Suppreſſion, being an Inflammation of thoſe Parts, with a ſtrong tendency to gangrene, the Violence done by the Operation itſelf, and, much more, the Irritation and Compreſſion from the Canula left there, cannot but frequently augment that Diſpoſition, and bring on a fatal Event: Accordingly we ſee in Practice, that the Arguments I have here employ'd againſt this kind of *Puncture*, are not Arguments *à priori*, but ſuch as the Accidents of the Operation have furniſh'd. I might alſo mention the danger of rendring the Wound of the *Urethra* fiſtulous; but as I believe this Method is now falling into diſcredit, I ſhall not examine into that Objection, nor ſome others leſs material, which might be ſtarted.

I SHALL not pretend to ſay poſitively, what Diſadvantages will enſue from the *Puncture* of the Bladder between the *Proſtate* and *Ureter*, becauſe I would only ſpeak from Experience;

and

and this kind of *Puncture* has hitherto been rather recommended than carried into Execution, few, that I know of, having yet practiſed it. However, ſhould any Surgeon be inclined to perform it, I would adviſe him to introduce the Fore-finger of his Left-hand up the *Rectum* in order to feel the *Proſtate*, as it will be an excellent Guide for the direction of the Trocar, which muſt be carried parallel to the *Rectum*, a little above and on one ſide of the Finger: It is the very Step which Monſieur *Foubert* takes in his new Method of cutting for the Stone, where he introduces his Trocar into the Bladder: But I ſhall preſently deſcribe his Manner of cutting, when the probable Objections to this kind of *Puncture* in *Perinæo* will naturally occur in examining the Merits of his new Operation.

Besides theſe Methods of drawing off the Urine when under a Suppreſſion, they have alſo made way for the Reception of a Canula, by cutting open all the *Urethra*, from that Part of the *Perinæum*, where cutting is performed by the greater *Apparatus*, and continuing the Inciſion through the Neck of the Bladder. This they have done by the help of a grooved Staff when it was practicable; and where *Strictures* of

of the *Urethra* prevented the introduction of a Staff, they have either cut, according to the beſt of their Judgment, without any Guide, or have puſhed in a Trocar with a grooved Canula, and cut upon the Groove; when the Inciſion was made, they paſs'd a Gorget, and by that means a Silver Canula, round which they twiſted ſome fine Rag that it might lie eaſier in the Wound.

THE Objections to theſe Ways, beſides the Difficulty of doing them, are ſo nearly the ſame with thoſe I have already mentioned to the other Methods, that I ſhall not re-conſider them. It may be proper, however, in this place to take notice, that after the Operation, it has been uſual to inject Balſamic Remedies in order to deterge, as they ſay, the Feculencies of the Bladder; but whether this Proceſs be ever neceſſary I much queſtion; for I believe what is called a Foulneſs of the Bladder, is no more than that *Mucus*, which it uſually furniſhes when inflamed.

THE laſt Way of drawing off the Urine, is by a *Puncture* above the *Os Pubis* in that part of the Bladder where the high Operation is performed. This Method has been occaſionally followed by ſome eminent Surgeons for many

many Years, and is ſtill approv'd of; but it is not recommended, as having thoſe ſuperior Advantages which, in my Opinion, belong to it. It is an Operation of no difficulty to the Surgeon, and of little Pain to the Patient, the Violence done to the Bladder being at a diſtance from the Parts affected; it is equally applicable, whether the Diſorder be in the *Urethra*, or the *Proſtate Gland*; and ſince the Method of curing *Strictures* of the *Urethra* by ſuppurative *Bougies* is become general, its Benefits are ſtill more inhanced in Suppreſſions from that Cauſe; for whilſt the Canula remains in the Bladder, the *Bougies* may be continually employ'd, which poſſibly in a ſmall time will make room for the natural Paſſage of the Urine.

I THINK the Canula of the Trocar ſhould be made with two Rings in its upper Part, like the Canula for the *Empyema*, by which means it may be tied round the Body with a ſmall Ribband, and prevented from falling out of the Bladder. It is alſo a Matter of Importance, that the Canula ſhould not be above two Inches and a half long, or perhaps two Inches only, though we read of [3] a Caſe where after the Urine was diſcharged, the Bladder ſubſiding into the *Pelvis*, withdrew from the Canula, and

3 *Vide* Daran, 379.

and made a ſecond *Puncture* neceſſary, which the Surgeon perform'd with a longer Trocar, and then the Operation ſucceeded. From this Inſtance, one would be induced to judge a long Trocar more proper than a ſhort one; but as it is not mentioned how far it was introduced, nor at what diſtance from the *Os Pubis*, we cannot reap any poſitive Inſtructions from this Hiſtory: However, it may be obſerv'd, that in cutting for the Stone by the high Method, the Urine always found a free iſſue, though the Bladder ſubſided into the *Pelvis*; and after making an Inciſion above the *Os Pubis* for a Suppreſſion of Urine, where I have uſed a Canula not above an Inch long, the Bladder always empty'd itſelf very readily; ſo that it is reaſonable to ſuppoſe, if the *Puncture* be made in the proper Place, that is, about an Inch and a half from the *Os Pubis*, it will not be neceſſary to puſh the Inſtrument very far; but if it be made too high towards the Navel, the Bladder as it contracts, deſcending towards the *Os Pubis*, will draw the Canula obliquely downwards, and perhaps abſolutely ſlip away from it, ſo that its Extremity ſhall be left in the *Abdomen*; or ſhould the Bladder adhere ſtrongly to the Canula, it will in

that

that Caſe be ſuſpended in a painful Situation. On the other hand, if the *Puncture* be made cloſe to the *Os Pubis*, the Bladder in that part, often riſing with an almoſt perpendicular Slope, leaves a Chaſm between it and the Abdominal Muſcles, or, to ſpeak more ſtrictly, a certain depth of *Membrana Cellularis* only, ſo that if the Trocar penetrate but a little way, it poſſibly may not enter into the Bladder; if it penetrates conſiderably, it may paſs through the Bladder into the *Rectum*, or if not in the Operation itſelf, perhaps ſome Days after, when by the courſe of the Illneſs and Confinement, the Patient is more waſted; for the Abdominal Muſcles then ſhrinking and falling in, occaſion the extremity of the Canula to preſs againſt the lower part of the Bladder, and in a ſmall time to make a Paſſage into the *Rectum*.

I HAVE been led into this Criticiſm on the *Puncture* above the *Os Pubis*, by an Accident which happen'd in my own Practice, where though I introduced it above an Inch and a half above the *Os Pubis*, yet having puſhed it full two Inches and a half below the Surface of the Skin, its Extremity in ſix or ſeven Days inſinuated itſelf into the *Rectum:* The Patient from that time voiding no Urine by the Canula,

and

and being troubled with a *Diarrhœa*, I concluded that a mortify'd Slough of the Bladder had ſeparated, and that the *Urine* was evacuated into the *Pelvis*; but upon opening him after his Death, I found the Caſe to be as I have ſtated it, and that the Urine made the chief Part of his *Fæces*.

It is an Article well worth our Attention, what length of Time we may ſafely leave the ſame Canula in the Bladder. In Paralytic Diſorders of the Bladder, or where its Tone is broke by too long a retention of Urine, the *Puncture*, as I have already obſerv'd, is ſeldom or never neceſſary; but ſhould either of the other Caſes be complicated with this, it can hardly be expected, that the Bladder ſhould recover its Functions in leſs time than three, four or five Weeks, which, to the beſt of my Judgment, ſeems to be uſually requiſite for the Recovery, when we draw off the Urine daily, or leave the Catheter in the Bladder five or ſix Days together. When the Suppreſſion is from an accidental Inflammation of the Neck of the Bladder and *Proſtate*, either accompany'd, or not accompany'd with Obſtructions in the *Urethra*, its duration is generally much ſhorter: But it may be remark'd, that when there are

Strictures,

Strictures, though the Suppreſſion is not total for ſo long a time, yet it remains in a great degree, which makes the continuance of the Canula in the Bladder expedient, that they may be more effectually treated.

Now it has been diſcovered, that a Catheter left in the Bladder longer than ten Days, may poſſibly gather ſuch an Incruſtation of Stone from the Urine, as not only to render the Extraction of it painful, but even impracticable: This ought therefore to be a Caution to us never to leave the Canula in the Bladder quite a Fortnight; but I muſt confeſs that the ſhifting it may poſſibly prove an embarraſſing Circumſtance. I have known an Example, when after the Extraction of that in the Bladder, they could not introduce a ſecond through the ſame Orifice, and the Patient, not caring to ſubmit to another Puncture, dy'd of the Suppreſſion. To obviate therefore the Difficulty of this Caſe, I would adviſe the ſecond Canula to be made with an Extremity like a Catheter, which being round and ſmooth will eaſily paſs; whereas the ſharp Edges of the Canula of a Trocar will be an Impediment to its Paſſage. I have here recited the poſſible Accidents which may attend this Operation; but they

ought not to be esteemed Objections to it, since when we are once appris'd of them, they may be easily avoided; and in general it may be said of the Operation, that it is accompany'd with very little Trouble and Pain, requiring only the Care to stop up the Orifice of the Canula with a Cork, which is to be taken out occasionally as the Bladder fills, till such time as the natural Passage opens, and the Patient can urine by the *Penis*,

THE Subject I am here treating of naturally leads me to the Consideration of *Strictures* in the *Urethra*, and as the Method of curing them by suppurative *Bougies* is not yet generally understood, I shall enquire into the Nature of their Effects upon this Disorder, and also into the Nature of the Disorder itself.

THIS Method of dissolving Obstructions in the *Urethra* has been lately taught and celebrated by Monsieur *Daran*; but as there are some who contend, that Monsieur *Daran* does nothing, that was not done before by many others now living, I shall not enter into this Dispute; and therefore when I mention the suppurative Method as an Improvement, I desire it may be understood, that I speak only of the Advantages it seems to have over those prescribed by the best Writers extant.

MON-

Monsieur *Daran* reaps such prodigious Profits from reserving the Composition of his *Bougie* to himself, that we cannot expect he should reveal the Secret so long as he enjoys these lucrative Advantages: But he has given us a Collection of Cases with a preliminary Discourse, wherein he has fully stated the Effects of it; and, if I am not mistaken, he has by this means furnished us with sufficient Indications for discovering, if not the same *Bougie*, at least a *Bougie* of the same Nature: Though what, perhaps, is of greater Consequence than the Composition itself; he has there taught us how necessary it is to be patient and assiduous, in hopes of a future Benefit from a constant Application, though we do not perceive the immediate Advantages for many Days or Weeks.

The Substance of the Doctrine he lays down may be comprised in few Words: He says, if the Canal of the *Urethra* be open enough to admit the Extremity of the *Bougie*, a Suppuration will ensue from the diseased part of the *Urethra*, which will in time relax and open the *Stricture*; or if the *Stricture* opposes the Entrance of the *Bougie*, yet still the mere Point of the *Bougie* will suppurate it in a

ſmall degree, and by and by, though much more tediouſly than in the other Caſe, by relaxing, open it. Since therefore the Good wrought by *Daran*'s *Bougie* is owing, as he ſays, to the mere Effects of Suppuration, it may reaſonably be preſumed that any other *Bougie*, operating exactly in the ſame manner, will anſwer exactly the ſame End; and that there are many of this Nature, is probable from the great Number of Cures perform'd lately both here and abroad, in imitation of *Daran*'s Method; tho' ſome Surgeons, finding their Experiments ſo ſucceſsful, have imagined that they had diſcover'd *Daran*'s own Compoſition, not giving themſelves leave to think there may be a variety of Compoſitions capable of working nearly the ſame Effects.

But the ſuppurative Power of certain *Bougies* has been ſo often mentioned by preceding Writers, that an unwary Reader is apt to conclude from this Circumſtance, there is no eſſential difference in *Daran*'s Method from that practiſed heretofore; but whoever will give a proper Attention to what is written on this Subject, will find that [4] thoſe who ſpeak of ſuppurating *Bougies*, often confound them with *Eſcharotic Bougies*, and do not aſcribe thoſe wonder-

[4] *Vide* Palfin. *Chap.* xxii. *Edit.* 2.

wonderful Effects to a continued Suppuration, which *Daran* lays ſo much Streſs on, nor indeed ſpeak of it with any great Elogium; nay *Wiſeman*, who ſeems to have given more hiſtories of Cures wrought by the *Bougie*, than any one, except Monſieur *Daran*, ſays, that if a Flux of Matter be brought on by the *Bougie*, we muſt deſiſt from the Uſe of it, till the diſcharge be ſtopt by proper internal [5] Remedies: In ſhort, there is not one modern Writer, who does not adviſe the *Urethra* to be laid open, in order to deſtroy any ſtubborn Obſtructions, ſo little are they aware that by the conſtant application of a gentle Suppurative *Bougie*, they might at laſt be reduced and the Paſſage opened.

The ſeveral Affections of the Urinary and Seminal Parts in which the *Bougies* may be uſefully employed, are: 1. The mere Contraction of a Portion of the *Urethra*. 2. Ulcerations at the Extremities of the Excretory Ducts of the *Proſtate Gland*, the *Veſiculæ Seminales*, and the *Glands* of the *Urethra*, yielding ſometimes a plentiful, ſometimes a ſmall Gleet. 3. *Callous Cicatrices* of former Ulcers. 4. *Caruncles*, called alſo *Carnoſities* and *Excreſcences*,

[5] Wiſeman, 415. *Vol.* 2.

which have arisen from the Surfaces of former Ulcers. 5. A scirrhous or spongy Enlargement of the *Veru montanum*. 6. A *Scirrhus* of the *Prostate* or *Vesiculæ Seminales*. 7. A spongy Enlargement of the *Corpus Spongiosum* [6] *Urethræ*.

THERE are, however, several eminent Physicians and Surgeons, who do not believe that the Matter of a Gleet, or a remaining Running after a Clap, is the Suppuration of an Ulcer or Ulcers, but a preternatural Discharge of the Liquors of the neighbouring Secretory Organs, arising from a relaxation of their Vessels. They imagine also, that the Matter produced by the *Bougies*, is not the increased Suppuration of the Ulcers of the *Urethra*, but an increased Secretion of the Liquors of the *Urethra*; and lastly, they believe that what is vulgarly called a *Caruncle*, is no other than a *Stricture* in the *Urethra*, or a Protuberance of some Portion of its spongy Body.

IN what manner a Gleet is furnished, cannot well be determined, without ascertaining the exact Seat of a *Gonorrhœa*, upon which there has been formerly great variety of Sentiments; some esteeming the Discharge to be a purulent Matters from Ulcers, and others, an augmented Secretion from the Glands of the *Penis* in Men,

[6] *Vide* Astruc. *pag.* 234. Daran, *pag.* 5. and

and of the *Vagina* and *Urethra* in Women. One would ſuppoſe that the Diſſection of Perſons, dying with a *Gonorrhœa* upon them, ſhould immediately have decided this Queſtion. But if upon Enquiry, Ulcers have ſometimes been diſcovered in the *Urethra*, there have alſo been many opened, where there were no evident Signs of Ulceration; and it is principally from theſe different Appearances, that Surgeons have formed ſuch different Judgments.

BUT that the *Lacunæ* of the *Urethra* are uſually ulcerated in a *Gonorrhœa*, ſeems now to be generally aſſented to, and moſt Surgeons think that in thoſe Inſtances I have alluded to, which had no mark of Ulceration, they were either negligently obſerved, or perhaps examin'd after the Ulcers were healed: So that notwithſtanding many ſtill believe, that a Gleet is not the Diſcharge of an Ulcer, all allow the Exiſtence of Ulcers during the *Gonorrhœa*.

I MUST confeſs however, that I am very much inclined to believe, the Running is not all of it a purulent Matter, but partly Matter, and partly a Diſcharge from the neighbouring Secretory Organs, as alſo from the *Veſiculæ Seminales*, when they or their Ducts are affected. It ſhould ſeem probable, that the firſt Running is of

that Nature, not only becauſe it is often produced in leſs time after the Infection is communicated, than we ſee requiſite for the formation of Matter in every other Inſtance, but becauſe the Appearance of Matter is frequently the firſt Alarm of a *Gonorrhœa*; the Pain in Urining, and the other Symptoms of an Inflammation and Ulceration, following ſometimes two or three Days after.

For theſe Reaſons I ſuppoſe, that the Venereal Poiſon in its firſt Operation irritates only, and by that Irritation brings on an increaſe of Secretion, which happens to the Glands of the *Inteſtines* from Purgatives, to the ſalivary Glands from ſmoking, and indeed to every other ſecretory Organ of the Body from irritation. As the Poiſon operates more ſtrongly, the Inflammation increaſes, and the Ulcers form and extend, when not only the Matter from the Ulcer is ſanious, but all the ſecretory Veſſels communicating with the ulcerated *Lacunæ* ſeparate a thinner Fluid than uſual, and both the Matter and ſecreted Fluids continue to be thin ſo long as the Inflammation is violent.

I know it is aſſerted that the Diſcharge of a *Gonorrhœa* has all the Properties of a purulent Matter, but I believe this is begging the Queſtion

Queſtion; for we ſee ſome Men liable to a Running neither Venereal nor preceded by any venereal Taint, where its reſemblance to Matter is altogether as ſtrong as that of a *Gonorrhæa*; and yet in this Caſe, no Ulceration is ſuſpected, nor are there any Symptoms of it. In Women too, it is ſometimes very difficult to diſtinguiſh the *Fluor Albus* from Matter; and in ſome kinds of Inflammations of the *Prepuce*, there are very large Secretions of a thin Matter, without any Ulceration of the Skin. Theſe Arguments ſhould induce one therefore to believe, that the Diſcharge of a *Gonorrhæa* is not all of it a purulent Matter; and it may be further obſerved in ſupport of this Suggeſtion, that the Quantity of it is generally much greater, if we may judge by analogy, than a few Ulcers of the *Urethra* could poſſibly furniſh: But to conclude in one word, I think we have almoſt ocular Proof of it in the Examination of Women; for in them, notwithſtanding the *Gonorrhæa* be exceedingly plentiful, yet upon the niceſt Inſpection, we often cannot find the leaſt degree of Ulceration in the *Vagina*; though if the Diſcharge was purely the Digeſtion of Ulcers in that Part, it is likely ſome few of them would be viſible: I ſhould therefore on theſe Accounts think

think it even poſſible, that in ſome ſlight *Gonorrhœas* which diſappear in a few Days, the Venereal Poiſon may not have been active enough to bring on an Ulceration of the *Urethra*, but only a mere Irritation of the *Lacunæ*. What I have here ſaid on the Nature of a *Gonorrhœa*, will, I hope, conduce to the better underſtanding the Nature of thoſe Diſeaſes, which are derived from a *Gonorrhœa*.

When the Inflammation ceaſes, and the Ulcers of the *Urethra* heal at the ſame time, the Cure of the *Gonorrhœa* is perfected; on the other hand, if the Inflammation be only removed and the Ulcers remain open, a Gleet muſt enſue. It is upon this principle of Ulcers ſubſiſting in the *Urethra*, that M. *Daran* accounts for the Action of his *Bougie*, ſuppoſing it to have the Property of healing them with a ſound Cicatrix, and if its Operation can be underſtood, when there are Ulcers, it will not be difficult to comprehend it, when there are none; ſince it ſeems to have the Power of opening every unſound Cicatrix of the *Urethra*, and bringing them immediately into an ulcerated State; ſo that whether there be an Ulcer or a Cicatrix only, when the *Bougie* is firſt applied, the

the Caſe preſently becomes the ſame in both Inſtances.

I HAVE here ſpoke with ſome Poſitiveneſs of the faculty the *Bougie* has to carry off the Scab, or unſound Cicatrix from the Ulcers of the *Urethra*; but perhaps it may be a queſtionable Point with ſome People, and therefore I ſhall obſerve in favour of this Opinion, that the firſt Diſcharge procured by the *Bougie* is generally very ſanious, and evidently flows from the Place, where the Obſtruction is; that part of the *Bougie* only being covered with Matter, which anſwers to the Obſtruction: Again, the *Chordee* excited by the uſe of the *Bougie*, and which is almoſt always the Conſequence of applying it, is infinitely more painful where the Obſtruction is, than in the other Parts of the *Penis*; from which Conſideration, I think it highly probable, that both the Diſcharge and the Pain are chiefly occaſioned by inflaming and ſuppurating the Obſtruction; tho', I muſt confeſs, that a *Bougie* will produce a *Chordee* in a ſound *Penis*, where there is no Obſtruction: But the *Chordee* in that Inſtance extends through every part of the *Penis*, and is by no means ſo painful as in the other.

THERE

THERE are many, as I have already intimated, who imagine that the prodigious Increaſe of certain Gleets at particular Times, laſting only for two or three Days, and then ſuddenly abating to their wonted Quantity, is incompatible with the Doctrine of a purulent Diſcharge; they ſuppoſe that the Ulcers cannot poſſibly enlarge and diminiſh again in ſo ſhort a time, as to account for this difference of Evacuation, and therefore conclude a Gleet to be nothing more than a preternatural Excretion from the relaxed Veſſels of the *Urethra*, which they believe may often be more relaxed by a variety of Accidents. But from what I have ſaid on the complicated Circumſtances of a *Gonorrhœa*, it is probable, that however the Matter of a thick Gleet may be furniſhed by Secretion, ſtill the Stimulus provoking that Secretion is kept up by the Subſiſtence of Ulcers; and it is alſo as probable, that when the Gleet is very thin and in ſmall quantity, it is the mere diſcharge of thoſe Ulcers.

THAT ſometimes unknown Cauſes, and ſometimes Debauches, or any violent Emotion of thoſe Parts, ſhould occaſionally bring on an Inflammation of the Ulcers and the neighbouring Veſſels, and in conſequence of that, a temporary

porary increaſe of the Gleet is not wonderful, when we reflect that habitual Ulcers of every other Part of the Body are often in a fluctuating State, and generally ſuffer from Exceſſes of every kind.

If the Notions I have advanced of the Nature of a *Gonorrhœa* and *Gleet* be true; that is, if the Diſcharge be partly purulent, and partly an Excretion, it will be preſumed that the Running brought on by the uſe of a *Bougie* is alſo of a mixed kind. M. *Daran*, in order to prove the Suppuration on the *Bougies* to be the Matter of an Ulcer, refers us to a very curious Experiment. He ſays, that if we leave one of his *Bougies* four Hours in the *Urethra* of a Man that has never been infected, it will come out unſoil'd; and if we inſtantly put that ſame *Bougie* into the *Urethra* of another who has had a *Gonorrhœa*, it will in leſs than four Hours produce a Suppuration, and the *Bougie* will have a thick Matter on it: Hence he concludes, that no part of the Diſcharge is an Excretion, ariſing from the Irritation of the *Bougie*; becauſe, he ſays, that Circumſtance would happen equally in both *Urethras*: Beſides, that the *Bougie* at firſt is covered, as I before mentioned, with Matter only in that part of it, which

which lay in contact with the Obstructions of the *Urethra*; whereas was the Matter afforded by the Excretory Ducts, and not by the old Ulcers, it would be covered almost equally in every Part.

I CONFESS that this Experiment will have great Weight in deciding the Question before us; but, I suspect, he has not often repeated it on People who have never been clap'd, at least he does not say he has; and I am the more inclined to think so, because in the same Page [7] he seems to insinuate, that the Experiment is needless, declaring it a sufficient Proof of the Fact, that in a diseased *Urethra*, the *Bougie* is covered with Matter in that Place only which touched the Ulcers.

BUT this Suspicion is not founded on mere Conjecture; for I have prevailed upon several Lads from Twelve to Twenty Years of Age, who never had been clap'd, to submit to the Introduction of a *Bougie*; and in every one of them, the *Bougie* collected a certain Quantity of Discharge, but from some, more plentifully than from others: I suppose it can hardly be presumed that a Mercurial *Bougie*, which I employed, could have eroded the *Urethra*, and brought on a Suppuration in Six, Five, Four,

[7] *Page* 36. *Prelim. Discourse.* or

or three Hours, which were the ſeveral Lengths of Time I allotted to the different Experiments; but if the Diſcharge was not a Matter from Sores, it muſt have been an Excretion from the *Lacunæ* of the *Urethra*. However, leſt it ſhould be ſuggeſted, that the Operation of my *Bougie* ought not to be compared to that, which would be produced by a *Bougie* of M. *Daran*'s Compoſition, I alſo try'd one of his, which by Accident fell into my Hands, in a manner which leaves no doubt with me of its Genuineneſs, and I found the Effects exactly the ſame. It therefore probably follows from theſe Experiments, contrary to the Opinion of M. *Daran*, that all the Diſcharge procured by the *Bougies* is not *Pus*; but partly *Pus*, and partly a Secretion from the neighbouring Veſſels, in conſequence of the Stimulus of the *Bougie*. Nevertheleſs I have, with M. *Daran*, made uſe of the Word *Suppuration* to expreſs the Diſcharge produced by a *Bougie*.

I SHALL alſo in this Place take notice of another very extraordinary *Phænomenon*, which M. *Daran* affirms to have occurr'd in his Practice. He ſays, that by opening the Ulcers or Scars of the *Urethra*, and bringing on a Diſcharge with his *Bougie*, an infectious Quality

lity is excited, notwithſtanding the Patient for many Years before, may, to all Appearance, have been perfectly ſound. This he imputes to the Operation of the *Bougie*; ſuppoſing that it puts the Venereal Poiſon into Action, which, though it may lie dormant, he ſays, is not extinguiſhed ſo long as theſe Diſorders of the *Urethra* ſubſiſt; and, on this Account, he expreſly forbids all Commerce with Women during the Uſe of the *Bougie*.

The Aſſertion here propoſed is of a very intereſting Nature, and it concerns us much to be aſſured of the Fact; but, I muſt own, I have ſome doubts, whether M. *Daran* may not have been impoſed upon in this Article: For I myſelf know, that Huſbands labouring under a Gleet, have, upon violent Eruptions of it, continued to approach their Wives without infecting them; which I think would not ſo frequently happen as it does, if the Diſcharge created by the *Bougie*, was infectious, becauſe the two Caſes ſeem to be parallel to each other.

Besides, it appears to me, that, was it true, it would be clear beyond a doubt; for there are ſo many Men, who cannot be perſuaded to refrain from their Wives during this Treat-

Treatment, that we ſhould have numberleſs Proofs of it continually. I have had ſome Examples of this Nature under my own Care, where the Suppuration was in an exceſſive Quantity, but no Infection was communicated: However, as M. *Daran*, who has had ſo good Opportunities to inform himſelf, is poſitive in this Opinion, it muſt be remembred, that my Arguments are only Negative, and my Inſtances, perhaps, too few to convince us that it never happens.

STRICTURES of the *Urethra* are poſſibly the moſt frequent Cauſes of Obſtructions, and happen ſometimes to a ſmall Portion of the Paſſage only, at other times, to a very conſiderable Length of it, and frequently, to three or four different Parts of it. The Symptoms excited by *Strictures* are very nearly the ſame with thoſe occaſioned by the other Obſtacles of the *Urethra*, that is to ſay, a Difficulty to urine with or without burning, a continual urging to urine, a total Suppreſſion of Urine, (*Dyſury*, *Strangury*, *Iſchury*) and laſtly, an Incontinence of Urine; all which different Accidents happen to different Men, under the ſame Circumſtance, and frequently to the ſame Patient at different Times.

THIS Diſeaſe is neither abſolutely peculiar to Venereal Affections of the *Urethra*, nor to the *Urethra* itſelf: Nevertheleſs, it ſeldom ariſes from any other Cauſe, nor indeed is any other Part of the Body ſo frequently affected as the *Urethra*; but we meet with Inſtances of it now and then, not only in Adults who have never been clap'd, but even in Children who have been ſuſpected to labour under the Stone: And that it may be produced without a previous Venereal Taint, we have another ſufficient Evidence in the Writings of the Ancients, who ſpeak of it, when the Pox had not yet made its Appearance in the known World [8].

THE Diſpoſition there is ſometimes in membranous Parts of the Body to contract, is very notorious: I have in my own Practice met with four Inſtances, where the *Rectum* near the *Anus* was contracted, and one of them, ſo much as not to exceed the Diameter of a Writing-Pen; in conſequence of which, the Patient was frequently at the Point of Death from a Suppreſſion of the *Fæces*, notwithſtanding every Art was uſed to prevent this Accident. But this Propenſity to contract, ſeems to be much ſtronger in thoſe Parts which have been wounded or ulcerated, than in thoſe which have been always

[8] *Vide* Hippoc. Aphor. 81. *Sect.* 4.

always unhurt; for the contractile Diſpoſition of Scars ſometimes continues to exert itſelf for many Weeks and Months after the Sore is healed, as we may obſerve particularly in Burns, or indeed in any Wounds of the tendinous and ligamentous Parts, as the Fingers and Toes. And without doubt, it is in conſequence of previous Scars in the *Urethra*, that *Strictures* happen ſo frequently to People who have been clap'd, in compariſon of thoſe who have not: But what is very ſingular, this Contraction ſometimes does not come on in leſs than fifteen, twenty, or thirty Years after the *Gonorrhœa*. It is very remarkable in regard to many of theſe *Strictures*, that the Symptoms ariſing from them ſhall be extenuated by acting againſt the *Stricture*; that is to ſay, by introducing a *Bougie* big enough to diſtend the *Urethra*, the Painfulneſs of the *Stricture* ſhall ceaſe, and the *Strangury* ſhall abate, ſo that a Man who is accuſtomed to make Water every Hour, ſhall, by wearing a *Bougie*, retain it three or four Hours: It is an Event one would not expect, but I have met with a ſimilar Caſe in another Species of Contraction; a Contraction of the Fingers attendant upon a *Ganglion* in the Palm of the Hand, which ran under the *Ligamentum Carpale* above

the Wriſt: Theſe *Ganglions* generally bend the Fingers ſo much, as to bring the Extremities of them almoſt cloſe to the Palm of the Hand. In the Caſe I allude to, the Contraction was exceedingly painful; but in Proportion, as I extended the Fingers, and preſerved them ſo by proper Bandage, the Pain was mitigated, till at laſt it wholly ceas'd when they were quite ſtraight. If I neglected to keep them extended, they again contracted and became painful; which proves what I have here advanced, that acting againſt the contractile Diſpoſition, inſtead of cauſing Pain, as one would ſuppoſe, may on the contrary prove a means of Relief.

I HAVE here preſumed, that the mere Stretching of the *Urethra* procures this Abatement of Symptoms; and I believe the Cauſe will hardly be doubted, ſeeing that the Effect is ſo ſudden, often taking place the very firſt time of applying the *Bougie*, before it can be ſuſpected that the Suppuration could have wrought ſuch an Effect: Beſides, that upon withdrawing the *Bougie*, the *Strangury* returns immediately, which is an Argument, that it operates only by ſupporting the contracted Fibres.

IF the Symptoms of *Strictures*, *callous Scars*, *Caruncles*, and *Tumors* of the *Corpus ſpongioſum*

ſum Urethræ are eſſentially different from each other, thoſe Differences are not yet particularly ſpecified by any Writer: But amongſt other Characteriſtics, by which to diſtinguiſh the Diſeaſe of the *Proſtate Gland*, and *Veſiculæ Seminales*, from Obſtructions of the *Urethra*, I think it has been juſtly obſerved, that where the *Urethra* only is affected, the Patient in making Water voids Matter before he does his Urine: On the other hand, where the *Proſtate* or *Veſiculæ Seminales* only are concerned, Matter follows the laſt Drops of Urine: But it frequently happens that the one is complicated with the other [9].

I AM inclined to believe that the generality of Caſes cured by a gradual Diſtenſion, were chiefly *Strictures*; for it is certain, that by a conſtant Uſe of keeping open the *Urethra*, ſeveral Cures have been wrought; though there were alſo ſometimes other terrible Diſorders relieved by this Method; for it happens now and then, that the worſt Conſequences enſue from the ſlighteſt Obſtructions, and it is not uncommon to meet with *Stranguries*, Suppreſſions of Urine, and even *Fiſtulas in Perinæo* ariſing from Obſtacles in the urinary Paſſage, which yield very ſoon to the Introduction of a com-

[9] Daran's *Prelim. Diſcourſe*, 185.

mon *Bougie*, or a Leaden-probe; and in many of these Instances, the Complaints cease when once the Passage is opened: But as the Property of Suppuration was not sufficiently attended to, Surgeons formerly neither sought those *Bougies* which were most suppurative, nor procured all the Discharge they might by Diligence have procured with those they did use; in consequence of which, the Patient was often subject to Relapses, unless he daily, or once in two or three Days, introduced a *Bougie* or Leaden-probe to keep open the Passage; for there are some *Urethras* so prone to contract again if the Disease is a *Stricture*, or so apt to swell again, if the Disorder is an Enlargement of the *Corpus spongiosum Urethræ*, that Patients are constantly obliged to pass a *Bougie* or Leaden-probe the Moment before they urine.

The old Surgeons employed upon these Occasions a small Wax-Candle (*Bougie*); but the Wax often melting in the *Urethra*, and the Wick sometimes breaking in the Extraction, and a Part of it remaining in the Passage, the Danger of this Accident has for many Years brought it into disuse, and the *Bougie* is now made of Cloth dipt in Wax or Plaister, and then rolled up into the proper Form: These

Bougies

Bougies are of all Sizes, from the Bigneſs of a Knitting-needle to the Size of a large Catheter. Thoſe who attempt a gradual Diſtenſion by Leaden-probes, have them alſo made with the ſame Gradations. There are ſome who prefer Probes made of Whalebone, which are not liable to break as Leaden-probes, eſpecially as it is a Faſhion to daub Leaden-probes with *crude Quickſilver*, which renders them brittle, and has ſeveral times occaſioned this Misfortune: Beſides theſe Artifices for dilating the *Urethra*, it has likewiſe been Cuſtomary to uſe Catgut of a Size ſuitable to the Degree of *Stricture*, which having the Quality of expanding gradually as it moiſtens, has induc'd ſome to give it a Preference to the other Contrivances. There have alſo been Surgeons, who by means of a Catheter open at its Extremity, have endeavoured to introduce a ſmall Tent into the *Stricture*, with deſign to act only on the diſeaſed Part; they tied a Piece of Thread to it, that they might withdraw it at Pleaſure, and in this Manner repeated the Operation as often as they judg'd neceſſary; but the Pain of introducing the Tent; the Difficulty of extracting it, if of a Nature to ſwell; the Danger of breaking the Thread; and, in ſhort, the little Benefit

propoſed by this Method in preference to the others, always obſtructed its general Acceptation, and at laſt abſolutely exploded it.

It may be perceived, by the Deſcription I have given of this Operation, that it all along ſuppoſes a Poſſibility of paſſing the *Bougie* to a certain Diſtance in the *Urethra*; and though the Introduction may be ſlow, yet that it does, from day to day, make ſome progreſs towards the Neck of the Bladder: But Experience ſhews, that there are a multitude of Caſes, where the Obſtacle preſents itſelf within an Inch or two of the Extremity of the *Penis*, and with ſuch a Reſiſtance, as is not to be ſurmounted by Force, or, at leaſt, by that Force which Surgeons have uſually dared to exert, in breaking through *Strictures* of the *Urethra*; and, in many of theſe Inſtances, every Attempt to relieve by Diſtenſion has been baffled.

However, in all times there have been enterpriſing Men, who have endeavour'd, by *eſcharotic* Applications at the Extremity of their *Bougies*, to make way through thoſe Obſtacles, which reſiſt the *Bougie* or the *Leaden-probe*; and, to ſay the Truth, this Practice has been avow'd by the ableſt Surgeons of the two laſt Centuries; but at preſent it is univerſally condemned,

condemned, and indeed has been ſo almoſt ever ſince *Saviard*'s time [1].

THE Objections to the uſe of Cauſtics, were the Difficulty and almoſt the Impoſſibility of directing them, ſo as to eat through all the diſeaſed Parts of the *Urethra*, without deſtroying the ſound Part; the Impracticability of preventing the *Urethra* from contracting, when it heal'd, as much, if not more than it was, at the time of applying the *Eſcharotic*: And laſtly, the Pain was ſo excruciating, and perhaps the Application ſometimes ſo poiſonous, that an immediate Mortification of the *Scrotum*, *Penis*, and *Bladder*, were ſometimes known to enſue; upon theſe Accounts the uſe of *Eſcharotics* ſeems to have been entirely rejected, and another kind of Proceſs has been eſtabliſhed in their Place, which in point of Severity is nearly if not quite as exceptionable.

THIS is, by cutting in *Perinæo*, if poſſible, upon a Staff, and then by the help of a *Gorget*, to introduce a ſilver *Canula* cover'd with a fine Rag into the Bladder, which is to be kept there for two or three Days, and then withdrawn; after which, the Obſtructions are to be deſtroy'd by proper *digeſtive* and *eſcharotic* Medicines; at the ſame time, a Seton is to be paſſed from the

1 *Obſerv.* 74.

the Wound through the *Urethra*, and out at the Extremity of the *Penis*: This Seton is daily to be cover'd with either *eſcharotic* Powders, or ſtrong Digeſtives, in order to waſte the Obſtructions of that Part; when this is done, a Catheter is to be introduced into the Bladder and kept there, that the Urine running off that way, the Wound may more eaſily heal. When the Wound is healed, the Catheter muſt be taken out [2]. If the Staff cannot be introduced to cut upon, a *Trocar* with a groov'd *Canula* is recommended, which being puſhed into the Bladder will ſerve to direct the Inciſion of the *Urethra*, from the *Perinæum* even through the *Proſtate* and Neck of the Bladder, in caſe theſe Parts are affected likewiſe; after which, the other Proceſſes will be the ſame, as if the Inciſion had been made on a Staff [3].

ACCORDING to the Repreſentation I have here given of theſe Methods, a ſtriking Abſurdity offers itſelf immediately, in the propoſition of carrying a Seton from the Wound out at the *Penis*: For if we admit that a Seton can be paſſed, a *Bougie* cover'd with the ſame

2 *Vide* Dionis, *page* 212. 3 Dionis, *page* 212. Le Dran's *Oper. page* 370. *Obſerv. de M.* Le Dran, *l'Obſ.* 77. *Memoires de l'Academie de Chirurgie, page* 438. *Vol.* I. Aſtruc, *page* 243, Palfin, 188. *Vol.* I.

Remedies

Remedies may be applied, and with the ſame Advantage: If it cannot be paſſed, no Service can be done by the Operation to that part of the *Urethra*, which conſequently renders the whole Operation of no Effect. However I muſt not omit, that [4] ſome have propoſed a Remedy in this Caſe, by cutting up the whole *Urethra*; and, as an Improvement upon this Method, ſome have recommended the healing it afterwards upon a Catheter, when the Obſtructions are deſtroy'd.

I HAVE already mentioned ſome other Exceptions to this Method of getting into the Bladder, in treating of the Puncture in *Perinæo*; but as I believe there are no Advocates at preſent for this Practice, I ſhall uſe no more Arguments to prove its unfitneſs.

ULCERS of the *Urethra* cannot be ſuppoſed to ſubſiſt, without furniſhing a greater or a leſs Quantity of *Gleet*, and where the Patient has no diſcharge after a Clap, the Surface of the *Urethra* is either healed, or cover'd with ſome kind of Scab or Excreſcence. A remaining Gleet, and indeed all the other Diſorders of the *Urethra* are uſually imputed to an unſkilful Treatment of the *Gonorrhæa*, and

4 *Vide* Wiſeman, 428. *Vol.* II.

particu-

particularly to the uſe of aſtringent Injections: But this Cenſure ought to be paſſed with great Tenderneſs, ſeeing there are ſo many Examples, where the Caſe happens, after the moſt regular and ingenious Methods of Cure.

It cannot be denied, aſtringent Injections ſometimes produce Miſchief upon the Spot, and perhaps ſometimes intail a Miſchief, that ſhall not be perceiv'd for many Years: Though, by the way, it may be obſerved, that they are ſeldom employ'd, except in ſtubborn *Gleets*, which poſſibly might have had the ſame Conſequence without them; but where Injections have been uſed, the Diſorder is always aſcribed to their Operation.

There is not perhaps in Surgery a more delicate Point than the proper management of a ſtubborn *Gonorrhœa*, which continues to run in ſpite of all internal Methods of Cure. Surgeons recommend Patience, ſpeak ſlightly of the Complaint, and give hopes that Nature will, by and by, work a Cure of herſelf: But few People are to be pacified by this Conduct, when they are thus circumſtanced, and they wiſh to be cured at any hazard. Under this Difficulty we have no Alternative: Aſtringent Injections muſt be employ'd, or the Caſe abandoned.

doned. Indeed we may have recourſe to the *Bougie*; but, as the *Bougie* requires a great length of Time to perfect the Cure, I believe few Patients would ſubmit to it, unleſs Injections had firſt been found ineffectual; and in this Situation, I myſelf have uſed the *Bougie*. I ſhall make no ſcruple to confeſs, that I have ſometimes employ'd aſtringent Injections, but I do not recollect ever to have met with any Misfortune from them: It is true, I have always begun with weak Injections, and gradually increaſed their Strength, which no doubt may have greatly contributed to their Innocence. However, I would not be thought to contend for the uſe of them, except on this Occaſion, when, in my Judgment, they ſeem to be neceſſary; for I queſtion whether an habitual *Gleet*, that is ſuffered to run on, is not more likely to terminate in ſome painful Diſeaſe of the *Urethra*, than if it had been ſtop'd by an aſtringent Injection within the firſt three Months of its appearance.

ULCERS of the *Urethra* and *Verumontanum* are ſometimes complicated with a contraction of the Canal, and ſometimes the Canal is open: M. *Daran* affirms, that he can diſtinguiſh by feeling with his *Bougie* their exact Situation,

Situation, Form, and Nature, ſo as to determine whether they be contiguous to, or at a ſmall diſtance from the *Verumontanum*; whether they be round or oval, and whether their Edges be ſmooth, fungous or callous: I own, this is a delicacy of Touch, ſo much above my Conception, that I cannot help thinking he is miſtaken.

THE Operation of a *Bougie* upon theſe Ulcers, ſeems to be nearly the ſame with that of external applications on Ulcers in other parts of the Body, where, if they be not continued till the Sore is entirely healed, either a Fungus or a Scab will ſometimes form; but the moſt parallel Caſe to Ulcers of the *Urethra* are the little ragged Ulcers, that ſometimes proceed from ſmall Abſceſſes in the Verge of the *Anus*, which are not readily to be cured, but by little doſſils laid in cloſe between their Edges, ſo as to fall into contact with every point of the Ulcer. I have choſe this Inſtance for Illuſtration, becauſe as the Surface of the *Urethra* is every where concave, I do not think it improbable that it may ſometimes collapſe, and by that means occaſion one part of the Ulcer to rub againſt the other, reſembling in ſome degree the ſtate of thoſe Fiſſures of the *Anus*.

PERHAPS

PERHAPS it will be ſuggeſted, that if this be the principal Action of the *Bougie*, any kind of *Bougie*, diſtending the *Urethra*, and preventing the corrugation of the Ulcer, will put it into a diſpoſition of healing: But Experience ſhews, that every ſpecies of Application is not ſuitable, ſome acting with much more Innocence and Benefit than others. *Eſcharotic Bougies* are, as I have ſaid, never to be truſted. The *Leaden* and *Whalebone* Probes, though they diſtend the *Urethra*, are painful to the Sores, and bring on Defluxions or *Hemorrhages*. The *Wax-candle* is bad in two Extremes; firſt, whilſt it is hard, it has the Property of the two former, and afterwards, by the heat of the Part, the Wax ſometimes melts and runs off from the Rag, ſo that the Candle is no longer firm enough to ſupport itſelf againſt the Sides of the *Urethra*: *Bougies* of Plaiſters are therefore the moſt proper Compoſition, which, if made of a due Conſiſtence, will ſoften ſufficiently to prevent any painful Friction, and yet will preſerve their original Shape.

NEVERTHELESS, I would not be underſtood, by what I have here ſaid, that it is only the Conſiſtence of the Plaiſter, and not its *medical* Virtues that are to be conſider'd: I have no doubt,

doubt, that in moſt Caſes thoſe Virtues are neceſſary, though I am ſtill of opinion, that ſeveral of the Plaiſter *Bougies* formerly uſed would, with aſſiduity, have cured ſome Ulcers; but Surgeons hitherto have had ſo little Notion of ſtopping mere *Gleets* by *Bougies*, that I do not ſo much as meet with an inſinuation of this Practice; and *Wiſeman* is ſo far from imagining it, that in Obſtructions of the *Urethra* complicated with a *Gleet*, he orders the *Gleet* to be ſtopt firſt by internal Means, before the *Bougie* be applied [7].

I HAVE taken notice that M. *Daran* ſuppoſes the whole diſcharge procured by the *Bougie*, to be the *Sanies* or Digeſtion of Ulcers; but I believe I have ſaid enough to prove, beyond Contradiction, that it is alſo a Secretion from the Glands of the *Urethra*, &c. &c. And I ſhall obſerve here, how reaſonable it is to conclude, that this Evacuation from the neighbourhood of the Ulcers, may tend to have a good Effect upon the Ulcers themſelves, ſince we ſee that in general, the nearer we procure a Drain from the Part affected, the more efficacious will that Drain be.

CALLOUS *Cicatrices* are another Article amongſt the Diſeaſes I have enumerated of the *Urethra*;

7 Wiſeman, *pag* 415.

Urethra; but the great Similitude there is between this Affection and a *Stricture*, make any Enlargement on it altogether needleſs.

CARUNCLES, call'd alſo *Carnoſities* and *Excreſcencies*, which were for near two hundred Years ſuppoſed to be the only cauſe of Obſtructions, have from the beginning of this Century, or a little before, been almoſt wholly exploded, as being purely Chimerical; ſo much have Writers run into Extremes on this Subject. M. *Petit* open'd the *Urethras* of twelve People labouring (as it is [6] affirm'd) under Obſtructions in that Part, and found not the leaſt appearance of a *Caruncle* in any of them: Theſe Obſervations, made by ſo judicious a Surgeon as M. *Petit*, ſeem to have greatly confirmed the Opinion, adopted by the moſt eminent Practitioners before his Time, that there is no ſuch Diſeaſe as a *Caruncle* [7]. But now again it is believed, that they are one of the Cauſes of Obſtructions in the *Urethra*; and M. *Daran* goes ſo far as to aſſert, they are, if not the only, the moſt frequent Cauſe; indeed he ranks *callous Cicatrices* of the *Urethra* under this Head, and thus blends theſe two Diſeaſes together, which are generally conſidered in oppoſition the one to the other [8].

[6] Palfin, 189. *Vol.* I. Garengeot, *pag.* 22. *Vol.* II.
[7] Saviard, *Obſ.* 73. [8] Daran's *Prelim. Diſ.* 132.

I BELIEVE it will ſeldom happen, that *Caruncles* are not accompany'd with either a *Stricture*, *callous Cicatrices*, or Protuberances of the *Corpus ſpongioſum Urethræ*, in which Caſe the *Caruncles* make only a part of the Obſtruction, and poſſibly may often not be bigger than the Head of a Pin; but thoſe who have examined the *Urethra* after Death, expecting to find them of a conſiderable Bulk, and not meeting with ſuch, have, in all likelihood, frequently overlooked theſe ſmall Appearances (probably diminiſhed alſo by Death) and concluded there were no ſuch things. That ſuch ſmall *Excreſcences* may occaſion violent Diſorders in ſo tender an Organ as the *Urethra*, I have had occaſion to ſee a notable Inſtance of in the *Urethra* of a Virgin, where they grew in a ſmall Quantity upon the Orifice of the *Meatus Urinarius*, and for many Months had produced the moſt excruciating Torment, which continued till I had totally extirpated them.

YET notwithſtanding what has been ſo poſitively ſaid, that *Caruncles* have no Exiſtence but in the Fancy, I have opened ſome *Urethras* where they were very evident: In one, I found near the *Verumontanum*, a Filament running acroſs the *Urethra*, which had obſtructed the entrance

entrance of the *Catheter*, and the Patient died of a Suppreſſion of Urine. In another, I found ſmall Filaments, ſome looſe, and one of three Quarters of an Inch long attached at both ends to the *Urethra*, but running in the Direction of the Canal. In a third, beſides the Contraction, I found a ſmall Excreſcence, not unlike one of the *Tricuſpid Valves* of the Heart; which, with the Inſtances I could produce from others, proves that the Doctrine of *Caruncles* is not without Foundation.

The Action of the *Bougie* on a *Caruncle* ſeems to be partly Compreſſion, and partly Suppuration; for I queſtion, whether by the latter alone, the Cure could be ſo ſpeedily effected; as is the Caſe with every kind of *Fungus*, which is much more readily reduced by proper Applications, with the Aſſiſtance of Preſſure, than by Applications alone.

A *Scirrhus*, or ſometimes perhaps a ſpongy Enlargement of the *Verumontanum*, with or without Ulceration, ſeems to be a very common Cauſe of Obſtruction, and where in Coition the Emiſſion is painful, or the Semen is either injected into the Bladder, or only flung a little way forward in the *Urethra*, if the *Urethra* itſelf is not obſtructed, the *Verumontanum*, and

the Extremities of the Excretory Ducts of the *Veſiculæ Seminales* are generally affected. If Semen be emptied into the Bladder, it follows the Urine when the Patient firſt makes Water; if it be diſcharged into the *Urethra*, it runs off gradually ſoon after the Erection ceaſes. I have been ſurpriſed at the great Number of Inſtances I have ſeen of the ſecond Kind; but it muſt be obſerved, that theſe Symptoms are ſeldom conſtant, for ſometimes the Patient emits freely, at other times is ſubject to this Irregularity. When it is emptied into the Bladder, it is ſaid to be owing to a deformed Cicatrix of the *Verumontanum*, which inverting the Orifices of the Excretory Ducts of the *Veſiculæ Seminales*, turns them towards the Bladder [9]: But this accounts for it only where the Symptom is conſtant, and therefore I am inclined to think, that in general it may rather ariſe from a greater or leſs Enlargement of this Part at different Times, which will neceſſarily obſtruct the Canal more or leſs; though it muſt be remarked, that an almoſt total Obſtruction in any part of the *Urethra* will alſo prevent a free Emiſſion, notwithſtanding the *Verumontanum* was unaffected, and in all probability this is the moſt common Cauſe of Obſtructions of the Semen.

[9] *Memoires de l'Acad. de Chirurg. p.* 427. *Vol.* I.

A *Scirrhus* of the *Proſtate* Gland and of the *Veſiculæ Seminales*, is another Diſorder, ſaid to ariſe from previous *Gonorrhœas*; but though the Excretory Ducts of theſe Organs being indurated or ulcerated, muſt conſequently occaſion ſome Diſorder in the Organs themſelves, yet a *Scirrhus* and Enlargement of the *Proſtate* Gland often occurs, when no venereal Taint has preceded; whereas Diſorders of the *Urethra*, are, as I have before mentioned, the uſual Conſequence of Claps. A *Scirrhus* of the *Veſiculæ Seminales* is, I believe, an uncommon Caſe; but, to confeſs the Truth, we have not as yet all the Light we may reaſonably expect hereafter, from more frequent Diſſections of morbid Bladders.

THE Stone in the Bladder, and a *Scirrhus* of the *Proſtate*, excite ſo many of the ſame Symptoms, that Patients under this Diſorder are generally ſuſpected to have the Stone; though there are Indications which diſtinguiſh the one from the other, but not ſufficiently to make Searching needleſs. I think the principal one is, (when the Symptoms in both Caſes are become very bad) that the Motion of a Coach or Horſe does not increaſe the Complaint, when the *Proſtate* is affected, but is intolerable

when it is a *Stone*: It alſo generally happens that the Fits of the Stone come on by Intervals, whereas the Pain from a diſeaſed *Proſtate Gland* is more equal; however, this Rule has its Exceptions ſometimes.

When it enlarges, as it does in all the Caſes that are not Venereal, it may be felt very plainly with the Finger in the *Rectum*: It alſo conſtringes the Neck of the Bladder ſo much, as not only to render the Iſſue of the Urine very difficult, but if a Sound be paſs'd into the Bladder, it remains as it were wedged in the Paſſage, being ſo tightly embraced for a conſiderable Length, that the Extremity of it cannot be moved from one Side of the Bladder to the other; though indeed, for the moſt part, it abſolutely obſtructs the Entrance of a Sound or Catheter.

When the Diſorder of the *Proſtate* is not from an antecedent Venereal Cauſe, it generally proves mortal, deſtroying the Patient in a few Months, or perhaps a Year or two: On the contrary, Venereal Diſeaſes of the *Proſtate* ſubſiſt a much longer time before they become fatal, and are generally diſtinguiſhable by their Complication with ſome other Affections of the *Urethra*; whereas, in the firſt Caſe, the

Urethra

Urethra is clear, and the Sound meets with no Interruption till its arrival at the *Proſtate*.

Ulcerations of the *Proſtate* and *Veſiculæ Seminales*, may ſometimes attend upon the other Diſorders of the *Urethra*; and the Quantities of Matter which we ſee voided after the Urine by ſome Patients, plainly ſhow there muſt be Abſceſſes in ſome part or other of the Bladder. M. *Daran* diſclaims all Pretence to cure theſe Ulcerations, declaring his *Bougie* only operates where it falls into contact; but I ſhould think it probable, that the *Bougie* may often extend its Influence from the *Excretory Ducts* of theſe Parts to the Parts themſelves, ſince *Indurations*, and *Fiſtulas in Perinæo* with little or no *Stricture* of the *Urethra*, are evidently relieved by its Operation on the *Lacunæ*: I am therefore of Opinion, that when the Diſeaſe of the *Proſtate* ariſes from a previous Affection of its excretory Ducts, the *Bougie* may be ſerviceable; when it does not proceed from ſuch a Cauſe, I preſume the *Scirrhus* may, in its Nature, reſemble the *Scirrhus's* of the Breaſt, Teſticle, *&c.* which generally have a cancerous Diſpoſition, and in which Caſe the *Bougie* muſt be altogether ineffectual.

A FUNGOUS Enlargement of the *Corpus ſpongioſum Urethræ*, is the laſt Species of Obſtruction I have mentioned, requiring the uſe of a *Bougie*: But though this is by the generality of eminent Surgeons eſteemed the moſt common kind of Obſtacle, the poſitive Exiſtence of it has not been ſo clearly demonſtrated, as one would expect. But it is preſumed that in thoſe Caſes where the Canal is totally contracted, and yet eaſily admits a *Bougie* or *Catheter*, it muſt be owing to ſuch a ſpongy Expanſion of the *Urethra*, which in its Nature may be ſuppoſed to recede, as the *Bougie* compreſſes it. Again, it is thought that in this Enlargement of the *Corpus ſpongioſum Urethræ*, the Openneſs of the *Urethra* in Perſons, who have been ſuppoſed to die of Obſtructions there, may be better accounted for from this Hypotheſis than any of the others, becauſe, it is more reaſonable to imagine (as they ſay) that this kind of Tumor ſhould ſubſide after Death, than that *Caruncles* ſhould diſappear, or *Strictures* relax. How far this Argument may be concluſive, I ſhall not take upon me to determine; but it is certain, that in ſome *Urethras*, the Signs of a contracted Canal often diſappear ſome Hours after Death, whether it be a

fungous

fungous Eminence or a *Stricture* of the *Urethra*. Some Surgeons alſo judge it evident from the touch of the *Bougie*; and, though I ſhould think this too fallacious a Guide to depend much upon, I muſt confeſs that I have often imagin'd the ſame thing. Beſides, in ſupport of this Doctrine, I ſhall mention a kind of parallel Diſorder in the *Membrana Pituitaria* of the Noſe, which I have ſeen ſwell and expand ſo much, as entirely to ſhut up the Noſtrils. What happens to the *Membrana Pituitaria* of the Noſe, may likewiſe happen to the *Urethra*, but I am not quite ſo ſure of the Fact: However, ſuppoſing that this Diſorder ſhould be frequent, the good Effects wrought upon it by the *Bougies*, will not be difficult to account for; ſince a continual diſcharge from a loaded tumified Part, ſeems a very natural means for reducing the Tumor.

THOUGH Women are but little ſubject to Obſtructions of the *Urethra*, becauſe the *Lacunæ* of their *Vagina* are principally concern'd in a *Gonorrhœa*, yet, as there are ſome ſmall *Lacunæ* alſo in the *Urethra*, which are ſometimes affected, the ſame Conſequences may enſue, as in the *Urethra* of Men; accordingly the Caſe does occur, though very rarely. Ulcers of the two

Lacunæ

Lacunæ of their *Proſtate* Glands are more common: Theſe Ulcers appear juſt within the *Vagina*, that is to ſay, exactly in the Place where the *Lacunæ* are ſituated. The treatment of the one and other will be eaſily underſtood, from the Rules laid down for the treatment of Men.

I HAVE now conſider'd all the principal Diſorders of the *Urethra*, relievable by the *Bougie*, except the *Fiſtula* in *Perinæo*, which I ſhall examine into the nature of, when I lay down the Rules for the Management of the *Bougie*. It remains therefore to be enquired into next, what may, moſt probably, be the fitteſt Compoſition of Plaiſter for rendering the *Bougie* efficacious.

IF the Plaiſter be too ſoft, the *Bougie* cannot be introduced with a ſufficient Force, either thro' a *Stricture*, or any other kind of Obſtacle, to procure the proper Effect with ſpeed: For, if it lie with its Point only againſt the Obſtacle, its Operation will be very tedious, whereas was it ſtiff enough to paſs a little way thro' the Obſtruction, it would not only diſtend, but alſo quickly bring on a conſiderable Suppuration from the diſeaſed Part. It is therefore of great Conſequence that the *Bougie* ſhould not give way

way to a ſlight Reſiſtance, but ſhould be firm enough to admit of that Force, which may be ſafely exerted in diſtending the contracted *Urethra:* For I ſhall here remark, that though I have a great Opinion of the good Effects produced by the Suppuration, yet, I believe alſo that the *Bougies* operate by diſtending the *Urethra*; and I will go ſo far, as to give it as my Judgment, that even the Cures, done by M. *Daran*, are wrought partly by *Diſtenſion*, and partly by *Suppuration*; though he himſelf aſcribes them to the *Suppuration* only.

If the Plaiſter be too hard, it may, for ſome time, have the Properties of *Leaden* or *Whalebone* Probes; and, by its Friction, not only bring on Pain and Defluxions, but even rupture the diſtended Veſſels of the *Urethra:* Again, the harder it is, the leſs it will ſoften by the Heat of the *Urethra*; and whatever Virtues may be ſuppoſed to reſide in the Plaiſter, they will not be imparted to the Obſtructions, whilſt it remains in a hard State; at leaſt not in that degree, as if the Plaiſter was melted. Another Inconvenience in very brittle *Bougies*, is their liableneſs to crack whilſt in the *Urethra*, which makes their Extraction painful; for, not conforming to the Motion of the Body, they break

break only in that Place, where there happens to be the greateſt Streſs; the Conſequence of which is, that they bend in an Angle at the broken Parts; and, the Edges of the broken Plaiſter being hard, they tear the tender *Urethra*, as the *Bougie* is withdrawing. But the moſt important Objection to very ſtiff *Bougies*, is, the danger of handling the *Urethra* too roughly, eſpecially when in the Hands of unskilful Men. If the *Bougie* be ſoft, it will rather bend than injure by its reſiſtence; but it is capable of doing great Miſchief when it is hard; for I myſelf have ſeen an example, where by preſſing a few Hours every Day againſt the membranous Part of the *Urethra*, it made way into the *Rectum*; and I ſuppoſe the Inſtances may have been frequent with thoſe Practitioners, who have employ'd much force in diſtending the *Urethra*; but no one, that I know of, has been ingenuous enough to confeſs it.

One of the chief Ends propoſed by the *Bougie* being to procure a diſcharge from the Ulcers, and the *Lacunæ* of the *Urethra*; the Compoſition muſt not be of an aſtringent nature, as is evident from the Effect of aſtringent Injections. Deſiccative Plaiſters are a kind of Aſtringent, and by checking the Diſcharge, which

which would be brought on by their Irritation, the *Urethra* becomes inflamed, and renders their Action of no effect; beſides, that generally through want of a proper degree of Suppuration, their Continuance in the *Urethra* for a ſufficient length of Time is inſupportable. Wax-Candles are alſo of this nature; but their Operation is not ſo ſtrong, as that of ſome Epuloticks: However, for the moſt part, they produce ſo little Matter, that they prove an ineffectual Application. It ſhould therefore ſeem improper, to uſe this ſpecies of *Bougie*, unleſs it be at the concluſion of a Cure, when we propoſe to cicatriſe the Ulcers.

ESCHAROTIC Powders ſprinkled on the *Bougie* in a ſmall Quantity, is a method of Practice followed by ſome Surgeons, who diſavow the uſe of *Eſcharoticks*, and declare they only employ them for the ſake of a plentiful Digeſtion; but as they muſt erode in ſome degree, and there are certain *Urethras*, where the leaſt Eroſion is very pernicious, I think the uſe of them may be dangerous; beſides, that when they act as an *Eſcharotic*, they form an *Eſchar*, inſtead of bringing on a Suppuration.

PLAISTERS

PLAISTERS impregnated with a large proportion of *Turpentine* or *Reſin*, ſeem to be too ſtimulating; and, tho' a certain degree of Irritation is neceſſary, yet, if the *Urethra* be very much ſtimulated, a violent Strangury or ſome other Symptom of the Irritation enſues, which makes the Continuance of the *Bougie* in the *Urethra* intolerable. Beſides, when the *Urethra* is very much inflam'd, the diſcharge generally abates, and ſometimes ceaſes, notwithſtanding the uſe of the *Bougie*.

THE Properties then requiſite in the *Bougie* are, a ſufficient degree of firmneſs, that it may be introduced with ſome Force; a Suppleneſs and Tenacity, that it may conform to the Motions of the Body without breaking; a lenient ſuppurative diſpoſition, to bring on a diſcharge without Pain; and laſtly, a ſmoothneſs of Surface, that it may not only be introduced with more eaſe, but that it may lie eaſy in the Paſſage till it begins to diſſolve.

THE beſt Baſis of ſuch a *Bougie* in my Opinion, is *Diachylon ſimplex*, which may be rendered Efficacious, by a great variety of Mixtures; but tho' an addition of certain Gums or of the mucilage Plaiſter, will alone anſwer the Purpoſe in ſome Diſorders of the *Urethra*, yet

yet as a long uſe of *mercurial* Applications is almoſt a Specific for venereal Ulcers, and has alſo a powerful Effect on every other Species of ſtubborn Ulcers; I have chiefly confined my Experiments to Preparations of Mercury.

I HAVE often uſed white *Precipitate*, red *Precipitate*, *Calomel* and *Æthiops Mineralis*; and tho' the *Precipitates*, at leaſt the red *Precipitate*, are properly eſcharotic Powders, yet when they are mingled in Plaiſter, they loſe their corroſive Property, in the ſame manner as *Elixir* of *Vitriol* does by Dilution; and on this account may be employ'd with the utmoſt innocence. However, it may be proper to obſerve, that the red *Precipitate* ought to be finely levigated, for Levigation abates the *eſcharotic* Quality of it, even when in a Powder; and, in this ſtate, I have carried the proportion of Powder from one Dram to three Drams for every Ounce of Plaiſter, without producing any Miſchief, or without diſcovering any notable difference of Operation in the *Bougies*; ſo effectually ſheathed are the *cauſtical* Qualities of the Mercury, by the Plaiſter they are mixed with.

BUT, tho' theſe Remedies often work a Cure in ſome ſtubborn Diſeaſes of the *Urethra*, yet

yet a very large quantity of crude Quickſilver, added to the Plaiſter, ſeems to be better calculated for the Purpoſe, as Quickſilver, mingled with Axungia or Plaiſter, is not only an excellent topical Medicine for Ulcers; but has alſo a peculiar diſcutient Quality, which it exerts, even when there is no Rupture of the Veſſels. This Operation of the Quickſilver therefore, ſeems to give it greatly the Preference to the other Compoſitions; becauſe, it not only acts as favourably upon the Surface of the Ulcers, but alſo exerts its other Virtues on the *fungous* or indurated Parts of the *Urethra*,

PERHAPS we ſhall diſcover hereafter the proper Proportion of Quickſilver to the Plaiſter; at preſent, I have allotted half an Ounce to every Ounce of Plaiſter, which renders it exceſſively more Mercurial than any Plaiſter now in uſe. The *Diachylon* muſt be made with Oil, and a little *Pix Burgundica* added to it, that it may be ſufficiently tenacious: To every Ounce of Plaiſter I have uſually flung in two Drams of *Crude Antimony* finely levigated; from an Opinion, that it greatly conduces to the Smoothneſs and good Conſiſtence of the *Bougie*; beſides, that it may poſſibly have other Virtues. Upon this Plan the Preſcription ſtands thus,

Diach.

Diach. cum pice Burgund. ℥ii.
Argent. Viv. ℥i.
Antim. Crud. Pulv. ℥ſs.

The Quickſilver, whether it be divided in *Balſ. Sulp.* or *Honey*, muſt not be put into the Plaiſter till the Moment before the *Bougies* are made; nor muſt the Plaiſter be boiling hot at that time; leſt, by the Heat, the Quickſilver ſhould ſeparate from the Body it is divided in, and fall down to the bottom in form of Globules. When the Quickſilver is mingled with the Plaiſter moderately hot, Slips of fine Rag muſt lie ready to dip in the Compoſition. Theſe Slips muſt be of different Lengths, from ſix to nine or ten Inches, and about three Inches broad; roll them up looſely, and, taking hold of one Extremity with the left Hand, let it fall in upon the Surface of the Plaiſter, and then draw it out gently; as it is drawn out, it will unroll and take up a Quantity of Plaiſter upon its Surface, equal to the Thickneſs of a ſilver Groat: Though, to facilitate the unrolling of the Rag, it will be proper to aſſiſt its Motion with the End of a Spatula, or any ſuch Inſtrument: The Plaiſter muſt however be ſo hot, as to ſoak through and diſcolour the Cloth, otherwiſe it

will not make ſo good a *Bougie*. Several Slips may be dip'd into the ſame Compoſition, one after another, before it becomes too cold; but to do this more handily, the Ladle in which it is melted, ought to be broad and flat at the bottom; and the Plaiſter muſt be kept ſtirring, that it may preſerve an equal Conſiſtence. When the Plaiſter is become too cool to admit of dipping, the remainder may be ſpread with a warm Spatula: On one ſide of the Cloth, it may be ſpread very thin; on the other, it muſt be laid on of the ſame thickneſs, as I have before deſcribed when it is dipt: But this will be done in a more exact and even manner, by ſpreading the Plaiſter three ſeveral Times, than by attempting to make it of the requiſite Thickneſs at one ſtroke. Perhaps, thoſe who are dextrous at ſpreading will always prefer it to the Method of dipping, and it has this Advantage, that the Quickſilver may be mingled with the Plaiſter in a cooler ſtate, and is therefore leſs ſubject to be ſeparated and loſt.

If the Cloth be exactly three Inches broad, it will make ſix *Bougies* of a moderate Size, but their Size may be increaſed or diminiſh'd according to the Occaſion: It is generally adviſeable, that the *Bougie* ſhould be ſmaller at the End

End which is introduced through the *Strictures*, than at that which is left out at the *Penis*; for that Purpoſe, many cut off a Part of the oblong Square I have deſcribed, in ſuch manner, as to reduce it almoſt into the Shape of a long right-angled Triangle; but as this way of cutting it weakens the *Bougie* exceedingly, and it is not at all neceſſary the *Bougie* ſhould be taper from one Extremity to the other, it is much better to cut off a little Slope, of about an Inch and a half long, from the End that is to be paſs'd into the *Urethra*; which will leſſen it, where it is requiſite to be ſmall; and leave it ſtrong in the other Parts, where the Diminution is not neceſſary.

The Plaiſter taken up by the Cloth when dipt, will have little Bubbles upon its Surface, and not be ſo ſmooth, as if it had been ſpread; therefore an Iron-ſpatula, a little warm'd, may be paſs'd over the Plaiſter before it be cut into *Bougies*, which will render it more compact and even. It is a much more exact and ſpeedy Method to cut the *Bougies* off with a Knife and Ruler, than with Sciſſars: When they are roll'd up, it muſt be with that ſide outwards, which is covered with Plaiſter; and they muſt firſt be roll'd up with the Finger and Thumb as cloſe as poſ-

ſible, before they are roll'd upon a Board or Marble; for, upon this Circumſtance, the Neatneſs of the *Bougie* very much depends: I think too they may be roll'd up more neatly by the Hand than any kind of Machine. Holding the Plaiſter a little before the Fire, in cold Weather, will facilitate the Rolling; unleſs it has been juſt dipt, when it is not neceſſary.

I AM appriſed how inartificial it muſt appear, to propoſe ſuch a compendious Method of Cure as is here laid down, by the uſe of one ſort of *Bougie*; when it is ſaid, by Men of the greateſt Experience, that different kinds of *Bougies* are neceſſary for the different Stages of the Cure. I will not take upon me to anſwer this Aſſertion, by declaring that the Method I have propoſed is perfect: It probably may admit of Improvement; but ſtill I can affirm, that in this manner I have cured a great Number of Diſorders of the *Urethra*, accompany'd with *Strangury*, Incontinence of Urine, Suppreſſions of Urine, and dreadful *Fiſtulas* in *Perinæo*; which, I preſume, will be a ſufficient Motive for us to follow this Method of Practice; till ſome one more ſkilful than myſelf ſhall oblige the World with ſo uſeful a Diſcovery.

BUT though the Doctrine I have here advanced is chiefly built on Experience; yet, from what we see in the Treatment of Wounds and Ulcers, the Event is not mysterious. Indeed formerly, Surgeons hardly dared to believe the Cure of an Ulcer could possibly be compleated, but by a regular Succession of *detergent*, *digestive*, *incarnative* and *cicatrising Applications*; at present, this formal *Apparatus* is greatly abridged, and it is known, that a foul Ulcer may be brought into a Disposition to heal, and be even perfectly cicatrised, by the same Remedy: I suspect, however, that the supposed Necessity of the several Classes of *Bougies*, is founded on this ancient Opinion; and on the false Principle, that all the Discharge procured by the *Bougie* is derived from the Ulcers themselves; in consequence of which, it is concluded, that so long as a suppurative *Bougie* shall be continued, the Ulcer must remain unhealed: But, if I am right, I have prov'd that a great Portion of the Discharge is not from the Ulcers; so that it is possible they may be healed, notwithstanding the *Bougie* continues to be covered with some Discharge. Nevertheless, had we a certain Criterion, by which to judge that the Ulcers were in a kind Disposition to heal; and that the Ob-

ſtacles of the *Urethra* were radically cured, I have no Objection to deſiccative *Bougies*.

HAVING now examined into the Nature of the Diſorders of the *Urethra*, and alſo into the Virtues of thoſe Remedies which ſeem moſt ſuitable for their Relief; I ſhall next explain in what manner thoſe Remedies are to be applied.

BEFORE a *Bougie* of any kind be introduced into the *Urethra*, it is neceſſary that it ſhould be daub'd all over with ſweet Oil; not only for its eaſier Introduction, but alſo that it may not ſtimulate too ſuddenly, and make its Continuance in the Paſſage intolerable: In order to introduce it, the Patient may either ſtand, or lay himſelf in the Poſture we put a Man, that is to be cut for the Stone; in either Caſe, the Surgeon graſps the *Penis* near the *Glans*, and extends it gently, that the *Urethra* may not be wrinkled; by which Precaution the *Bougie* will meet with no Impediments but thoſe occaſioned by the Diſeaſe.

IT is generally ſaid that we muſt judge of the Size of the *Bougie*, that is to be firſt introduced, by the largeneſs of the Stream with which the Patient urines: But this Rule is very fallacious; for it frequently happens, that the Urine is voided in a Stream as thick as a Packthread, at the ſame time that the Obſtruction will

will not admit the Point of the fineſt *Bougie*. I ſuppoſe this *Phænomenon* may be accounted for, by the Rapidity with which the Urine is forced through the contracted Portion of the *Urethra*, compared with the Slowneſs with which it advances afterwards through the open Part of it on this ſide of the Contraction; for in Proportion as the Stream thickens, its Velocity diminiſhes. It very often happens, that in the beginning we cannot employ a *Bougie* too ſmall; on this Account, the End of it muſt be round, that it may readily ſlip over the *Plicæ* of the *Urethra*; for, if it be pointed, it may be ſtopt by them before it arrives to the Obſtructions: Sometimes the Obſtructions themſelves ſuffer a larger *Bougie* to paſs over them; whilſt the Extremity of a little one ſhall be entangled and obſtructed by them. It is alſo from theſe Cauſes, that a large Catheter or Sound may ſometimes be paſſed into the Bladder, when a ſmall one cannot; the Poſſibility therefore of theſe Circumſtances require, now and then, great Attention.

When the *Bougie* is ſmall, and conſequently weak, it is a little difficult for an unexperienced Surgeon to adjuſt the Force with which it ſhall be puſh'd. It is exceedingly deſirable that it ſhould enter within the Obſtruction; but inſtead

ſtead of penetrating, it generally bends ſometimes double, or treble, and ſometimes ſpirally; ſo that when the *Bougie* is extracted, it reſembles a Cork-ſcrew: This laſt Appearance of the *Bougie* has made it almoſt univerſally believed, that the *Urethra* aſſumes a tortuous Figure when thus diſeaſed; but it ſeems evidently to be a Miſtake; for, if this was the Shape of the *Urethra* itſelf, one could not make the *Bougie* more or leſs ſpiral, by puſhing it with more or leſs Force; nor indeed could ſo pliable a Subſtance, as the *Bougie*, preſerve that Shape in the Extraction; unleſs it were taken out by unſcrewing it, as we take a Screw out of a Cork. In whatever manner it bends, the Extraction is always painful; and therefore it is of great Importance to deſiſt from puſhing it on, when once it begins to bend; for from that Moment the farther Introduction of it is impracticable. To avoid this Inconvenience, it muſt be paſs'd very gently, and, when it meets with the leaſt Reſiſtance, inſtead of puſhing it ſtraight on, turn it round between your Finger and Thumb ſeveral Times, and, as you turn it, preſs it a little forwards: if by this Conduct it ſhould advance, continue to do the ſame thing till it ſtops; if it does not advance, proceed no farther: But as I have

have hinted, this is a nice Proceſs; for when it bends it ſeems to advance, and will deceive any one not much accuſtomed to this Operation.

If we do not confine the *Bougie* in the *Urethra* by ſome kind of Bandage, it will be expedient to faſten a Piece of Thread to the Extremity: leſt it ſhould inſinuate itſelf into the Paſſage beyond our reach, and make the Extraction difficult, if not impoſſible, without an Inciſion. If we keep it fixed in the *Urethra* with a Cotton-ſtring ty'd to its Extremity, and then paſs'd round the *Penis*, no other Thread is neceſſary.

Sometimes the *Urethra* is ſo tender, that the firſt Application is very painful; but what adds greatly to the Patient's ſuffering, is the dread of the Operation. On this account, timorous People ought to be treated with Gentleneſs, and the *Bougie* ſhould be left in only two or three Hours in a Day at firſt; but this is to be done, either in Compliance with the tenderneſs of the Part, or the apprehenſions of the Patient; for, when they are able and willing to ſuffer it, the *Bougie* may be left in ſix or ſeven Hours of the Twenty-four in the Beginning of the Cure: Sometimes it happens, that the *Bougie* is very bearable at firſt, and becomes more painful after ſome time; this

Circum-

Circumſtance demands a Conduct which is to be learnt from Experience only; for it is difficult to lay down any Rule, by which it may be diſtinguiſh'd what degree of Pain will admit of the continuance of the *Bougie*, and what forbids the Proſecution of it: But generally the Patient himſelf will judge whether he can bear it or not; and the diſcontinuance of it may be for one, two, or three Days, according to the Nature of the Symptoms. There are ſome few Inſtances, where the ſame *Bougie* that has already remov'd a Strangury and other concomitant Complaints, ſhall, by remaining many Weeks in the Neck of the Bladder, irritate it, and bring on a freſh Strangury. In this Caſe, the Uſe of the *Bougie* muſt be forbore a Day or two, and the Strangury will ceaſe. Some Surgeons have recommended in theſe Circumſtances, what they call a gentle ſoothing *Bougie*; but an abſolute refraining from all kinds of *Bougies* is, I believe, much the better Method.

If the Patient will ſubmit to wear a *Bougie* nine or ten Hours in a Day, he will, in all Probability, be much ſooner reliev'd than if he wore it only four or five Hours. There are a great many, whoſe Diſorder is ſo deſperate, as

to

to render them unfit for every other Buſineſs than that of their Cure. I have had ſeveral of theſe under my Care, who wore the *Bougie* almoſt the whole Time, Night and Day, without Intermiſſion; as they withdrew one, introducing another; and, if it does not ſtimulate too much by this conſtant Application, it is certainly a prudent Step; for the more Suppuration is procured, and the longer the *Urethra* is kept diſtended, the more likely it is that the Cure will be radical. However, as few Men will ſubmit to ſo exact a Diſcipline, nor indeed does the nature of the Malady abſolutely require it in many Caſes, it will be adviſeable to wear it in the Day, rather than the Night; as in Bed the Patient will be liable to Erections; and Erections are accompanied with a much more painful *Cordee*, whilſt the *Bougie* is in the *Urethra*, than when it is not: Beſides, that the *Bougie* does not ſeem to operate ſo kindly, when the *Corpus ſpongioſum Urethræ* is inflated, as when it is flaccid; but, as I have intimated, there are a great many Examples where it may be wore Night and Day; the Objection I have here ſuggeſted, not occurring. Two *Bougies* a Day ſeem to anſwer the Purpoſe very well in the generality of Diſorders; one in the Morning,

ing, and one in the Evening; which may be uſed ſo early, and ſo late, as not to interfere with the Patient's Avocations; though in a little time they become ſo familiar and eaſy, that many walk about with them in the *Urethra*, and follow their daily Occupations without the leaſt Inconvenience.

If during the Uſe of the *Bougies*, the Teſticles ſhould inflame, or any feveriſh Diſorder come on; it will be proper, till this Symptom be remov'd, to ſuſpend the application of the *Bougies*, at leaſt to leave them only an Hour, or half an Hour in a Day in the *Urethra*, to prevent its contracting again.

To obviate any liableneſs to inflammatory Diſorders of the *Urethra* or genital Parts; it is of great Importance that the Patient ſhould live temperately, and even enter into a cooling Regimen during the Treatment.

With regard to the length of Time neceſſary for the Cure of theſe Diſorders, it will be often imprudent to make any poſitive Prognoſtic; for there are not only deſperate Caſes, to all appearance, which are relieved in a few Weeks, but there are alſo ſeemingly ſlight Obſtructions, which do not yield for many Weeks or Months. M. *Daran*'s Book furniſhes us with ſome Examples, where the *Bougie* was applied

applied for Excreſcencies, *Strictures* and Ulcers, ſometimes three, and ſometimes four or five Months; the Cure, however, was effected with Patience, in all or moſt of the Inſtances: Nevertheleſs, the greater Number of Cures will be wrought in ſeven, eight, nine, or ten Weeks.

I KNOW no Rule for determining when the Cure is effected, but by the removal of every Symptom of the Diſorder; for ſome degree of the Running will generally continue as long as a *Bougie* is employ'd. If therefore the Patient judges himſelf well, and feels no Obſtruction in the Paſſage, after having uſed the *Bougie* a Fortnight or three Weeks longer, for a Confirmation of the Cure, he may deſiſt gradually, wearing it at firſt only an Hour in a Day, and then two or three times a Week; after which it may be entirely left off. If, after all theſe Precautions, it ſhould be found that any Gleet remains, or any Obſtruction threatens to return; it will be neceſſary to repeat the application of the *Bougie* for five or ſix Weeks. Towards the cloſe of the Cure, it was formerly cuſtomary for Surgeons, who practiſed the method of DISTENSION, to uſe very large *Bougies*; but I do not find it neceſſary, and perhaps they may ſometimes by over-ſtretching prove pernicious.

A PERPETUAL Incontinence of Urine is a great Impediment to the Suppurative Power of the *Bougies*; for by continually keeping it wet, the Plaiſter can act but very ſlowly; and therefore, I think, it will often be adviſeable to make way by force through the Obſtruction; for it ſometimes happens, that the Incontinence of Urine ſhall ceaſe from that Moment the Paſſage is opened; provided that a *Bougie* be introduced immediately, upon withdrawing the Sound or Catheter; but if no *Bougie* be paſſed, in order to procure a Diſcharge and preſerve the openneſs of the Canal, the Diſeaſe generally returns when the Sound or Catheter is taken out.

I KNOW that ſome of the moſt experienced Surgeons are averſe to this Method of Violence; and I myſelf confeſs, that it ought to be exerted with great Caution, leſt the Inſtrument ſhould be puſhed through the Coats of the *Urethra*; but when it is uſed with Diſcretion, the Cure will ſometimes be exceedingly abridged; for by this Means the *Bougie* will arrive at once through an Obſtruction, that perhaps might have required a Month, or five Weeks, to open by ſo gradual a Suppuration as is brought on by the mere Point of the *Bougie*. I have been led into the Approbation of employing ſome Violence

lence to open the *Urethra*, by the ſudden Advantages I have reap'd from it, where I have been neceſſitated, in a dangerous Suppreſſion of Urine, to make way by force into the Bladder, in order to draw it off and ſave the Patient's Life.

In Suppreſſions of Urine it will be always adviſeable to introduce the Catheter, if poſſible, and indeed to keep it in the Bladder two, three, or four Days; after which the Canal will perhaps admit a *Bougie*; and then, as I have intimated, a Suppuration being once procur'd, it may eaſily be preſerved open. Upon the Suppoſition that the paſſing of the Catheter ſhould be impracticable; beſides the uſual Methods employ'd in Suppreſſions of Urine, I would alſo recommend the introduction of a *Bougie* as far as the *Stricture:* In a few Hours it will bring on a Diſcharge, and may poſſibly, by that Diſcharge, relax the *Stricture* or even the Neck of the Bladder, which-ever be the cauſe of the Suppreſſion; but I own, I do not much depend upon ſo ſudden an Effect from the Suppuration, as is requiſite for the Relief of this Diſorder.

The common event in Suppreſſions of Urine which do not prove mortal, and when the Catheter cannot be introduced, is this: After the Bladder is diſtended to a certain degree, it reſiſts

ſiſts any farther Diſtenſion, with a Force ſuperior to that Power which keeps the *Stricture* of the *Urethra*, or the *Stricture* of the Neck of the Bladder contracted; in conſequence of which, the Urine is expelled involuntarily, and by Drops, ſo that the firſt Symptom of a Recovery is an Incontinence of Urine. When the Paſſage is once open, it continues to flow faſter than it is brought from the Kidneys into the Bladder, ſo that the Bladder contracting, recovers its Tone, and the Inflammation of the *Stricture* in the *Urethra*, or the *Stricture* in the Neck of the Bladder abating, the Patient returns into the Situation he was in before the attack. This is often the Caſe, where no *Bougie* has been employed; but it is poſſible, that a *Bougie* by irritating the *Urethra*, may promote the Contraction of the Bladder, and I ſuppoſe whenever a *Bougie* produces a ſudden Evacuation of Urine, it muſt be by this means, rather than by the Diſcharge.

INDURATIONS, and *Fiſtulas in Perinæo*, are a frequent conſequence of Obſtructions in the *Urethra*, and in the Neck of the Bladder; ſometimes there are ſeveral *Fiſtulas*, and though they acquire their Name from being ſuppoſed to be ſeated in *Perinæo*; yet ſome of them may be alſo in the *Scrotum*, ſome near the *Anus*, and

and others even in the Groin. When there are five or six different *Fistulas* giving issue to the Urine; it is said to have been discover'd by Dissections, that they are all derived from one Orifice [1] only, in the *Urethra*; and generally from that portion of it which is called the *membranous Part*; but though this may be true, where the *Fistulas* have been formed by the bursting of the *Urethra* in a Suppression of Urine, (no very uncommon Circumstance) yet where the Indurations, arising from Obstructions in the *Urethra*, have impostumated and broke, I am grosly deceiv'd, if some of those Abscesses do not lead into different Parts of the Canal.

Some of these Indurations are amazingly hard; particularly when the *Corpora Cavernosa Penis* are thus affected: I have once been obliged to cut off a part of such a Tumor, which would not yield to the Operation of the *Bougies*, as the other Indurations had done; and I found it of a *Cartilaginous* Consistence. Besides these particular Hardnesses, the whole *Membrana Cellularis Scroti*, and *Penis*, is sometimes indurated, and becomes monstrously enlarged, occasioning a *Phymosis* or *Paraphymosis*; and, what is very singular, these terrible Accidents often ensue from slight Obstructions in

[1] Le Dran, 354.

the *Urethra*; but ſtill, the removal of theſe ſlight Obſtructions proves a means of Cure. At one time, theſe Obſtructions feel like ſmall *Excreſcences*; at another, like a ſtraitneſs of the Paſſage, from an Expanſion of the whole *Corpus ſpongioſum Urethræ*; and often, like *Strictures* in different parts of the Canal. But though I have ſpoke of Inſtances, where the Obſtructions are ſlight; yet, in the generality of theſe Caſes, they are very ſtubborn, and require both Time and Diligence to overcome. I have met with an Example, where the *Urethra* has been intirely ſtopt up, ſo that no Urine has paſſed out at the Extremity of the *Penis* for ſome Years; and yet by Perſeverance I have opened the Paſſage.

It would ſurpriſe any Body not acquainted with theſe Caſes, to ſee what monſtrous Tumors ſubſide, and what foul *Fiſtulas* digeſt and heal from the mere opening of the *Urethra*, and the proper treatment of the Obſtructions; but there are, however, ſome *Fiſtulas* which require a farther management than the application of a *Bougie*. Sometimes the Indurations are in too rotten a ſtate to be diſperſed, and therefore ſuppurate ſooner or later. When they are fully maturated, it is more prudent to

open

open them either by Inciſion or Cauſtic, than to let them break. Sometimes the *Fiſtulas* are ſo large as to require dreſſing; in which Caſe, Pieces of *Bougie*, proportioned to the breadth and depth of the *Fiſtulas*, are often the moſt ſuitable Application. Sometimes the Edges, and circumjacent Skin of the *Fiſtula*, are ſo callous, as to make the Extirpation of them neceſſary. But in all the Examples where cutting appears neceſſary, I believe it will be judicious, firſt to make a Paſſage, if poſſible, into the Bladder, and wait the Iſſue of that Proceſs, before any Operation be performed; becauſe, as I have already intimated, the Effects of opening the Canal are ſometimes very wonderful, and will often ſpare the Knife.

I HAVE had no Opportunity of attempting the Cure of *Fiſtulas* in *Perinæo*, which have been left after cutting for the Stone. But M. *Daran* ſpeaks of them as manageable by the ſame Methods: And, whether the *Fiſtulas* remain open, from a mere contraction of the Canal; or, whether the Contraction be accompany'd with callous Edges, or any fungous Excreſcence in that Part, the *Bougie* ſeems calculated to remove either Cauſe. I ſhall obſerve here, by the way, that Surgeons in curing thoſe

Wounds after the Operation, have not ſufficiently reflected that *Fiſtulas* were, in ſome Meaſure, the conſequence of a Contraction of the *Urethra*; otherwiſe, they would in caſes of Danger have kept a Catheter a few Days in the Bladders of their Patients, in order to dilate the Paſſage, and give iſſue to the Urine: By this means they might alſo have prevented its continual draining through the Wound; which Circumſtance conduces very much towards the confirmation of a *Fiſtula*.

It may perhaps appear aſtoniſhing, that all theſe dreadful diſeaſes, which are evidently derived from a venereal Cauſe, ſhould not abſolutely require anti-venereal Remedies to render the Cure complete; but Experience ſhews that they are not often neceſſary. Theſe Caſes ſeem in their nature exactly to reſemble the *Verrucæ*, that ariſe from the *Prepuce* after a *Gonorrhœa*; which are curable by external Applications, though a Salivation will not affect them: For thus it is with the generality of Diſorders in the *Urethra*, and many Indurations and *Fiſtulas* in *Perinæo*; though theſe laſt are more frequently reliev'd by *Antivenereals*, than where the Complaint is confin'd to the *Urethra* itſelf. However, it is very poſſible that they may be

be complicated with other Pocky Symptoms; in which Circumſtance a mercurial Courſe will be evidently expedient; but the Canal ſhould be open'd before the Patient is laid down; though, if the Symptoms are urgent, this Rule may be diſpenſed with. M. *Daran* ſays, there is alſo ſometimes a latent *Virus* in the Obſtructions, when a Salivation is alſo neceſſary; and he judges of the Exiſtence of this *Virus* from the Stubbornneſs of the Diſorders; therefore, if they do not yield in a certain Time to the Operation of his *Bougie*, he aſcribes it to this Cauſe; and has recourſe to *antivenereal* Remedies, which he declares ſeldom fail to prove ſucceſsful.

CHAP. V.

Of Cutting for the STONE.

THE great Violence done to the *Urethra*, and to the *Neck* of the Bladder, in Cutting for the Stone by the Greater *Apparatus*, having been often attended with dreadful Conſequences, which might be probably avoided, was the Bladder to be opened in another Part of it; ſeveral ingenious Men,

have, ſince the Beginning of the preſent Century, apply'd themſelves with diligence, to diſcover ſome Method of Cutting, in which neither the *Urethra*, nor the *Neck* of the Bladder ſhould be concerned.

AMONGST other Contrivances, one was, by an Inciſion into the Bladder above the *Os Pubis*; and the firſt Eſſays made in this way of Cutting, gave the greateſt Expectation that it would prove an eaſy unexceptionable means of Cure; but future Experiments ſhew'd its Fallibility; and ſome of the Difficulties which occurr'd in the execution of it, appear'd ſo frightful, that it was ſuddenly diſuſed; and at preſent, there is no one Surgeon in *Europe* who continues to practiſe it.

THE Objections to this Method are to be found in ſeveral Books, and therefore I ſhall not repeat them all: But it may be obſerved, that they are too indiſcriminately applied; becauſe there are certain Inſtances, where we may be ſure that ſome of the moſt important ones do not take place; and, though they have abſolutely diſcredited this way of Cutting with the preſent Age, I ſhould not be ſurpriſed, if hereafter, on particular Occaſions, it ſhould be revived and practiſed with Succeſs.

THE

The moſt frightful Circumſtance in this Operation, is the poſſibility of a contracted Bladder, which not admitting much Injection, and therefore continuing to lie concealed under the *Os Pubis*, may deceive the Operator, who, in this Caſe, opens the *Peritonæum* inſtead of the Bladder; in conſequence of which, the *Inteſtines* protrude, and the Patient generally dies. This Accident alone would be ſufficient to condemn the Operation, were we equally expoſed to it in every Perſon that is cut; but in many Men, we know by Searching, that their Bladder is very large, ſo that we run no Risk of this Misfortune in thoſe Caſes; and therefore the Objection is of no weight, where we are certain that the Bladder extends itſelf a conſiderable height above the *Os Pubis*, and will admit a large Quantity of Injection. Another Inconvenience imputed to the high Operation, is, the difficulty of ſeizing the Stone when it is ſmall; and the Impracticability of extracting all the Stone, when it happens to be broke into a great Number of Pieces: But though we cannot always poſitively determine, by Searching or other Circumſtances, what is the exact Size of a Stone; yet there are a multitude of Inſtances where we are very ſeldom miſtaken, when we

judge it to be large; and, as to the Accident of breaking the Stone in the Extraction, though it be poſſible, yet we are ſo ſeldom ſubject to it in this Method, compared with all the others, that the little danger there is of breaking a Stone in the Extraction, is eſteemed one of the moſt remarkable Benefits of the high Operation.

ANOTHER Objection to the high way of Cutting, are, the Excoriations which enſue from the effuſion of the Urine all over the Skin near the Wound; but this Inconvenience may, in my Opinion, be very much relieved by Embrocations, or Unguents, or Plaiſters, any of which will be a good Defence againſt the Acrimony of the Urine, in caſe they are applied before the Excoriations ariſe.

ONE of the greateſt Evils which follow this Operation, are the *Abſceſſes* and *Gangrenes* of the *Membrana Cellularis*; and theſe are aſcribed to the Inſinuation of the Urine into the Cells of that Membrane, in conſequence of the ſupine Poſture of the Patient, which prevents a free Iſſue of the Urine from the Bladder: But though I am inclined to believe, that they chiefly ariſe from the Contuſion of the Wound in extracting the Stone; yet, as far as they may

be

be aggravated by the Infinuation of the Urine into thoſe Cells, the Miſchief may be very much prevented by the Introduction of a *Canula*, as practiſed in the Puncture above the *Os Pubis* for Suppreſſions of Urine.

From theſe Conſiderations it appears to me, that though the general Objections to the high way of Cutting are very ſtrong; yet there may be particular Caſes where ſome of the principal Objections cannot be applied; and it is very probable, that, were both the Bladder and the Stone always large, this Method would, upon the whole, be found preferable to all the others; as neither a *Fiſtula*, nor an Incontinence of Urine, can ever happen in this way; and no degree of Skill can abſolutely prevent them, where the Neck of the Bladder is concerned in the Operation.

When the high Way of Cutting was exploded in *England*, the lateral Method was taken up, on the ſame Principle of making a way into the Bladder without wounding the Neck of it. *Albinus*, who has given us an Account of *Rau*'s Method, as he was ſuppoſed to have improv'd it after *Frere Jaques*, ſays, that he opened the Bladder between the *Neck* and the *Ureter*: But every body now ſeems to be con-

convinced that, either *Albinus* in his Relation, or *Rau* himself in his Suppoſition, was miſtaken; ſince it is almoſt impoſſible to cut the Bladder in that part upon a common Staff, without alſo wounding the Neck of it [z].

But though *Albinus*'s Aſſertion was found not to be true, when the Experiment was carefully made, both on dead and living Subjects; yet the very Suggeſtion that Good might ariſe from an Inciſion in that part of the Bladder, has produced another Method of cutting for the Stone, invented by M. *Foubert*, an eminent and ingenious Surgeon of *Paris*, who has given us a Deſcription of the Operation in the Memoirs of the Academy of Surgery, of which the following is an Abridgement.

The Patient being prepared as in the other Methods; he orders him for ſome Hours before the Operation to retain his Urine, notwithſtanding any Urgings to void it. By this means he propoſes to diſtend the Bladder more effectually than can poſſibly be done by an Injection; which being flung in faſter, than the Bladder is accuſtomed to receive the Urine from the Kidneys, makes a ſmall Diſtenſion very painful. When the Patient can no longer reſiſt the Irri-

[z] *Memoires de l'Acad. de Chir.* 663. *Vol.* I. Le Dran's *Paralléle.*

tation

tation to Urine, a Yoke is put on the *Penis*, to prevent the iſſue of the Water from the Bladder. Being then placed in the uſual Poſture for Cutting, an aſſiſtant with a convenient Bolſter, preſſes the *Abdomen* a little below the Navel in ſuch a manner, that by puſhing the Bladder forwards, he may make that part of it protuberate which lies between the *Neck* and the *Ureter*. The Operator at the ſame time, introduces the Fore-finger of his Left-hand up the *Rectum*, and drawing it down towards the right Buttock, puſhes in a *Trocar* on the left Side of the *Perinæum*, near the great Tuberoſity of the *Iſchium*, and about an Inch above the *Anus*: Then the *Trocar* is to be carried on parallel to the *Rectum*, exactly between the *Erector Penis* and *Accelerator Urinæ* Muſcles, ſo as to enter into the Bladder on one ſide of its Neck: As ſoon as the Bladder is wounded, the Operator withdraws his Fore-finger from the *Anus*.

THE Trocar is longer than a common Trocar, and is made with a kind of Handle, that determines it into an upper and a lower Part. On the upper Part of the Canula, is a Groove continued almoſt to its Extremity: By the means of this Groove ſome Urine will iſſue out, when the Trocar penetrates into the Bladder;

der, at leaſt, if he draws out the Perforator a little way, which will ſerve as an Indication to the Operator that he muſt not puſh it any farther: But the principal Uſe of the Groove is to guide the Inciſion, after the Perforator is withdrawn; this Inciſion muſt be carried between the above-mentioned Muſcles, through the *Skin*, *Membrana Adipoſa*, *Tranſverſalis Penis*, *Levator Ani*, and a little Portion of the Ligament that runs into the Neck of the Bladder, from the *Symphyſis* of the *Os Pubis*; and laſtly, through the Body of the Bladder at near half an Inch from its Neck, and at the ſame diſtance above the Inſertion of the *Ureter*. The length of the Inciſion through the Skin, is to be above an Inch and a quarter, running obliquely upwards from one ſixth of an Inch on the Inſide of the great Tuberoſity of the *Iſchium*, to the ſame Diſtance on the Inſide of the Seam in *Perinæo*. The length of the Inciſion in the Bladder itſelf is to be ſomething more than an Inch.

For making the Inciſion more conveniently, M. *Foubert* has deviſed a Knife, the Blade of which is fixed into the Handle in ſuch a direction, as to reſemble a Claſp-knife a little ſhut; by this Artifice, he cuts with much more facility,

facility, than if the Handle lay in a right Line with the Blade: But to conceive rightly of this Operation, one ſhould ſee either the Inſtruments themſelves, or the Figures of them, which he has annexed to the Deſcription of his Method.

When the Inciſion of the Bladder is made, he introduces the *Gorget* upon the Groove of the *Canula*; after which, the Operation is finiſhed as in the other Methods; only that his *Gorget* is differently contrived from the *Gorgets* which are moſt in uſe.

These are nearly the particulars of M. *Foubert*'s Method of Cutting; but though he has practiſed it ſeveral Years with great Dexterity, if I may judge by the Operation I myſelf have ſeen him perform, and, with good Succeſs, according to his own Declaration; nevertheleſs he has not yet had the Happineſs to perſuade any of his Countrymen to adopt it; and I preſume for the following Reaſons.

Because there are many Bladders, which, from the continual Irritation of the Stone, have been ſo accuſtomed to diſcharge the Urine as faſt as it flows from the Kidneys, that they become very ſmall; and at the ſame time are incapable of a ſufficient Diſtenſion, either by Injection

Injection, or a gradual Influx of Urine from the Kidneys: For want therefore of a proper Guidance, it may ſometimes happen, that the *Trocar* will paſs between the Bladder and *Rectum*; at other times, as the *Trocar* is very long, even through the Bladder into the *Pelvis*.

M. *POUBERT* is fully appriſed of the Poſſibility of this Accident, and even admits he himſelf has met with it: He ſays, that he laid aſide the Method of injecting the Bladder, becauſe it is ſometimes not ſuſceptible of ſo ſudden a Dilatation; and has ever ſince let the Bladder fill with Urine before he perform'd the Operation. In order to render the Bladder capable of holding a ſufficient Quantity, where he finds it in a contracted State, he orders his Patient to drink very plentifully of Ptiſan, or other innocent Liquors ſome Days before; and he declares, that from this Management the Patient will acquire the Habit of retaining a Glaſs or two of Urine in his Bladder, which is Direction enough for the *Trocar*: And he aſſerts, that he cannot be deceived in this Circumſtance, becauſe, with his Fore-finger in the *Rectum*, he can diſtinguiſh the Fluctuation of the Urine, if there be any in the Bladder. But notwithſtanding M. *Foubert*'s Extenuation of this

this Difficulty, I believe where a Bladder is ſmall, and a Stone very large, which is ſometimes the Caſe, a proper Opening of the Bladder, by means of a *Trocar*, will appear to be precarious.

I FIND this Objection has already been conſider'd; for a certain Author has propos'd, as an Improvement on the Operation, that the external Inciſion ſhould be firſt made with a Knife through the Skin and *Membrana Adipoſa*, between the *Erector Penis* and *Accelerator Urinæ Muſcles*; when the Fluctuation will be evident, and the Puncture of the Bladder more certain. Monſieur *Foubert*, however, rejects the Propoſition; but, in my Opinion, without ſufficient Motives; for in this manner the external Inciſion may be made to extend below the *Anus*, which, at the ſame time, dividing the greater Part of the *Tranſverſalis Penis*, will exceedingly facilitate the Extraction of the Stone, and prevent that Contuſion which accompanies ſmall Inciſions. M. *Foubert* himſelf ſpeaks of this Contuſion; and mentions the Reſiſtance of the *Levator Ani*, and the *Tranſverſalis Penis Muſcles*, as great Impediments to the Extraction of the Stone; upon which account, he recommends the Inciſion of theſe

Muſcles

Muſcles to be perform'd upon the Stone whilſt in the Forceps, as a final Perfection of his new way of Cutting: But ſo long as his external Inciſion ſhall reach no lower than about an Inch above the *Anus*, which will always be the Caſe, whilſt he uſes a *Trocar*; the Parts muſt neceſſarily be contuſed in the Extraction of large Stones, notwithſtanding the meaſure he here adviſes.

The exact Inciſion of the Bladder ſeems alſo to be another Difficulty in the Operation; for what Urine there is in the Bladder being immediately evacuated by the *Trocar*; the Bladder itſelf will ſubſide, and leave no Protuberance to cut upon; in which Caſe, it is poſſible that either the Knife may fail to open the Bladder at all, or may wound it in more Places than one. M. *Foubert* recommends, as an Expedient for accompliſhing this Inciſion, to preſs down the Extremity of the grooved *Canula*, at the ſame Moment that you raiſe the Point of the Knife; that, by keeping that Part of the Bladder ſteady, it may be cut the more eaſily; but I doubt that in general the right Execution of this Proceſs will be found too delicate for the greater Number of Operators.

Ano-

ANOTHER great Evil, attendant upon a Wound of the Bladder in that Part, is the want of a free Egreſs for the Urine, which inſinuating itſelf into the *Cellular Membrane*, produces Abſceſſes or Gangrenes which often prove fatal; or if they do not deſtroy, yet, by lying on the *Rectum*, they produce a Slough there; and thus form a Communication between the Bladder and *Rectum*. To obviate this Miſchief, M. *Foubert* propoſes the Uſe of a Canula; but though upon ſuch an Emergency as a *Hæmorrhage* from the *Proſtate Gland*, the Application of a Canula may be adviſeable, in order to compreſs the Artery; yet in general I ſhould imagine it a pernicious Practice to preſs with that Force, which a Canula muſt exert againſt the Lips of ſo tender a Wound, and where the Inflammation has ſo remarkable a Propenſity to degenerate into a Gangrene.

IT would be an Injuſtice to the Merits of Mr. *Cheſelden*, ſhould I omit to mention in this place, that the very firſt Eſſay he made on the *Lateral Method*, was deſign'd as an Improvement on *Rau*'s Manner, by injecting the Bladder with a groov'd Catheter before he made the Inciſion, and cutting thoſe very Parts, which *Albinus* ſays that *Rau* cut; and which M. *Fou-*

bert recommends to be cut; ſo that in fact, M. *Foubert*'s Method differs only from *Cheſelden*'s, in the Inſtruments employ'd; and, if I may be ſuppoſed to ſpeak without Prejudice, I think where it moſt differs it is moſt deficient; for, as Mr. *Cheſelden* perform'd it, the external Inciſion was large, and had thoſe Advantages I have enumerated; the Bulging of the Bladder was perceptible, ſo that the Opening into it was ſafely made; and there being alſo a long grooved Catheter already in the Bladder, the Inciſion was enlarged with more Certainty. However, in ſpite of theſe beneficial Circumſtances, he was obliged to diſuſe the Operation, from the Miſchief done by the Inſinuation of the Urine into the *Cellular Membrane*, &c.

It may be gathered from what I have ſaid on Cutting for the Stone; that how much ſoever this Operation may have been improved, ſince the beginning of the preſent Century, yet that none of the Methods are exempt from ſome particular Imperfections. I ſhall not now run a Parallel betwixt the *Old Way* and the *Lateral Way*; but it appears to me, that the Advocates for the *Old Way*, do at length tacitly admit of the ſuperior Advantages of the *Lateral Method*, having lately recommended the Inciſion of the

Urethra

Urethra to be continued in the *Old Way*, quite through the [3] Neck of the Bladder, in order to cut open thoſe Parts, which, they acknowledge, muſt otherwiſe be tore open by the Extraction of the Stone.

BUT I ſhall obſerve upon this continued Inciſion, (the *Coup de Maitre*, as the *French* term it) that though it manifeſtly is preferable to a Laceration of the *Urethra*, and Neck of the Bladder; yet it does not anſwer ſo well, as the Inciſion by the *Lateral Method*; becauſe, the Wound is nearer the Angle of the *Os Pubis*, and therefore in extracting a large Stone, we muſt draw it obliquely downwards, which will neceſſarily have a Tendency to ſeparate the Bladder from the Ligament, that connects it with the *Os Pubis*; and when this happens, the Conſequence, in all Probability, will be dangerous. Beſides, the external Inciſion, notwithſtanding this Dilatation, is ſtill ſmall, in compariſon of the Inciſion by the *Lateral Method*; ſo that it will be much more liable to Contuſion from the Extraction of the Stone. Again, by this way of cutting open the Neck of the Bladder, the *Rectum* is much more expoſed to be wounded; becauſe, the Inciſion being carried

[3] Le Dran, 309. *Memoires de l'Acad. de Chir* 422. *Vol.* I.

on from the *Urethra*, it will neceſſarily lead to that Part of the Neck of the Bladder that lies upon, and is contiguous to the *Rectum:* but a more important Objection than any of the others, to the continued Inciſion, I mean in oppoſition to the Inciſion made by the *Lateral Method*, is this; that the Wound in the *Urethra* does not in the leaſt facilitate the Extraction of the Stone, ſince the Opening in the Neck of the Bladder does all the Service that can be done in this Proceſs; and yet, by drawing the Stone and Forceps through that Portion of the *Perinæum*, great Violence is done to thoſe Parts, and altogether unneceſſarily: Indeed now that we know a direct way into the Bladder, it ſhould ſeem almoſt as needleſs to make the Inciſion in the *Urethra*, where it is practiſed by the great *Apparatus*, as it would be, to begin the Inciſion in the middle of the *Penis*, though the Abſurdity would then be more ſtriking; and therefore I have mention'd it for the better Illuſtration of what I have advanced.

After having mentioned theſe Objections to the continued Inciſion of the *Urethra* and *Proſtate Gland*, I ſhall obſerve, that Mr. *Serjeant Hawkins* ſeems to have fallen on an ingenious

nious Contrivance not only for removing them, but alſo giving the laſt hand towards perfecting the Lateral Operation. This he effects by makeing his *Gorget* to cut on the right ſide, ſo that when it is introduced upon the Staff, and puſhed on into the Bladder, it neceſſarily makes an Inciſion on the left ſide of the *Urethra* and *Proſtate Gland*, and thus avoids the Danger of wounding the *Rectum:* and as the external Inciſion is to be made in the ſame manner, as when you propoſe to open the *Proſtate* with a Knife, the Extraction of the Stone will be accompany'd with all the ſame Advantages; but I ſhall not enter into a more particular Detail of this curious Invention, as it is to be hoped the Author himſelf will oblige us with an ample Deſcription of the Benefits we have reaſon to expect from it.

I CANNOT diſmiſs the Examination of the preſent Subject, without pointing out ſome very eſſential Particulars, in which the *Engliſh* and *French* Surgeons differ in regard to this Operation; and though I am appriſed that the *French* look upon ſome of thoſe Proceſſes, in which they differ from us, as ſo many Articles of Improvement; yet, I believe, they will not appear ſuch, when I ſhall have ſtated my Objections to

them. In *England*, an Aſſiſtant always holds the Staff, after the Operator has fixed it; by which means the Operator has his left Hand at liberty; ſo that he not only can be better aſſured of having cut the *Urethra*, or the Neck of the Bladder, by feeling the naked Groove with his Fore-finger; but he can alſo, by the Direction of his Finger, introduce the Beak of the Gorget into the Groove, without the leaſt riſk of ſlipping it on one ſide. Beſides theſe Advantages, if I am not miſtaken, moſt Men will alſo make the external Inciſion more ſteadily, when they lean with the Fingers of their left Hand upon the *Perinæum*. The *French* Operators, from an Apprehenſion that an Aſſiſtant may diſplace the Staff, deprive themſelves of theſe Benefits, by holding it with their left Hand; and, in conſequence, make the Operation more complex; for not parting with the Staff out of their Hand, till the Gorget is in the Bladder, they are obliged, after the Inciſion is made into the Neck of the Bladder, to give the Knife to an Aſſiſtant, who holds it ſteadily, whilſt the Operator ſlides the Beak of the Gorget upon the Surface of the Blade into the Wound. I have lately ſeen ſeveral Operations done after this manner in *France*, as dexterouſly

terouſly as the nature of the Method would admit; but from ſeeing them, am ſo little perſuaded of the Propriety of this Practice, that was there ſome doubt, that an Aſſiſtant might through Ignorance move the Staff, I think the Hazard would be worth riſking; but the Fact is, that in Hoſpitals and in great Towns, there are generally Aſſiſtants of equal Abilities with the Operator himſelf; and conſequently as capable of holding the Staff; though indeed almoſt any Surgeon is equal to it; ſince no other Talent is requiſite, than to keep the Staff in the very Poſition the Operator places it, till the Beak of the *Gorget* is admitted into the Groove; when the Operator takes it into his left Hand, in order to accommodate its Motion to the Introduction of the *Gorget*.

ANOTHER difference in the manner of Operating, is the Poſture of the Operator whilſt he makes the Inciſion: In *England*, we ſeat ourſelves in a Chair of a ſuitable height to the Table on which the Patient lies; and in this Situation we are firm, having no Part of our Body on the Stretch. In *France*, the moſt eminent Operators kneel on one Knee, which ſeems to be an unſteady, if not a painful Poſture; and does not, as I conceive, procure us

any one Advantage that we do not derive from Sitting.

ANOTHER Circumſtance in which they differ from us, is the Poſture of their Patients. In *England*, we generally place them almoſt horizontally, only raiſing their Heads a little on a Pillow: In *France*, their Bodies are raiſed ſo high, as to make about an Angle of forty-five Degrees. I cannot ſay, I have heard any reaſon aſſigned for this great Elevation of the Body; but, perhaps, it may be done with a view to promote the falling down of the Stone towards the Neck of the Bladder. I will not take upon me to ſay, that no good ever ariſes in this reſpect from the Elevation of the Body; though I think that the Difficulty of extracting a Stone, is ſeldom owing to its diſtance from the Neck of the Bladder; and when a Bladder does happen to be large, and the Stone lies towards its *Fundus*, a long Forceps is always a Remedy; but when a Stone lies in the anterior Part of the Bladder, bulging forwards beyond the *Proſtate*, in one of the *Sinus's* of that Part; the laying hold of it is often embarraſſing; and, if we admit that a Stone may roll about the Bladder eaſily, perhaps this Poſture of the Body will often fling it into one of theſe *Sinus's*; However,

However, the great Objection to this Elevation of the Body, is the incumbent Weight of the *Inteſtines*; which being urged forwards by the Cries of the Patient, may puſh the Coats of the Bladder between the Cheeks of the Forceps; and if they ſhould be laid hold of together with the Stone, the Conſequence would be dangerous, if not fatal; and I ſhould imagine the Accident very poſſible; becauſe the Bladder cannot contract ſo faſt as the Urine iſſues out of it at the Wound, and therefore falls immediately into a flaccid State.

ANOTHER material Variation, is the Structure of the Staff they cut upon, which has a Stop at the Extremity of the Groove; whereas ours is open all the way. The uſe aſcribed to the Stop, is to inform the Operator when the *Gorget* is in the Bladder, and to prevent his puſhing it too far; but the Admonition is certainly needleſs, as the iſſue of the Urine indicates the Introduction of the *Gorget*, and the reſiſtance of the Wound prevents its going too far: But the Inconvenience of a Stop may ſometimes be very troubleſome, eſpecially to an unpractiſed Operator; for the beak of the *Gorget* may poſſibly prevent the withdrawing of the Staff, if the *Urethra* be very narrow, or at leaſt

leaſt render its return very difficult; and if the Operator ſhould draw back the *Gorget* quite out of the Neck of the Bladder, to make way for the return of the Staff, he might afterwards miſs the Direction of the Wound, and puſh the *Gorget* between the Bladder and *Rectum*. On theſe Accounts it appears to me, that a continued Groove is far preferable to one with a Stop at its Extremity.

THE Make of the Forceps is alſo an Article of great Importance; for the Succeſs of an Operation will often depend on the Perfection of this Inſtrument. If the Cheeks of the Forceps be very ſhort, they will not command a large Stone ſo readily as if they were longer; for not encompaſſing a ſufficient ſpace of the Stone, it will be very apt to ſlip away from them, unleſs to prevent this Accident, it be graſped with a Violence that in all probability will break it. It is true, that if the Teeth of the Forceps are made very large, they will obviate the Inconvenience of the Stone's ſlipping out of them; but the largeneſs of their Teeth is a more material Objection to the make of the Forceps, than the ſhortneſs of their Cheeks; for as many Stones are exceedingly ſoft, the Teeth, by entring into their Subſtance, will frequently

quently break them, which is an Event of ſo bad Conſequence, that we cannot be too careful in avoiding it. It is alſo of Advantage for ſeizing a Stone, which lies in the *Fundus* of a very large Bladder, that the Handles of the Forceps ſhould be likewiſe long, as well as the Cheeks: But whoever will take a View of the Prints of the Forceps now uſed in moſt Parts of *Europe*, will find there are good grounds for the Criticiſms I have here advanced. M. *Le Dran* has lately added an ingenious Piece of Mechaniſm to his Forceps, which, I hope, will prove a means to prevent in ſome meaſure the breaking of a Stone in the Extraction. It is a little branch of Iron, whoſe Extremity is bent at right Angles, ſomewhat reſembling a Hook; this branch of Iron hangs from a Joint on one of the Handles. On the other Handle, there is a range of Orifices, contiguous to each other, for the Reception of the Hook. When the Stone is firmly graſped, the Operator lets the Hook into that Orifice which happens to anſwer to the wideneſs of the Forceps; by which Artifice the Stone cannot be more compreſſed; becauſe the branch of Iron reſiſts the farther ſhutting of the Forceps, and conſequently the Compreſſion of the Stone.

THE proper kind of Knife to cut with in this Operation has been the Object of much Attention; and it is amazing what a Variety of them has been invented, and ſtill continues to be employed by foreign Surgeons: Yet the requiſites of a proper Knife ſeem to be very evident. The Blade ought to be convex towards the Extremity, otherwiſe the Operator will cut with the Point only, inſtead of a large Portion of the Edge. The Handle ought to be neither large nor heavy, that the Reſiſtance to the Knife may be more eaſily felt; and laſtly, the Back of the Blade ought not to be very thin, that it may have a due Weight and a ſtrong Edge; beſides, that the Back being blunt is a Security againſt wounding the *Rectum*, when we cut the Neck of the Bladder from below upwards. For theſe Reaſons all ſtraight-edged Knives, and all Knives with two Edges ſeem improper; though theſe laſt are chiefly uſed abroad: However, it muſt be confeſſed that this kind of Knife ſeems beſt calculated for their manner of Cutting; becauſe inſtead of making three or four different ſucceſſive Inciſions down to the Neck of the Bladder, as we practiſe in *England*, they firſt divide the Skin, and then continue to puſh the Knife forwards,

wards, without once withdrawing it till the Inciſion is finiſhed.

The Knife we employ in Cutting, is almoſt the only one we uſe on any Occaſion in Surgery; and I am inclined to believe that by habituating ourſelves always to the ſame Knife, we arrive to a much better command of it, than if we uſed ſeveral of a different make. It cannot be denied however, that a reaſonable Variety of Inſtruments is an eſſential Aid to Surgery; yet it may be obſerved that this Supplement to the Hand has been ſo much attended to by moſt Surgeons, that Dexterity itſelf has not been ſufficiently cultivated; and it is very remarkable, that in Proportion as the art of Operating has been improved, the number of Inſtruments has been generally retrenched. *Dionis* reflects on the Superfluity recommended by *Scultetus:* Some of the Moderns condemn *Dionis* for the ſame Exceſs; and perhaps the future Generation will diſcard many of thoſe now in vogue with the preſent Age; at leaſt I am apt to believe, that ſhould they attain to a farther Perfection in the art of Operating than we are now poſſeſſed of, it will poſſibly be as much owing to an acquired Dexterity, as to any mechanical Inventions.

CHAP.

CHAP. VI.

Miſcellaneous OBSERVATIONS *and* IMPROVEMENTS.

SECTION I.

On Tumors of the GALL-BLADDER, *&c.*

A Tumor of the Gall-Bladder having been ſometimes miſtaken for an Abſceſs of the Liver, M. *Petit* in a Memoir preſented to the Academy of Surgery, has attempted to point out the diſtinguiſhing Symptoms of the two Diſorders; and from thence has taken occaſion to make ſome farther Enquiries into the Diſeaſes of the Gall-Bladder.

AN Inflammation of the Liver (called alſo an *Hepatic Cholic*) may terminate in various manners; but it frequently ends either by Diſcuſſion, or by Suppuration. Whatever be the Iſſue of the Inflammation, the Complaints are nearly the ſame whilſt it ſubſiſts; that is, a Pain in the region of the Liver, with a hard and

and painful Tumor of the Part; no Tincture of Bile in the Excrements, and on the other hand, a prodigious Quantity of it in the Urine: During the Suppreſſion of Bile, the whole Skin of the Body becomes exceedingly yellow, and ſometimes ſo in leſs than twenty-four Hours.

When the Inflammation of the Liver goes off by Diſcuſſion, it frequently happens that the *Ductus Cyſticus* remains obſtructed for ſome time, after the Secretion of the Bile takes place; and reſiſting to its Progreſs into the *Duodenum*, the Bladder becomes neceſſarily diſtended, and forms that Tumour in the right *Hypochondrium*, which from the Fluctuation one might miſtake for an Abſceſs.

It has been found by Experience, that when the Gall-Bladder has been inadvertently opened, the Effuſion of Bile into the *Abdomen*, has generally deſtroyed the Patient in a few Hours or Days; unleſs where the Bladder has adhered to the *Peritonæum* and Abdominal Muſcles; in which Inſtance, the Inciſion may not only be ſafe but expedient: It is of great Importance therefore to determine, whether the Fluctuation felt in that Part at the Criſis of an *Hepatic Cholic*,

Cholic, be the Matter of an Abſceſs, or an Accumulation of Bile in the Gall-Bladder.

When there is a Suppuration, the Pain continues to increaſe during the formation of the Tumor, and is of a throbbing Nature: When there is only an accumulation of Bile in the Gall-Bladder, the Pain ſuddenly ceaſes, or at leaſt continues to diminiſh during the increaſe of the Tumor. Again, after a Suppuration of the Liver, the Patient is exceedingly low and uneaſy, notwithſtanding the Abatement of Pain; whereas he finds himſelf compoſed and chearful, when the Tumor is formed by a diſcharge of Bile into the Gall-Bladder. The Rigors likewiſe attending the one and the other are different: In a Suppuration, they laſt longer and are followed firſt with a Heat, and then with a Dampneſs on the Skin: On the other hand, in a Suppreſſion of Bile the Skin is dry. Another Difference is, that in an Abſceſs of the Liver the Fluctuation comes on gradually; in a Collection of Bile, it is ſudden: And laſtly, an Abſceſs of the Liver does not evidently terminate at a certain Part, but is loſt confuſedly in the Tumor, being alſo accompanied with an *Oedema* of the Integuments; whereas the Tumor of the Gall-Bladder is always circumſcribed,

cumſcribed, lying under the falſe Ribs beneath the *Rectus* Muſcle.

I HAVE hinted, that though the opening of the Gall-Bladder is exceedingly dangerous where it remains looſe, yet when it happens to adhere to the *Peritonæum*, the Operation may be adviſeable. The Gall-Bladder, like the Urinary-Bladder, by exceſſive Diſtenſion is ſometimes burſt; but if previous to the Rupture, it adheres to the neighbouring Parts with which it falls into Contact, as is uſual with inflamed Membranes, it will be proper to make an Inciſion in the upper Part, leſt it ſhould burſt inwardly, and evacuate the Bile into the *Abdomen*. There are ſeveral [4] Examples recorded where it has broke externally, and the Patients by this Accident have done well: Theſe Examples therefore ſhew the fitneſs of making ſuch an Opening, where an Adheſion is certain; but what recommends the Operation ſtill more, is the Poſſibility of extracting a Stone or Stones from the Gall-Bladder, which by their reſidence would continue to keep up the Inflammation and the conſequential Complaints.

THIS Operation [5] was firſt performed where it was not originally intended; the Surgeon

[4] *Memoires de l'Academie de Chirurgie*, 155. *Vol.* I.
[5] *Memoires de l'Academie de Chirurgie*, 178. *Vol.* I.

only propoſing to cure by Dilatation a ſmall *Fiſtula* of the Gall-Bladder; but in examining the Cavity with his Probe, he felt a Stone as big as a Pigeons Egg which he extracted, and the Patient recover'd. It is true, this Operation is not yet eſtabliſhed; but beſides the Caſe here recited, there are ſeveral Hiſtories of Patients, whoſe Gall-Bladders have burſt externally, and where Stones have worked out of themſelves; which ought to encourage a ſkilful Surgeon always to examine, if there are any Stones in the Gall-Bladder, whether the Opening into it be made by Nature or by Art.

The Symptoms of an Adheſion are, its immobility in every Poſture of the Body, and ſome degree of Inflammation or *Oedema* of the Tumor; though if theſe laſt Appearances are gone off, yet their having ſubſiſted for a time, is an Argument of the Adheſion. The beſt manner of opening the Gall-Bladder, is by tapping it with a grooved Trocar in its moſt prominent or thineſt Part; and when the Bile is diſcharged, the Operator muſt paſs a Probe through the Canula in order to ſearch for a Stone. If he finds one, the Orifice muſt be enlarged by cutting upon the Groove of the Canula; after which he introduces his Fore-finger into the Bladder,

to

to be assured of the exact Situation of the Stone; when he finishes the Operation with a Forceps as in the high way of Cutting. If there should be no Stone, he leaves the Canula in the Bladder till the Bile finds a Passage into the *Duodenum*, and the Case becomes nearly the same with the Puncture above the *Os Pubis* in Suppressions of Urine.

SECT. II.

On encysted and adherent Stones of the Bladder.

MOnsieur *Houstet* has laid before the Academy of Surgery a Collection of Cases to shew, that Stones of the Bladder are sometimes contained in Cysts formed by the Protrusion of a part of its Coats. This Phænomenon has of late Years been so much attended to, that every knowing Surgeon is apprised of it, either from his own Observation, [6] or his Reading; but still the Examples are not common. Formerly it was believed that Stones often adhered to the Bladder, and unskilful Operators generally skreened themselves under this Pretence, when they could not extract the Stone: In propor-

[6] *Transactions of the Royal Society, Vol.* 42. *No.* 462. Heister, 1016.

tion as Surgeons improved the operation of Cutting, and were ſeldomer baffled in the Extraction, the Notion of adherent Stones was leſs regarded, and at length the moſt eminent Operators wholly disbelieved the Fact; but the poſſibility of the Caſe is now ſufficiently evinced from the Diſſection of ſeveral Bladders, where Stones have been found in little Cyſts or Pouches; and there have been a few Inſtances, where the Bladder has contracted in that Portion of it near the Inſertions of the Ureters, ſo much as to form two diſtinct Cavities, with a ſmall Orifice of Communication between them: One of theſe I myſelf have met with where the Stone was contained in the farther Cavity.

It is remarkable that the Opening into the Cyſts is frequently very narrow, ſo that the Stone is much bigger than the Orifice of the Cyſt; in conſequence of which it is impoſſible to lay hold of them with the Forceps, and the Operation neceſſarily becomes fruitleſs. The Stones contained in Cyſts, are often as ſmooth as though they had rub'd againſt each other, and of the ſame Figure that Stones generally have, when there are ſeveral in the Bladder. In proportion as they increaſe in Bulk, they ſeem to diſtend the Cyſt; for ſmall Stones are not found in

in large Cyſts; from whence it may be inferred, that the Weight of the Stones is the firſt Cauſe of this preternatural Figure of the Bladder; beſides, if the Stones themſelves did not occaſion the Protruſion of the ſeveral parts of the Bladder, we ſhould have heard of Encyſted Bladders where there was no Stone.

SOMETIMES the Stones lying in theſe Cyſts adhere to the internal Membrane of the Bladder, and I have twice ſeen in a dead Body an Adheſion of Stone where there was no Cyſt; but theſe Adheſions are not very ſtrong, and therefore do not much obſtruct the Operation; ſo that it is poſſible we may extract Stones that ſlightly adhere, when we do not ſuſpect it.

I AM afraid we can derive no other Benefit from the Hiſtories of Encyſted Bladders, than a Solution of the Difficulty of extracting certain Stones: However, this Difficulty very ſeldom occurs; for though I have met with two ſuch Inſtances after Death, yet in the Multitudes I have ſeen cut for the Stone, this unlucky Accident never once preſented itſelf. But ſhould there be only one Cyſt, and that ſo near the Neck of the Bladder as to be reached with the Fore-finger, the Point of a Knife may be ſafely convey'd on the Finger in order to dilate the

Orifice of the Cyſt; and the Extraction of the Stone may in this manner be facilitated.

It has been thought when Stones do not preſs upon the Neck of the Bladder, but remain immoveable in any other part of it, that they do not give Pain; however, ſome of the Caſes here recited contradict this Opinion: Indeed they do not prove ſo troubleſome when they are encyſted, as when they are looſe; nor is the body of the Bladder ſo painful a Situation for a moveable Stone as the Neck; for Experience ſhews, that if we move a Stone from the Neck, either by a *Sound*, or by ſuſpending the Patient with his Head downwards, we ſometimes procure immediate Eaſe. I ſuppoſe this may be accounted for, from its touching the Bladder in more Points when it lies in the Neck, than when it is in its Body or Fundus, in conſequence of which it muſt irritate more; beſides that from every effort to Urine, the Pain muſt be greatly augmented by the forcible Contraction of the Bladder on the Surface of the Stone.

SECT.

SECT. III.

Of the EMPYEMA.

MOnſieur *Foubert*, in a Memoir preſented to the Academy of Surgery (Vol. I. Page 717.) has drawn up the Caſe of a Perſon, who after ſome pulmonary Complaints had a Tumor formed on the right ſide a little above the *Diaphragm*, between the Cartilages of the ſeventh, eight, and ninth Ribs, and the *Cartilago Enſiformis*. He ſays, that he would have opened the Tumor, had he not been overpower'd by the Opinions of other Surgeons, who recommended the waiting for ſome more evident Motive to the Inciſion: During this Attendance the Patient died, and upon Diſſection it appeared to be an *Empyema*; the Matter of which puſhing forwards, had occaſioned the Protuberance juſt deſcribed. The Inference made from this Diſſection, is the probability of giving help in ſuch Caſes from a diſcharge of the Matter.

IT appears from the tendency of this Memoir, that the Operation for the *Empyema*, how much ſoever it may have always been adviſed, has not yet been univerſally eſtabliſhed

by Practice. Either the Inſtances are few in which the Operation is expedient, or they have been almoſt entirely overlooked; ſince it is certain that few Men have performed it.

But it muſt be underſtood, that I do not ſpeak of that Species of *Empyema*, where the Lungs adhere to the *Pleura*, and produce the Impoſtumation externally between the Ribs; but of that, where the Abſceſs of the Lungs when it breaks, diſcharges its Contents into the Cavity of the *Thorax*. *Empyemas* of the firſt Kind are frequent, and every Surgeon has ſeen them; but the other Caſe is more rare, or at leaſt is generally thought to be ſo. Indeed Abſceſſes of the Lungs without an evident Adheſion are very common, as we ſee in Conſumptive People, who ſpit up every Day the Matter generated in the Abſceſs; but in this Inſtance, either the Abſceſs may not have emptied itſelf into the *Thorax*; or if it has, the Matter is abſorbed again through the Opening of the Abſceſs; and in both Examples, the Operation for the *Empyema* would avail little, as there is no Quantity of extravaſated Matter looſe in the *Thorax*.

This Diſpoſition of the Lungs to caſt off the Matter generated either on their Surface, or in

in their Subſtance, has inclined many Surgeons to condemn the Operation for the *Empyema* as altogether inſignificant; and I confeſs, that though I have always had a doubt as to my own Judgment in this Affair, yet having formerly with great Induſtry ſought in vain for Caſes where the Operation might have anſwered, I have alſo been led to ſuppoſe it needleſs.

However, I am now perſuaded there are ſome Abſceſſes, not only of the *Pleura* and *Mediaſtinum*, but of the Lungs themſelves, which empty their Matter into the *Thorax* on the *Diaphragm*, where accumulating, it at length proves fatal for want of a Diſcharge; or if ſome of it is carried off by the *Trachea*, the lodgement of the Remainder produces the ſame Event, though more ſlowly.

It is in ſuch Circumſtances as theſe that the Operation is adviſeable, and where, in all probability, the Evacuation would prove equally ſucceſsful with thoſe Diſcharges that are wrought by Nature, either through the *Trachea*, or between the Ribs externally, as in adherent *Empyemas:* And in theſe Caſes we ſee great Numbers, who live a long while under the Diſcharge, and ſome who perfectly recover. I have alſo lately met with an Inſtance in a Body

I diſſected, where the Operation could hardly have failed of Succeſs: It was a large collection of thin Matter in the left Cavity of the *Thorax*, without the leaſt degree of Ulceration or Inflammation either in the *Pleura*, *Mediaſtinum* or Lungs. I ſuppoſe there had been a previous Inflammation of theſe Membranes, or of the Inveſting Membrane of the Lungs, under which Circumſtance the Secretion of this Matter had been produced, as in Inflammations of the *Prepuce*, which alſo yield the ſame kind of Diſcharge exactly reſembling *Pus*, as I have before mentioned on another Occaſion.

MONSIEUR *Le Dran* in his [7] Obſervations, gives us the hiſtory of two Patients on whom he had propoſed to perform this Operation, but did not; and he found upon opening them after their Death, that in all Probability they might have been benefited by it; but theſe Arguments are of very little Force, in compariſon of the poſitive Aſſertion publiſhed by ſome [8] Surgeons, that they have often done this Operation, and with great Succeſs.

SINCE therefore ſome few Caſes may occur, where the Operation is adviſeable, it becomes

[7] *Obſervations*, 31, 32. [8] Marchetti, *page* 62. *Edit. Lond.* 1729. Freke, *page* 269.

a matter of Importance to decide, by what Symptoms we may be assured of its Propriety. It has been almost universally taught, that when a Fluid is extravasated in the *Thorax*, the Patient can only lie on the diseased side, the Weight of the incumbent Fluid on the *Mediastinum* becoming troublesome, if he places himself on the well side: For the same Reason, when both Cavities of the *Thorax* are filled with a Fluid, the Patient finds it most easy to lie on his Back, or to lean forwards, that the Fluid may neither press on the *Mediastinum*, nor on the *Diaphragm*: But however true this Doctrine may prove in most Instances, there [9] are a few, where notwithstanding the Extravasation, the Patient does not complain of more Inconvenience in one Posture than in another, nor even of any great difficulty of Breathing.

On this Account it is sometimes more difficult to determine when the Operation is requisite, than if we had so exact a Criterion as is generally supposed; but though this may be wanting, there are others which will generally guide us with a reasonable Certainty. The most infallible Symptom of a large Quantity of Fluid in one of the Cavities of the

[9] Le Dran's *Obs.* 217. *Vol.* I. Marchetti, 65.

Thorax,

Thorax, is a preternatural Expanſion of that ſide of the Cheſt where it lies; for in Proportion as the Fluid accumulates, it will neceſſarily elevate the Ribs on that ſide, and prevent them from contracting in Expiration, ſo much as the Ribs on the other ſide: Nay, we read that ſometimes the Preſſure of the Fluid on the Lungs is ſo great, as to make them [1] collapſe and almoſt totally obſtruct their Action. When therefore the *Thorax* becomes thus expanded after a previous pulmonary Diſorder, and the Caſe is attended with the Symptoms of a Suppuration, it is probably owing to a Collection of Matter: Though the Patient will alſo labour under a continual low Fever, and a particular Anxiety from the Load of Fluid.

Besides this Dilatation of the Cavity from an Accumulation of the Fluid, the Patient will be ſenſible of an Undulation; and ſometimes the Undulation is ſo evident, that a Stander-by may hear it quaſh very diſtinctly in certain Motions of the Body; as was the Caſe with a Patient of my own, upon whom I performed the Operation, but the Fluid in that Inſtance was very thin, being a ſerous Matter rather than a *Pus*.

[1] Le Dran's *Obſerv.* 211. *Vol.* I.

Again,

AGAIN, it will often happen, that though the Skin and intercoſtal Muſcles are not inflamed, they will become *Oedematous* in certain Parts of the *Thorax*, or if they are not *Oedematous* they will be a little thickned; which Symptoms, joined with the Enlargement of the *Thorax*, and the previous pleuretic or pulmonary Diſorders, ſhould ſeem to render the Operation unqueſtionably proper. But amongſt other Motives to recommend it upon ſuch an Emergency, this is one, that if the Operator ſhould miſtake the Caſe, an Inciſion of the intercoſtal Muſcles would neither be very painful nor dangerous.

I WOULD adviſe the Inciſion to be made between the ſixth and ſeventh Ribs, half way from the *Sternum* towards the *Spine*; which though not the moſt depending Part of the *Thorax* when we are erect, yet by lying down becomes ſufficiently ſo, to give Iſſue to the Fluid: But the Fact is, that by opening the *Thorax*, the Reſiſtance of the Fluid is taken off from the Lungs, ſo that they expand freely; and in their Expanſion propel the Fluid whereever it can find a Paſſage; and in that Inſtance where I performed the Operation, it ruſh'd out of the Wound I made in that Part, and flew to a great Diſtance from the Patient. If then

it

it be true, that the Action of the Lungs will force out the Matter through any Orifice of the *Thorax*, it will be much more expedient to do the Operation in the Place I have aſſigned, rather than in the moſt depending Part of the *Thorax*, (the Place of Election as it is called) becauſe in this Part it is often difficult to perform, and is ſometimes attended with troubleſome Conſequences: But what may be urged moſt in favour of an Inciſion in the middle of the *Thorax*, is the Practice of *Marchetti*, who always made the Opening [2] between the fifth and ſixth Ribs. I have here ſpoken of Abſceſſes from internal Cauſes, but the like Effect produced by Wounds or other external Injuries, will demand the ſame Treatment; and moſt of the Rules here laid down will be exactly applicable to thoſe Caſes.

2 *Page* 61, 65.

SECT.

SECT. IV.

On CONCUSSIONS *of the* BRAIN.

FROM the Diſſection [3] of Perſons dying of a Concuſſion of the Brain, it appears that in ſome, it is accompanied with an Extravaſation of Blood; in others, there is no Extravaſation. This Remark has given Occaſion to ſeveral Surgeons of the Academy to attempt the diſtinguiſhing the two Caſes, and Monſieur *Petit*, who firſt ſuggeſted the Diſtinction, has laid down the Symptoms, by which, he ſays, we may know whether the Concuſſion is attended with an Extravaſation or not; and conſequently whether it be proper to apply, or forbear the *Trepan*. It certainly would be a uſeful Diſcovery could the different Symptoms be aſcertained; but, I confeſs, I do not rightly apprehend the Difference, as it is deſcribed and illuſtrated by the annexed Caſes: Indeed we are promiſed that in M. *Petit*'s Treatiſe of Operations, which the World expects with ſo much Impatience, that this Point will be more fully handled.

[3] *Memoires de l'Academie de Chirurgie, Page* 198. *Vol.* I.

THE

The Doctrine laid down is this: That if a Drowſineſs and Loſs of Senſe come on the Moment of the Accident, the Caſe is a mere Concuſſion; when they ſucceed ſome time after, they are produced by an Extravaſation: But I think, we ſee every Day Examples of an Extravaſation on the Brain, where theſe Symptoms inſtantly ſucceed, and therefore the Obſervation is not concluſive: This the Academy ſeems to be appriſed of, by cautioning us to remember that the Concuſſion may be a firſt Cauſe of a loſs of Senſe, and an Extravaſation a ſecond Cauſe. But, in my Judgment, this Maxim leaves us quite in the dark, and does not reſcue us from the dangerous Tendency of the general Doctrine; for if we are to forbear the Application of the *Trepan*, where a Loſs of Senſe enſues immediately, upon the Preſumption that there is no Extravaſation, and yet in ſome of theſe Caſes there is an Extravaſation, the Conſequence muſt be often fatal.

In the courſe of theſe Conſiderations on the Diſorders of the Brain, there is a very good Rule of Practice propoſed by the Academy relating to Abſceſſes of the Brain [4] from external Accidents. They obſerve that hitherto the

[4] *Memoires de l'Academie de Chirurgie*, 319. *Vol.* I.

Moderns

Moderns have been as tender of making an Inciſion into the Subſtance of the Brain, in order to diſcharge any Matter which may poſſibly lie latent there, as the Ancients were of wounding the *Dura Mater* for the ſame end. The Academy therefore furniſhes us with ſeveral Hiſtories of Caſes to prove, that when the Symptoms of an Extravaſation, or an Abſceſs continue to ſubſiſt, though neither of them appear on the Surface of the Brain, we ought to puſh our Enquiry into the Subſtance of the Brain, by making a Puncture or Inciſion oppoſite to that Part of the *Cranium* which received the Injury.

They have likewiſe given us the Hiſtories of ſome Caſes, where Bullets [5] have been lodg'd in the Subſtance of the Brain for ſeveral Years, without any remarkable Inconvenience to the Patient. The chief View propoſed in theſe Accounts is to ſhew, that how dangerous ſoever a Compreſſion or Wound of the Brain is, in general, yet that ſuch Events are within the bounds of Poſſibility; and they alſo teach us, not to neglect the neceſſary Means of Cure, notwithſtanding the apparent deſperateneſs of the Accident.

[5] *Memoires de l'Academie de Chirurgie, Page* 314. *Vol. I.*

SECT. V.

On the FISTULA LACHRYMALIS.

AN ingenious Surgeon, Monſieur *De la Foreſt*, ſhew'd me, when I was at *Paris*, a new Way by which he declares he has cured ſeveral *Fiſtulæ Lachrymales*, without making an Inciſion into the *Saccus Lachrymalis*; and as he has lately [6] obliged the Public with an account of his Method, I ſhall here give a ſhort Extract of it from the Memoir itſelf. It is ſomewhat in Imitation of M. *Anell*'s Manner, who employ'd Balſamic Injections by the *Puncta Lachrymalia*, in order to deterge the Ulcers of the *Sac* and to open the Obſtruction of the *Ductus ad Naſum*; only that M. *De la Foreſt* paſſes a *Canula* from the Noſtril through the *Ductus ad Naſum* into the *Sac*, and throws his Injection upwards from the Noſtril through the *Puncta*.

HE does not always introduce the *Canula* when he flings up the Injection (which is uſually twice a Day) but after he has once paſſed it into the *Ductus ad Naſum*, he leaves it there for

[6] *Memoires* De l'Academie De Chirurgie, *Vol. II.*

nine

nine or ten Days, and then exchanges it for a clean one, continuing to do the ſame thing from Time to Time 'till the *Fiſtula* is cured by the Injections. The *Canula* is a Semicircle of about an Inch and a half Diameter, with a ſmall Portion of it at the Handle almoſt ſtraight, ſo that it nearly reſembles the Figure of a Sickle. The Diameter of the Orifice at its handle is one tenth of an Inch, and the *Canula* is made taper through all its length, ſo that its extremity is very minute. The Point of the *Canula* when introduced, reaches to the *Saccus*, and the Handle of it lies within the Noſtril.

In recent and ſlight Caſes, he uſes no *Canula*, but by a convenient Syringe throws up a Detergent Injection, which paſſing out at the *Puncta Lachrymalia* carries off the Matter in the *Duct* and *Sac*; and he ſays, by thus removing the Obſtruction, the Cure will be compleated in a few Weeks. Should the Obſtruction in the *Ductus ad Naſum* deny Admittance to the Pipe of the Syringe, or ſhould the *Canula* by reaſon of its Thinneſs be too weak to be forced up the *Duct*, in that Caſe he adviſes the Uſe of a ſolid Piece of Silver in the Shape of the *Canula*, to be introduced and left in the Paſſage a few Days, in order to

dilate it, after which, we are to employ Injections with or without a *Canula*, as we ſhall judge expedient.

In Caſes where the *Saccus* is ulcerated externally, he mentions the Uſe of a *Seton*, and ſays, he has ſometimes practiſed it with Succeſs, but he prefers the *Canula*, as it more readily admits of the Cure of the Wound of the Skin, which, he ſays is apt to become callous by a long Uſe of the *Seton*.

One would imagine it ſhould be very difficult to introduce a *Canula* by the Noſtril into the *Saccus Lachrymalis*; and indeed I found it ſo in my firſt Tryals upon a dead Body; but the Habit of doing it readily, may be acquired by Practice. However I have not yet experienced this manner of curing a *Fiſtula Lachrymalis*, and I believe it has not yet been attempted by any but the ingenious Author himſelf. It remains therefore to be decided by a ſufficient Number of Experiments, whether it be ſo practicable and ſo beneficial as one would hope, and as M. *De la Foreſt* aſſerts.

SECT.

SECT. VI.

On the POLYPUS.

MONSIEUR *Levret*, in a Treatiſe he has lately publiſhed on the Nature of *Polypuſes* both in the *Uterus* and the Noſe, has recommended a Manner of tying them, which he ſuppoſes more efficacious than any which has yet been publiſhed. The Extirpation of a *Polypus* by Ligature, has been frequently adviſed by others, and is even of as old a Date as the time of *Hippocrates*, who ſpeaks [7] of tying a *Polypus* of the Noſe; but the Difficulty of performing this Operation has either appeared ſo great, or has by Experience been found ſo great, that the uſual Method of removing it has been by Extraction with a Forceps.

THE Motive for preferring the Ligature to the Forceps, is the Probability of a *Hæmorrhage* after Extraction, which is deſcribed by all Writers, and particularly by M. *Levret*, as exceedingly dangerous, eſpecially in thoſe *Polypuſes* which hang down in the Throat.

7 *Liber de Affectibus.*

This is a very important Conſideration, ſuppoſing it to be true; but I cannot help remarking on this Occaſion, that what is eſteemed a common Accident, has never happen'd to be once the Conſequence where I have perform'd the Operation myſelf, or where I have ſeen others perform it; however I do not deny the Poſſibility, though I queſtion the Frequency of it.

IT is not eaſy to give an Idea of the Inſtruments M. *Levret* has deviſed for tying the *Polypus*, without a Drawing; and as he himſelf has annexed ſome Copper-plates to his Work, with a Deſcription of them, the Attempt is needleſs. But beſides the manner propoſed of extirpating *Polypuſes*, he has alſo enquired particularly into the Nature of them: He affirms that a *Polypus*, conſiſting of ſeveral diſtinct Portions, has only one Pedicule or Attachment; and that ſometimes there are a great Number of ſingle independent *Polypuſes*, which are commonly ſuppoſed to be but one. He aſſerts, that the Extirpation of a part of a *Polypus* by Ligature, will frequently cauſe the whole *Polypus* to periſh; and when it adheres to the *Membrana Pituitaria*, ſo as to prevent the paſſing a Ligature round it, he declares that by

by ſeparating it from the Membrane with a particular kind of Knife, which he has contrived for that Purpoſe, he can eaſily tie it. He approves alſo of M. *Manne*'s Invention of cutting the *Velum Palati*, in order to expoſe a *Polypus* that hangs down a little way in the Throat, but which cannot well be managed either in the Method of extracting or tying, when it lies concealed behind the *Velum Palati*.

THESE are the moſt material Points of M. *Levret*'s Book in regard to the *Polypus* of the Noſe, and, I believe, whoever will examine what he has advanced on this Subject, will find him to be a very ingenious Surgeon, and an excellent Mechanick.

SECT. VII.

On the Extirpation of SCIRRHOUS TONSILS.

THE Extirpation of *Scirrhous Tonſils* by Ligature, ſeems to be a Practice, as yet almoſt entirely confined to *England*, though for no other reaſon, as I imagine, but becauſe it generally requires ſome time for the Propagation of an Improvement. It is acknowleged on all hands, that the Application of Eſcharotics is a tedious, painful, and ſometimes an ineffectual Method of Cure: It is likewiſe granted, that the *Hæmorrhage* which follows upon the Exciſion of *Scirrhous Tonſils*, is greatly to be feared; but ſtill the tying them is neglected.

BY what I can learn, the other two Methods, for the Reaſons I have aſſigned, are ſeldom practiſed; and therefore thoſe People who are unfortunately afflicted with this Malady, have no other Reſource than in Palliatives, which rarely produce much Benefit. It is true, the Diſorder is not very common, but when an eaſy and a certain Remedy is once diſcovered for any Diſeaſe, however uncommon we may eſteem

eſteem it, it is amazing how frequent the Examples are found; and, I believe, that was the Operation familiar to every Surgeon, there would be few that would not meet with ſome Occaſion to perform it.

BESIDES, there is not an Operation in Surgery that, in my Opinion, ought to give an Operator ſo much Encouragement: It is neither dreadful in the Doing, nor melancholy in the Event. All other *ſcirrhous* Tumours, whether of a *ſcrophulous* or *cancerous* Nature, are ſubject to a Relapſe; the Poiſon either remaining in the Neighbourhood of the extirpated Gland, or at leaſt falling on ſome other Gland of the Body: In this Caſe, I have never met with one ſuch Inſtance, but the Patient has always been reſtored to a perfect and laſting Health.

THE continual good Succeſs attending this Operation, is an Anſwer to a common Objection that has formerly been made to it; and which perhaps may ſtill be an Objection with ſome Foreigners; that it muſt be dangerous to deſtroy a Part, by which Nature has been accuſtomed to fling off any Diſorder of the Conſtitution, leſt for want of a Diſcharge, the Humour continuing to float in the Blood ſhould produce a Fever, or ſome other ill Habit of Body.

Body. It was thought that the frequent accidental Inflammations of *Scirrhous Tonſils*, are not to be conſidered as local Diſorders, but, like the Gout, a Diſtemper in the Conſtitution, which muſt be received on ſome one Part for the good of the whole: However, the abſolute Exemption from future inflammatory Diſorders, in conſequence of the Operation, ſeems to demonſtrate, that the Weakneſs of the Part is the chief Cauſe of theſe Complaints.

CHAP.

CHAP. VII.

Of the CATARACT.

WITHIN theſe few Years a new Method of treating the *Cataract*, has been attempted by Monſieur *Daviel* at *Paris*, which having been attended with conſiderable Succeſs; has very much engaged the Attention of the Public, and Experiments are now daily making, that probably will ſoon aſcertain what are the Benefits and Diſadvantages of this Invention. It conſiſts in taking away the *Cataract* through an Inciſion made into the *Cornea*; for which purpoſe, M. *Daviel* employs a great Number of Inſtruments ſuited to the ſeveral Proceſſes of his Operation; but as his method ſeems capable of great Improvement by being rendered more ſimple, I have abridged it, and practiſed it myſelf upon ſeveral People in the following Manner.

HAVING choſe as dark a Room as you can well ſee to do the Operation in, that the Pupil may by that means dilate, and make a freer Opening for the Paſſage of the *Cataract*; Place the Patient before you in the ſame way

as

as for Couching, either opening the Eye-lids with your Finger and Thumb, or letting an Aſſiſtant raiſe the Upper Eye-lid whilſt you yourſelf keep down the Under Eye-lid; and which ever holds the Upper Eye-lid, muſt obſerve not to preſs againſt the Globe of the Eye, but the Edge of the *Orbit*. Then with a ſmall Knife a little larger than an Iris Knife, holding the Edge downwards, make a Puncture through the *Cornea* near the Circumference, into the *anterior Chamber* of the Eye, in ſuch a Direction as to carry it horizontally, and oppoſite to the tranſverſe Diameter of the Pupil: after which, you are to paſs it towards the Noſe, through the *Cornea*, from within outwards, as near to its Circumference as in the firſt Puncture.

When you have made the ſecond Puncture, puſh the Extremity of the Blade one ſeventh of an Inch beyond the Surface of the *Cornea*, and immediately cut the *Cornea* downwards, drawing the Knife a little to your Right Hand, as you make the Inciſion: This Wound will be almoſt ſemilunar, and nearly parallel to the inferior half of the Circumference of the Pupil, ſo that the future Cicatrix will obſtruct the Light but very little. M. *Daviel* recommends an Inciſion of nearly two thirds of the

the Circumference of the *Cornea*, but I believe what I mention will be found more commodious, as ſo large a Wound as he directs, is apt to give Iſſue to the Vitreous Humour.

I HAVE here deſcribed the Operation as it is is practiſed on the left Eye, but when you are to perform it on the right Eye, I would adviſe you to ſeat the Patient on the Ground, letting his Head fall back on your Knees, or againſt your Breaſt, which will give you the advantage of uſing your right Hand; whereas if you place him before you, it will be neceſſary to Operate with your left.

IT ſometimes happens that the Inſtant the Inciſion is made through the *Cornea*, the aqueous Humour, the Chryſtalline, and ſome of the vitreous Humour fly out ſuddenly, when neither the Operator nor Aſſiſtant ſeem to preſs the Eye; ſo that one would ſuggeſt it might be owing to a Convulſive Contraction of the Muſcles ſurrounding the Globe of the Eye during the Operation.

WHEN this is the Caſe, the Surgeon muſt inſtantly ſhut the Eye-lid to prevent the total Evacuation of the vitreous Humour, and at the ſame time both he and the Aſſiſtant ceaſe to preſs upon the Eye-lids: But if the Chryſtalline does not immediately ruſh out of the Eye, the

the Operator muſt preſs gently with one or two Fingers againſt the inferior Part of the Globe, till the Chryſtalline advance through the Pupil into the anterior Chamber, from whence it will generally fall through the Wound of the *Cornea* upon the Cheek. However, ſhou'd it not readily fall out of the Eye, but remain lodged in the anterior Chamber, I wou'd adviſe the Operator not to preſs the Eye in order to expel it, but immediately to ſtick the Point of the Knife into the Body of it, and extract it contained in its Capſula.

THIS Proceſs, I preſume, will be found of conſiderable Advantage, as it will in a great Meaſure, remove the Danger of evacuating the whole, or too much of the vitreous Humour, which is apt to follow the *Cataract*, when the Eye is forcibly preſſed; though it may be obſerved, that contrary to Expectation, a large Quantity of this Humour (perhaps a third Part or more) has been ſometimes diſcharged, without any bad Conſequence.

I HAVE ſuppoſed, that the great Benefit ariſing from this Method, is the ſafe and eaſy ſeparation of the Chryſtalline from the Bed of the vitreous Humour, ſo that the vitreous Humour ſhall be leſs expoſed to be evacuated; but

but perhaps it will alſo be approved of, as it will always render unneceſſary the Meaſure preſcribed by M. *Daviel*, of wounding the *Membrane* of the *Chryſtalline* before we proceed to the Extraction of the *Chryſtalline* itſelf; to which purpoſe he adviſes the Flap of the *Cornea* to be ſuſpended with a ſmall *Spatula*, then, with a pointed cutting Needle, to wound the *Membrane* on the Surface of the *Chryſtalline*, after which, to introduce the ſame *Spatula* through the Pupil, in order to detach the Cataract from its Adherences, and then proceed to the Expulſion.

I have here recited theſe proceſſes of M. *Daviel*'s Operation, which he propoſes merely to procure an eaſy ſeparation of the *Chryſtaline* from the vitreous Humour; but they are difficult to the Operator, fatiguing to the Patient, and I ſhould hope, altogether needleſs, if the Knife be uſed in the manner I have recommended; for whether by the Capſula of the *Chryſtalline*, he means nothing more than the Duplicature of the *Membrane* of the vitreous Humour, or whether he means the proper Coat which is alſo covered by the *Membrane* of the vitreous Humour, in either Caſe, ſince the *Chryſtalline* advances with ſo much readi-

neſs

neſs thro' the Pupil, it will be eaſily ſeized by the Knife and removed from the vitreous Humour, with its inveloping *Membrane*; whereas, in making an Inciſion on the Surface of the *Chryſtalline*, and wounding its Capſula, the *Chryſtalline* will frequently ſlip out of the Capſula, which will be left behind; and in fact, this has happened to M. *Daviel*, who adviſes Pincers and other Inſtruments, in order to extract the remaining *Membrane*. However I ſhall here obſerve in regard to the Capſula of the *Chryſtalline* Humour, that, ſhould the Humour ſlip out of it before it be ſeized by the Knife, it probably will waſte; for, in milky Cataracts, when the *Fluid* is diſcharged, the *Membrane* in length of time waſtes: And in one of my Patients, the *Chryſtalline*, from the mere preſſure in the Operation, burſt out of it Capſula in both Eyes, but in ſome Weeks it entirely waſted; and in another, though it remained three Months, yet in three Months more, it was entirely waſted; however, if the removing the Capſula ſhould, by future Experience, be found neceſſary, it may be conveniently done by the Curette (a ſmall Scoop) one of the Inſtruments M. *Daviel* recommends upon that Occaſion: This Inſtrument

may

may be alſo uſed for the Extraction of that ſpecies of *Cataract* which is ſoft or in pieces, and for the removal of the Capſula of a Bag-*Cataract*, when the Fluid only has been diſcharged, and the Bag remains behind; but it will be moſt eminently uſeful in detaching the *Chryſtalline* from the back part of the *Iris*, when any Portion of it happens to adhere, which Circumſtance wou'd render the Operation fruitleſs, without ſuch a Precaution.

Now I am ſpeaking of the Caſe where the *Capſula* is left behind, I ſhall obſerve, that probably one cannot always certainly judge at the time of the Operation, whether it be taken away, or whether it remain; for I ſuppoſe that the *Membrane* at the time of the Operation may be tranſparent, and afterwards become thick and opake; and if this conjecture be well grounded, the Operator will not be able to diſcern it, though it ſhould remain: but, to ſay the truth, the Danger of forcing out the vitreous Humour, has deterred me from an accurate Examination of the Eye, after the Expulſion of the *Cataract*: However it is a matter of no Conſequence, whether the remaining *Capſula* be diſcernable or not, if it be diſpoſed to waſte afterwards, as my experience

hitherto has proved it, ſince it will be more eligible on that ſuppoſition to leave the event to time, than to endeavour the Removal by a fatiguing Operation.

I HAVE mentioned the Curette as a proper Inſtrument to take away the Fragments of a *Cataract* when it is in pieces; but there is in Nature a *Cataract* ſo ſoft, as not to admit of Extraction by this Method: I preſume the Caſe is rare, yet as I have once performed the Operation on the Eyes of a Woman, where this circumſtance occured, I ſhall for its Singularity recite the Hiſtory. She was altogether as blind as thoſe whoſe *Cataracts* are ripe, but hers had the Appearance of a beginning *Cataract*, being of a light Blue and but little opake. Upon making the Compreſſion, the *Chryſtalline* did not advance through the Pupil, as in other Inſtances: and I found that, if I exerted more force, I ſhould ſoon evacuate all the vitreous Humour. It was evident, by the great Diſtance of the *Cataract* behind the Iris, that this Diſappointment did not ariſe from an adheſion to the Iris: however I had immediate recourſe to the Experiment of cutting through the *Capſula* with the Point of my Knife, hoping, by that means, to have ſet free the *Cryſtalline*; but

but it gave me no Aſſiſtance: I then paſſed the Curette through the Pupil, and turned it ſeveral times round, in expectation of breaking the *Capſula*, but found not the leaſt Reſiſtance to my Inſtrument, ſo that both Operations proved ineffectual.

I HAVE, in couching, met with *Cataracts* of this nature, but I had no apprehenſion that I could not by this Method have diſcharged the Matter of a *Cataract*, in however fluid a State it might prove.

THERE is one Circumſtance in this Operation, of ſo delicate a Nature, as almoſt to become an Objection to the Operation itſelf; I mean the Neceſſity of making the Inciſion of the *Cornea* of a particular Length; for if it be too large, all the Humours are ſubject to be voided; if too ſmall, the aqueous and vitreous will ruſh out upon preſſure, and the *Chryſtalline* will remain behind; this accident is owing to the fluidity of thoſe two Humours, which admits of their paſſing through an Orifice that is not large enough for the Paſſage of the *Cataract*. It is therefore a Precaution of the higheſt Importance, not to exert much force in preſſing the Eye, after you have diſcovered that the Inciſion of the *Cornea* is too

ſmall; but in that caſe, to enlarge the Wound ſufficiently with a convenient pair of Sciſſars, and then proceed to the Expulſion of the *Cataract*.

COULD we ſafely make uſe of a *Speculum Oculi*, perhaps this Difficulty of making a proper Inciſion of the *Cornea*, might be diminiſhed; and I am inclined to think, that with due attention, it might be employed: but then it muſt be contrived ſo, as that it ſhall not compreſs the Globe of the Eye; or, if it does, the Operator muſt be careful to remove it in the Inſtant the Inciſion is making, leſt by continuing the Preſſure after the Wound is made, all the Humours ſhould ſuddenly guſh out.

A MAN that practiſes this Operation on a dead Body, will wonder at the difficulty I have ſuppoſed in making this Inciſion; but when an Eye is in a convulſive Motion, and the Eye-lids are almoſt ſhut, as it often happens in the Operation, the Caſe is very different. The moſt material Inſtruction I can give on this head, is to make the firſt Puncture through the *Cornea* with quickneſs; becauſe when your Knife is once through the *Cornea*, it gives you ſome command of the Motion of the Eye; but if you attempt to penetrate

penetrate the *Cornea* gently and gradually, the Eye, upon the firſt Senſation of the Puncture, will ſuddenly retire from the Knife, and the Operator will be apt either to carry it betwixt the *Laminæ* of the *Cornea*, or through the *Cornea* upon the Iris, either of which Accidents wou'd incommode, if not defeat the Operator.

IT has not happened in any of the Caſes I have treated, that, either during the Operation, or after the Operation, the Iris has been puſhed forwards, or inſinuated itſelf through the Wound of the *Cornea*, forming a *Staphymola*; but M. *Daviel* ſpeaks of it as an Occurrence he has met with, and ſays it may eaſily be replaced by the ſame Spatula.

IT ſeldom or never happens that the Patient eſcapes an Inflammation in this method of removing the *Cataract*; whereas after Couching, it is no uncommon Caſe: in moſt of the Inſtances which have fallen under my Care, it has been very conſiderable, and of long Duration, few recovering in leſs than ſix Weeks. It frequently enlarges the Globe of the Eye, and the Eye-lids, and even veſicates the *Tunica Conjunctiva*; but for the moſt part without any bad Conſequence,

only that they are very tender to the Touch, and muſt be handled gently. I expected this *Opthalmy* would have always excited the ſame ſort of Pain in the Head, as that which accompanies any Inflammation after Couching; but having in a ſucceſſion of Inſtances found my Patients exempt from any conſiderable Pains in the Head, I was led into an opinion that Wounds of the *Cornea* had not a Tendency to produce this effect, like a Puncture in Couching, where all the Coats of the Eye, *viz.* the *Conjunctiva*, the *Sclerotica*, the *Choroides*, and the *Tunica Retina* ſuffer; but I have, ſince that time, ſeen examples which prove that the Head is liable to be affected by the Operation, tho' perhaps not ſo frequently.

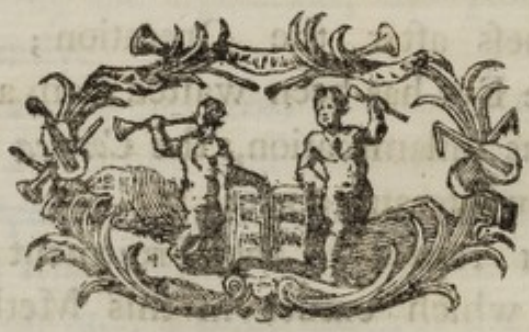
THERE is one great Evil to be apprehended from a Violent and tedious *Opthalmy* after this Operation, and that is, an Inflammation of the Iris, which I have ſeen in two Patients bring on ſuch a Contraction of the Pupil, as in time to cloſe it, and leave no Paſſage for the Admiſſion of Light. Some alteration in the Shape of the Pupil after this Operation, is exceedingly common; but the mere loſs of its circular Form is no impediment to the Sight.

Sight. This change of Figure in the Pupil is ſuppoſed to be owing, either to its ſudden dilatation from the rapid Motion of the *Cataract*, when expelled, or to ſome Violence done to it by the Knife during the Operation; but it is not improbable that the Inflammation of the Iris may alſo ſometimes produce this effect.

DURING the firſt Weeks of the *Opthalmy*, the Eye is generally ſo very tender, that it cannot bear the leaſt degree of Light, and it is often a Month or more, before the Dreſſing can be ſafely removed. One would expect an *Albugo* of the *Cornea* ſhould be a frequent conſequence of the Inflammation, but it very rarely happens, and I do not recollect to have ſeen one inſtance in which it was the ſole cauſe of Blindneſs after the Operation; though where the Eye has been waſted from a violent and tedious Inflammation, the *Cornea* has alſo remained white and opake.

WITH regard to the Treatment of the *Opthalmy* which enſues in this Method, I have nothing to propoſe in particular, the general Rules laid down for managing the Inflamation after Couching, being the moſt proper in this Caſe alſo.

I HAVE here, to the beſt of my Judgment, communicated all I have yet learnt on the Subject of this Operation, which I confeſs is attended with ſome Difficulties, and ſome bad conſequences; but ſtill the ſucceſs I have had in performing it, has greatly ſurpaſſed that which follows upon Couching, and I ſhould therefore hope, that when the practice of it ſhall become more familiar, it will prove a uſeful and happy Invention.



CHAP.

CHAP. VIII.

Of AMPUTATIONS.

THE Extremities are ſubject to many Diſorders which require Amputation; but a ſpreading Gangrene has been always eſteemed one of the moſt preſſing Motives, and indeed amongſt the Ancients, to all Appearance, the only one. It has therefore been cuſtomary with Writers to conſider the Nature of a Gangrene, previous to the Deſcription of the Operation; and as a right Notion of the Nature of a Gangrene is highly neceſſary for regulating our Conduct in regard to the Operation, I ſhall examine into ſome of the preſent Opinions on this Article.

THE old Surgeons treated Mortifications by different Methods, as they took their Riſe from different Cauſes, and were complicated with different Habits of Body. The Moderns ſeem to have abridged theſe Diſtinctions, conſidering a Mortification to ariſe either from an external or internal Cauſe, or ſometimes from

from Cold, which is look'd upon as a diſtinct kind of external Cauſe. In all the Kinds, it is an abſolute Stagnation of the Juices, and conſequently a privation of vital Heat: The Intention therefore in the Treatment will be nearly the ſame, from whatever Cauſe the Gangrene be deduced; for the reſtoration of Warmth, and a brisk Circulation, muſt be the end propoſed: Accordingly, we ſee in Gangrenes of every kind, ſpirituous Remedies apply'd externally, and Cordials internally, are the uſual means employ'd to ſtop their Progreſs. Moſt Gangrenes are exceeding putrid, yielding a ſtinking *Ichor*; but ſometimes it happens that they are dry and inoffenſive to the Smell: This kind of Gangrene is ſaid to be often the Conſequence of Gun-ſhot Wounds, but, I believe, it more frequently occurs in old Age: I have ſeen it where it has come on very ſlowly, and at the end of three Months from the firſt Attack, occaſioned no great degree of Indiſpoſition, though it had crept halfway up the Leg. However, ſome time after, the Patient languiſhed and died.

[8] SOME of the Moderns lay down different Rules for the Management of dry and moiſt Gangrenes; they ſpeak of the Abſurdity of uſing

[8] Guiſard, 442.

uſing ſpirituous Applications to a dry Gangrene, and recommend Emollients only: But, I do not apprehend, we are much benefited by this Diſtinction; for though Digeſtives ſoftened with Oil of Turpentine, may be more proper than Spirits for ſeparating the Sloughs of a Mortification, yet this ſuppoſes the Gangrene already formed, and is therefore a meaſure rather calculated for the Treatment of a Mortification, than for the Prevention of it. It may be obſerved, that I uſe the Words Gangrene and Mortification ſynonymouſly; but in all Books, a Gangrene is defined to be the Beginning of the Diſorder; a Mortification *(Sphacelus)* the laſt Stage of it; it is a Diviſion however of little uſe, and not ſtrictly adhered to by thoſe who mention it; I have therefore upon all Occaſions dropt it, and uſed them in the Senſe they are generally accepted in ordinary Converſation.

A GANGRENE ariſing from Cold, is ſaid to require a different Treatment from any of the others. Writers aſſert, that the ſudden Application of hot ſpirituous Remedies, brings on an immediate Putrefaction of all the Parts that are in the leaſt diſpoſed to mortify; on which account, they order the affected Limb to be rubbed firſt with Snow (which is ſomething warmer

warmer than the Air itſelf at thoſe Times) that the Tranſition from extreme Cold to extreme Heat may not be too quick. In ſupport of their Reaſoning it may be remarked, that frozen Plants rot inſtantly, if they are put into boiling Water; whereas, if they are firſt put into cold Water, and thaw'd gradually, they are not injured; but whether there be ſo exact a Conformity in the Parts of an Animal, and the Parts of a Vegetable under this Circumſtance, as to make the ſame ſort of Proceſs neceſſary in the Management of a frozen Limb, I will not take upon me to determine. Perhaps there may be ſome Prejudice in the Caſe: However, we cannot be much miſled by it, as we do not meet with many Inſtances of this nature in our Climate; and where we do, the Patient uſually, by his removal into a Houſe or Hoſpital, undergoes the firſt Change before the Surgeon viſits him; ſo that the common Method of Treatment becomes ſafe upon their own Principles, in that State of the Gangrene. However, in Armies during a Winter-Campaign, this Species of Mortification occurs very often; it therefore is of Importance to military Surgeons that this Point be adjuſted.

BESIDES the vinous Stupes which are now ſo univerſally approv'd of, Sea-water, Urine,

a Solution of *Sal Ammoniac*, *Lixiviums*, and ſeveral other Fomentations have had their vogue. Heat alſo applied in various Shapes, ſuch as hot Bricks, hot Loaves, *&c.* have had their Advocates. Cataplaſms too, of various kinds, have been invented; but at preſent it ſeems to be acknowledg'd by all Practitioners, that the common Fomentations, with a certain portion of Spirit of Wine, is at leaſt of equal Virtue with any of the others; and the *Theriaca Londinenſis* as powerful a Cataplaſm as any now in uſe.

These Remedies are to be employ'd when we begin to ſuſpect an approching Gangrene; tho' they are alſo neceſſary when it has manifeſted itſelf. But if the Gangrene has affected the Limb to any Depth, they become too ſuperficial, and therefore Surgeons have in general agreed that, under this Circumſtance, frequent Scarifications ſhould be made into the mortified Part, in order to make room for the Applications, and at the ſame time to give iſſue to the Sanies lodged within the Eſchar; beſides, it is imagined that by Scarification, the ſubjacent live Parts will become leſs ſtrangulated, and being more at Liberty, will conſequently be leſs liable to mortify.

To anſwer theſe purpoſes more effectually, we are taught to carry our Inciſion to the quick; beſides, we are told, that the cutting to the quick is the only way to make the Blood and Spirits return again towards the Place which they had [9] abandoned; but how it produces that Effect is not ſo clearly explained. For my own part, I confeſs I have my Doubts in relation to the great Advantages ſaid to be deriv'd from ſcarifying to the quick: I am jealous, that the Inciſions often rather exaſperate than alleviate, and [1] *Wiſeman*, though a Friend to this meaſure, declares, that he has ſometimes ſeen the Tendons wounded by following this Rule too cloſely; and where that Accident happens, he ſays, the Gangrene will be increaſed. I ſhould therefore imagine that Scarifications carried nearly through the *Membrana Adipoſa* will be deep enough for the Purpoſes mentioned, at leaſt in the tendinous Parts; as in the Foot, where there are ſo many Tendons; and in the outſide of the Leg, where it is covered with a ſtrong *Aponeuroſis*. Perhaps it may be objected, that by forbearing to wound the Membrane of the Muſcles, we leave them under Confinement from the *Stricture* of the Membrane; but, I believe, the very

9 Guiſard, 439. [1] *Vol.* 2. 215. Notion

Notion of a Strangulation of the Muſcles, under this Circumſtance, is borrowed from a falſe Idea of the Structure of their Membrane; for it was formerly ſuppoſed, that each Muſcle was contain'd within its proper Membrane, as in a Sheath; whereas now we know, that every Fibre of the Muſcle is enveloped with that Membrane; but, from this miſtaken Opinion, very poſſibly might ariſe the Doctrine of ſcarifying the Membrane of the Muſcles, in order to ſet them free.

When Scarifications and the other Remedies fail, it has been a Practice in all ages, from the time of *Hippocrates* down to the beginning of this Century, to cauterize the Eſchar: The memorable [a] Aphoriſm he left behind him relating to the Efficacy of Fire, brought the Cautery into uſe upon almoſt every Occaſion. In Mortifications they believ'd, that the putrifying Principle or Venom was extracted, with the Juices that were dry'd up, by the hot Iron: They thought likewiſe, that the ſeparation of the Sloughs was exceedingly aſſiſted by this Proceſs; and, what was more important, they imagined, that the Life of the Part was

[a] *Illi affectus qui Medicamentis non ſanantur, ferro ſanantur: qui ferro non ſanantur, igne ſanantur; qui igne non curantur, hos exiſtimare oportet inſanabiles.*

quickened

quickened by drawing the Spirits to it, and freeing it of all Humidities.

I HAVE here uſed the very Language of all Writers upon this Subject, and we have hardly in Surgery a more extraordinary Inſtance of humane Fallibility than this; for after an uninterrupted Practice of above Two thouſand Years, this celebrated Remedy, whoſe Virtues were ſuppoſed to be evident both from Reaſon and Experience, is at length fallen into diſrepute, and never employ'd for ſtopping a Gangrene. It has alſo met with the ſame Fate in regard to many other Diſtempers, for which it was formerly eſteem'd a kind of Specifick; but it loſt its Ground very gradually: When it was expell'd from among the Remedies for a Gangrene, it was ſtill reſerv'd for cancerous Tumors and Excreſcencies, from a Perſuaſion that it would kill any lurking Venom near the extirpated Cancers. And now, that it is no longer uſed for this Diſorder, it continues to be practiſed upon carious Bones in order to promote Exfoliation; but, I think, upon no better Grounds than in the other Caſes; ſo that, in all Probability, it will, by and by, be univerſally diſcarded even for the Exfoliation of Bones: In *England* it is already done; but for the final removal

removal of these Prejudices, we must allow more time.

The other Method of destroying Mortifications, either by the potential Cautery, or the Knife, are so deservedly exploded, that I shall not enquire into their Merits: But there has lately started up in *Great Britain* a new Practice of treating this Complaint, which at present makes some noise in the other Parts of *Europe*, and is therefore worth our Attention. Every body will immediately conclude, that I mean the *Cortex Peruvianus*, which within these few Years has been so exalted for its Virtues in stopping a Gangrene, that the Cautery itself was not more esteem'd amongst the Ancients, than is this Medicine by some of the Moderns. I know it will be look'd upon by many, as a kind of Scepticism, to doubt the Efficacy of a Remedy, so well attested by such an infinity of Cases, and yet I shall frankly own, I have never clearly, to my Satisfaction, met with any evident Proofs of its Preference to the Cordial Medicines usually prescribed; though I have a long time made Experiment of it with a view to search into the Truth.

Perhaps it may seem strange, thus to dispute a Doctrine established on what is called

Matter of Fact; but I ſhall here obſerve, that in the Practice of Phyſick and Surgery, it is often exceedingly difficult to aſcertain a Fact. Prejudice, or want of Abilities, ſometimes miſleads us in our Judgment, where there is evidently a right and a wrong; but, in certain Caſes, to diſtinguiſh how far the Remedy, and how far Nature operate, is probably above our Diſcernment: In Gangrenes particularly, there is frequently ſuch a Complication of unknown Circumſtances, as cannot but tend to deceive an unwary Obſerver. Mortifications ariſing from mere Cold, Compreſſion, or *Stricture*, generally ceaſe upon removing the Cauſe, and are therefore ſeldom proper Caſes for proving the power of Bark: However, there are two kinds of Gangrene, where Internals have a fairer trial; thoſe are, a ſpreading Gangrene from an internal Cauſe, and a ſpreading Gangrene from violent external Accidents, ſuch as Gun-ſhot Wounds, compound Fractures, *&c.* Yet even here we cannot judge of their Effect with abſolute Certainty; for ſometimes a Mortification from internal Cauſes is a kind of critical Diſorder: There ſeems to be a certain portion of the Body deſtin'd to periſh, and no more; of this we have an infinity of Examples

brought

brought into our Hoſpitals, where the Gangrene ſtops at a particular Point, without the leaſt aſſiſtance from Art; the ſame thing happens in the other Species of Gangrene from violent Accidents, where the Injury appears to be communicated to a certain Diſtance and no farther; though, by the way, I ſhall remark in this place, contrary to the receiv'd Opinion, that Gangrenes from theſe Accidents, (where there has been no previous ſtraitneſs of Bandage,) are as often fatal, as thoſe from internal Cauſes.

As I have here ſtated the Fact, we ſee how difficult it is to aſcertain the real Efficacy of this Medicine: But had Bark, in any degree, thoſe wonderful Effects in Gangrenes, which it has in periodical Complaints, its pre-eminence would no more be doubted in the one Caſe than in the other. What, in my Judgment, ſeems to have raiſed its Character ſo high, are the great numbers of ſingle Obſervations publiſh'd on this Subject, the Authors of which not having frequent Opportunities of ſeeing the iſſue of this Diſorder, under the uſe of Cordials, *&c.* and ſome of them, perhaps, prejudiced with the common Suppoſition, that every Gangrene is of itſelf mortal, have therefore aſcrib'd a marvel-

lous Influence to the Bark, when the Event has prov'd ſucceſsful.

HAVING thus far examined ſome of the moſt eſſential Points relating to the treatment of a Gangrene, it remains to be conſidered what is the moſt expedient time for Amputating, when all endeavours to ſtop the Progreſs of a Gangrene have proved ineffectual. And here Mankind have been unanimous; they have ſtrictly applied to Mortifications, the famous Maxim *Enſe recidendum*, &c. and the immediate Proſpect of inevitable Death without this Remedy, has always prevented the leaſt doubt of its Propriety; but time has at length produced in this Caſe a moſt remarkable Revolution: The ſpreading of a Gangrene, which has hitherto been eſteemed the ſtrongeſt Motive for Amputation, is now become an Argument againſt it; and ſome of the moſt eminent Surgeons in *England* not only defer the Amputation till the Gangrene is ſtopt, but even till it is advanced in its Separation.

THE beſt Reaſon that can be aſſigned for this extraordinary change in Practice, is, the amazingly ill Succeſs which has attended upon Amputations, under the Circumſtance of a ſpreading Gangrene. All Writers ſpeak of the

the Conſequence as being generally fatal, particularly in Gangrenes from internal Cauſes; and whoever will give themſelves the trouble to read the Hiſtories of theſe Caſes, will find the Aſſertion abundantly exemplified by Facts. How it comes to paſs that the Operation ſhould be ſo unſucceſsful, I ſhall endeavour to explain. I have already mentioned that ſome Gangrenes ſeem to be of a critical Nature, in which Circumſtance, the Mortification will ſpread to a certain Extent; but what that Extent will be, we have no Criterion to judge by, and conſequently not knowing where it would have ſtopt, we cannot determine where to amputate; though I have here ſuppoſed that if the Member be cut off, above the Place to which the Gangrene would have extended, the Patient might probably recover: but, I preſume, this is ſeldom true, for till Nature has abſolutely flung off the putrifying Maſs, that is, till the Gangrene is totally ſtopt, the Cauſe of the Mortification will continue to ſubſiſt; and notwithſtanding the Part on which it would have fallen, is removed, it will neceſſarily be diſcharged on ſome other. Accordingly it has often been found by Experience, that after an Amputation for a ſpreading Gangrene, the Gan-

grene has immediately ſeized again on the Stump, or ſome other Member of the Body; which is ſufficient to ſhew the unfitneſs of amputating whilſt the Gangrene is advancing, and proves that the Diſorder is not ſo local, as the ancient Doctrine implies.

AGAIN, if from old Age or any Infirmity of Body, the Blood ſhould become ſo impoveriſh'd, as to loſe its nutritious Qualities; and the Toes ſhould begin to mortify before any other Part, merely as the Circulation in them is more languid, which will therefore conſequently diſpoſe them to feel the firſt Effects of a deprav'd Blood; in this Inſtance alſo, the Impropriety will be obvious; for if the Mortification ariſes from the Cauſe I have ſuggeſted, it is impoſſible to know ſo exactly the ſtate of the Blood, as to decide how much of the Extremity would have periſhed; and without that Knowledge, it will be raſh to amputate.

IF then in the foregoing Caſes, it be expedient to wait till the Mortification is ſtopt; in Gangrenes ariſing from Oſſified Arteries, the fitneſs of it will be unqueſtionable: It is true, the Complaint is not common; but ſtill every Anatomiſt has ſeen ſuch Oſſifications: In this Example, as the Gangrene is imagined to proceed

ceed from a want of Elaſticity in the Veſſels, the Extent of it will be determined by the Exent of the Diſeaſe in the Arteries; and as we cannot poſſibly learn to what height they are affected, neither can we poſſibly determine where the mortifying Cauſe will ceaſe.

In Mortifications ariſing from violent external Accidents, theſe Arguments are not altogether ſo applicable; yet even here, it ſeems to be equally unſafe to amputate whilſt the Mortification is ſpreading. In theſe Caſes, the Limb is generally inflamed and tumified a conſiderable Height above the Gangrene, and indeed affected in ſome degree above the Place of Amputation. Slight however as this Affection appears, Experience has ſhewn, that it often retains the Seeds of a future Gangrene, which manifeſts itſelf again after the Operation; and what is very remarkable, we read of eminent [3] Surgeons, who have been ſo little certain of leaving no Taint behind, that when they imagined they were amputating a ſound Part they have found it totally mortified, not a drop of Blood following the Inciſion. If then we are not ſure, but that there may be the foundation of another Gangrene above the place of Amputation, it becomes one Argument amongſt

[3] Saviard, *Obſerv.* 16.

others, why the Doctrine I have laid down ſhould take place in Mortifications from external as well as internal Cauſes.

BUT what ſeems to be of much greater Importance in this Conſideration, than any of the Reaſons I have already alledged, is the ill ſtate of Health that the Patient labours under whilſt a Gangrene is ſpreading, be it of one kind or other; for at this time the Blood is frequently ſo thin, as to loſe even its florid Appearance, and it is not unuſual for fatal *Hæmorrhages* to ſucceed, in conſequence of this thinneſs, not from the great Veſſels, but from an Infinity of ſmall ones in every part of the Stump. The mere danger of a *Hæmorrhage* is then another Objection; but tho' this ſhould be eſcaped, yet Nature will generally ſink under ſo violent an Operation, where the Blood is deprived of its Balſamick Qualities, and the Strength of the Patient is ſo much exhauſted. On theſe accounts, the Propriety of deferring the Amputation will be evident, not only till the Mortification is ſtopt, but till the Separation is pretty far advanced; for by this meaſure, under a proper Treatment, the Blood will recover a healthy State and Conſiſtence, and the Patient will be better enabled to bear up againſt

the

the Fatigues and Danger of the Operation. During this Attendance, it will be proper to wrap up the mortified Limb in ſpirituous or odoriferous Bandages, in order to prevent ſo unwholſom an Annoyance; or if it be totally mortified, to cut off a large Portion of it, at ſome diſtance below the ſound Part: By this Method the Stench will be diminiſhed, and the Patient will be much more at his Eaſe, as I have frequently experienced.

THERE are very few Branches of Surgery more eſſentially improved ſince the Times of the Ancients, than the Method of amputating a Limb. [4] *Celſus* ſays, that the Patient frequently died under the Operation; either from the loſs of Blood, or the loſs of Spirits: How much Surgeons were deterred from the Operation by theſe Accidents, we have a curious Inſtance in the Writings of *Albucaſis*, who refuſed to cut off a Man's Hand purely on that Account. He ſays however, that the Patient in his Deſpair did the Operation himſelf, and recovered [5]. It is no wonder then, that we meet with ſo few Hiſtories of this Operation in the Works of the Ancients, when the Iſſue of it was often ſo ſuddenly fatal; nor is it ſtrange

4 Celſus, 497. 5 *Page* 244.

that

that Men ſhould have ſubmitted to Amputation for a Gangrene, which ſo evidently deſtroys as it advances, rather than for moſt other Diſorders which creep on ſlowly, and generally leave ſome hope however ill-grounded.

THE Ancients, and indeed the old Surgeons, laboured under three principal Diſadvantages in Amputation, which have been gradually removed by a ſucceſſion of Improvements. They were ignorant of the Double Inciſion. ſo that the Bone always protruded conſiderably; they had no Tournequet, and therefore could not ſo well command the *Hæmorrhage*; and laſtly, they wanted the crooked Needle, from which we reap ſuch eminent Advantages.

THE firſt Inconvenience which I have mentioned as a Conſequence of the ancient Method of Amputating, was the Protruſion of the Bone: for, making the Inciſion directly down to the Bone at once, the Muſcles and Skin afterwards withdrew, leaving a large Portion of it either naked, or ſo little covered, that it always periſhed and made an Exfoliation neceſſary: This Exfoliation was often a tedious and painful Work, and frequently by long preventing the Cure, reduced the Wound at laſt to an habitual Ulcer: Or, if the Wound did

heal,

heal, the Cicatrix proved ſo large, and the Stump ſo pointed, that it was liable to ulcerate again. Theſe Miſchiefs reſulted purely from the want of a lax Skin in the neighbourhood of the Wound; for Cicatrization is not effected by the mere Generation of new Skin, but chiefly by the Elongation of the Fibres of the circumjacent Skin towards the Center; and it is only when the Skin reſiſts a farther Extenſion, that the Cicatrix begins to form; from whence it muſt appear plainly, that the more lax the Skin is, the more readily will the Wound heal, and the ſmaller will be the Cicatrix: But though the old Surgeons could not apply this Maxim to Practice, ſo uſefully as the Moderns now do, yet they made ſome Efforts towards it; for before they Amputated they drew back the Skin with all their Force, that after the Limb was taken off, they might bring a larger Quantity of it over the Extremity of the Bone, and obviate in ſome degree the Inconveniences I have ſtated: However, this ſeems to have been all the Contrivance they were provided with to anſwer ſo great an End; unleſs it may be admitted that *Celſus* had a faint Idea of the Double Inciſion; and, to ſpeak my own Mind, I queſtion whether it can be doubted. In his

Chapter

Chapter on the Gangrene, he unluckily happens to be even more conciſe than uſual; but, I think, he expreſly ſays, that after we have cut down to the Bone, we muſt draw back the Muſcles and cut deep round the Bone, ſo that a Portion of it may be laid bare; after which it is to be ſawed off as cloſe as poſſible to the Fleſh: He tells us, that by this Method of Treatment, the Skin will be ſo lax as almoſt to cover the Bone. Perhaps I may have miſtaken *Celſus*'s Meaning; if I have not, it has been a great Misfortune to Mankind, that ſo beneficial an Inſtruction ſhould have been either overlooked or miſunderſtood: But it is certain, no Writer has copied him, and the double Inciſion as now perfected, is the Invention of another great [6] Man, to whom Poſterity will be always indebted for the many ſignal Services he has done to Surgery.

IT muſt be confeſs'd however, that notwithſtanding we derive ſuch Benefits from the double Inciſion; the contractile Diſpoſition of the Muſcles, and perhaps of the Skin itſelf, is ſo great, that in ſpite of any Bandage they will retire from the Bone, eſpecially in the Thigh, and ſometimes render the Cure tedious.

[6] Cheſelden.

To

To remove this Difficulty, I have lately on ſome Occaſions made uſe of the Croſs-ſtitch, which I would adviſe to be applied in the following manner in an Amputation of the Thigh.

Take a Seton Needle and thread it with about eight Threads of coarſe Silk, ſo that when they are doubled, the Ligature will conſiſt of ſixteen Threads about twelve or fourteen Inches long; wax it pretty much, and range the Threads ſo that the Ligature may be flat, reſembling a Piece of Tape, after which oil both it and the Edge of the Needle: The Flatneſs of the Ligature will prevent its wearing through the Skin ſo faſt as it would do if it was round, and the Oil will facilitate its Paſſage: Then carry the Needle through the Skin at about three-quarters of an Inch from the Edge of the Stump, and out again on the Inſide of the Stump at about half an Inch from the Edge of it; after which it muſt be paſſed through the oppoſite ſide of the Stump, from within outward, exactly at the ſame diſtance from the Lips of the Wound; this done, the Silk is to be tied in a Bow-knot. With another Needle and Skain of Silk, the ſame Proceſs is to be repeated in ſuch manner that the Ligatures

tures may cut each other at right Angles. If it is a large Thigh, the Lips of the Wound may be made to approach each other ſo near, as that the Diameter of the Wound may be about two or three Inches long; but in this, and in all other Stumps, the Approximation of the Lips will depend upon the Laxneſs of the Skin, and the Quantity preſerved by an artful double Inciſion: for the Skin muſt not be drawn together ſo tight as to put it upon the Stretch, leſt it ſhould bring on an Inflammation and Pain.

THE Manner of applying the Croſs-ſtitch after the Amputation of a Leg has nothing particular in it, only that the Threads muſt be carried between the *Tibia* and *Fibula*, rather than directly over the *Tibia*; and before the Skin is drawn over the End of the Stump, it will be proper to lay a thick Doſſil of Lint on the Edges of the *Tibia*, in order to prevent them from wounding the Skin: However I ſhall here obſerve, that as the Skin and Muſcles are not ſo lax in the Leg, as in the Thigh, the Croſs-ſtitch does not procure near the ſame Advantages upon that part, and therefore is hardly to be recommended.

I HAVE adviſed the Skains of Silk to be tied with a Bow-knot, that in Caſe of a *Hæmorrhage* they might be undone, in order to diſcover the Veſſel more eaſily; and alſo, if any Tenſion ſhould enſue, that they might be looſen'd for three or four Days, and then tied again when the Suppuration comes on, and the Parts are more at liberty.

PERHAPS it may be objected, that the double Inciſion is of itſelf ſufficient for anſwering the Ends propoſed by this Meaſure; but whoever is converſant in this Branch of Practice, muſt know, that notwithſtanding the lax State of the Skin and Muſcles at the time of the Operation, yet, ſome Days after, they fall conſiderably back from the Bone, and in the Thigh particularly ſo much, that no Bandage will ſuſtain them; the Conſequence of which is a proportionable Largeneſs of Wound, a tedioufneſs of Cure, and ſome degree of Pointedneſs in the Stump. It may be obſerved too, that the Strictneſs of Bandage employed for ſupporting the Skin and Muſcles of the Thigh, is not only painful, but, in all probability, may obſtruct the Cure of the Wound by intercepting the Nutrition: for it is certain that by long Continuance it often waſtes the Stump; and, I am

jealous,

jealous, it may alſo be acceſſary to thoſe Abſceſſes which ſometimes form amongſt the Muſcles in different parts of the Thigh.

THE Queſtion then remaining is, whether theſe Stitches will ſupport the Skin and Muſcles more effectually than Bandage, without producing ſome new Evil, a Point which can only be decided by Experiment. It is true, that this very Method was followed by ſome of our Anceſtors; and the Objections to it have abſolutely prevailed over the Arguments in favour of it; for few People now even know it ever was practiſed. Yet I cannot help imagining, that Caprice may have had more Share in utterly diſcarding this Method, than Reaſon and Obſervation; for it is poſitively ſaid, by ſome of the moſt able and candid Practitioners, to have [7] ſucceeded marvellouſly; and as the Inflammation and Symptomatick Fever, ſuppoſed to be excited by it, were alway relievable by cutting or looſening the Stitches, there does not ſeem to have been reaſonable grounds for wholly giving up ſuch great Advantages.

BUT if the Objections to it were of force when the ſingle Inciſion was practiſed, they diminiſh exceedingly now that we perform the

7 Parey, 30. Wiſeman, 230. *Vol. II.*

Operation

Operation by the double Inciſion; for though the double Inciſion does not wholly prevent the withdrawing of the Muſcles from the Bone; yet it abates the Degree of it ſo much, that they can ſuffer the Stitches without incurring either Inflammation or Pain, to which they were much more liable after the ſingle Inciſion. It muſt be remarked however, that they draw with that ſtrength, as to make the Stitches wear thro' the Skin and Fleſh in twelve or fourteen Days; but this is done ſo gradually, that it cauſes very little Pain or Inflammation; and tho' they conſequently come off with the Dreſſings, yet by this Time the Skin and Muſcles are fixed, and a ſlight Bandage will be ſufficient to maintain them in the ſame Poſition.

I CONFESS, however, that theſe Stitches are an additional Pain to the Operation, tho' perhaps not ſo bad as one is apt at firſt to ſuggeſt; for the mere paſſing of a large Needle through the Fleſh without making a *Stricture*, is very bearable, in compariſon of a tight Ligature; but whatever be the increaſe of Pain for the preſent, the future Eaſe in conſequence of it is an ample Compenſation; though, if

I am not miſtaken, there is ſtill another Conſideration of much higher Importance than any I have mentioned, and that is a leſs hazard of Life.

For the Symptomatic Fever, and the great danger of Life attendant upon an Amputation, does not ſeem to proceed purely from the Violence done to Nature by the Pain of the Operation, and the removal of the Limb, but alſo from the Difficulties with which large Suppurations are produced; and this is evident, from what we ſee in very large Wounds that are ſo circumſtanced as to admit of healing by Inoſculation, or, as Surgeons expreſs it, by the firſt Intention; for in this Caſe, we perceive the Cure to be effected without any great Commotion; whereas the ſame Wound, had it been left to ſuppurate, would have occaſioned a Symptomatic Fever, *&c.* but in both Inſtances, the Violence done by the mere Operation is the ſame, whether the Wound be ſewed up, or left to digeſt.

Upon this Principle, we may account for the diminution of Danger, by following the Method here propoſed; becauſe, as the Stitches have a power of holding up the Fleſh

Fleſh and Skin over the Extremity of the Stump, till they adhere to each other in that Situation; they actually do by this means leſſen the Surface of the Wound; in conſequence of that, the Suppuration; and in conſequence of both, the Danger reſulting from the Suppuration.

PERHAPS it may not readily be underſtood, how a Wound can by any Management be ſuddenly ſo much diminiſhed; but it may be better conceived, if we reflect on what I have already intimated, in regard to the healing of a Wound; for in this way we accompliſh immediately by Art, what requires a length of Time to be effected in the other Methods by Nature; and with this advantageous Circumſtance, that when the Wound is reduced into ſo ſmall a compaſs, the Skin is in a looſer ſtate, than when it has not been brought forward by the Stitches; in conſequence of which, the Cure will be more quickly compleated; for the looſer the circumjacent Skin is, the leſs will be the Cicatrix, and Cicatriſation is by much the ſloweſt Proceſs in Healing. It appears then from the Repreſentation I have here given, that

by this Method, we not only bring the Wound to a ſmall compaſs in a leſs time, but alſo give it a ſtronger tendency to heal entirely. There have been Attempts made within theſe fourſcore Years, to render Amputations leſs dangerous, by deviſing a Method of healing the Wound by the firſt Intention. The firſt Eſſay of this kind is to be ſeen in the *Currus Triumphalis è Terebintho*, printed at *London* in the Year 1679, though the Merit of the Invention is aſcribed, either to *Verduin*, or *Sabourin* who each contended for it many Years after: But it is highly probable, they both had the Hint from *England*, ſince by the Character of the Author, and the Importance of the Subject, I think, the Book muſt have been popular in thoſe Days. Their Manner of amputating the Leg, was by preſerving a large Flap of the Skin, and of the Gaſtrocnemius Muſcle, cut into ſuch a Shape, as that when it was brought over the End of the Stump, it might exactly cover the Wound, and being faſtened to it by a few Stitches, or Plaiſter, or Bandage, it might heal by Inoſculation. I ſhall not enter into many Particulars of the Operation, becauſe it is univerſally

verſally diſapproved of at preſent; though I ſhall obſerve, that the frequent Impracticability of ſtopping the *Hæmorrhage* without Ligature or Cautery, and the Danger of confining any Particles of Bone that may happen to exfoliate after the Flap is united, are the two principal Objections to it. M. *Rabaton* and M. *Vermal* have each of them improved on this Plan, by making two oppoſite Flaps and uniting the one to the other after having tied the Veſſels.

MONSIEUR *Le Dran* has deſcribed [8] both their Methods, and ſeems to approve of them, having once performed it himſelf with Succeſs; but as he does not mention either the Age of his Patient, nor the Limb he took off, one cannot lay very great Streſs on the Caſe.

I BELIEVE, however, that this Operation has not been much practiſed; though by the beſt Information I have been able to procure, is has very little anſwered Expectation where it has been done; but when it has happened to ſucceed, the Event has confirmed the Doctrine I have laid down,

[8] *Page* 565.

that it is not the Violence done by the Operation, but the Effects of Digeſtion which excite the Symptomatic Fever, *&c.* for in theſe Inſtances, the Cures are ſaid to have been effected with very little danger or trouble to the Patient.

I COME now to enquire into the Nature of the ſecond Inconvenience which the old Surgeons labour'd under; and this was the want of a Tourniquet; but though they had not the Tourniquet to looſen the Ligature at pleaſure, whilſt the Amputation was performing; yet they employed a Bandage above the place of Amputation, carrying it round with a ſufficient Tightneſs to compreſs the Veſſels, aud prevent their Bleeding: But the Misfortune was, that whilſt the *Stricture* remained, the Orifices of the Veſſels were not viſible; and the moment it was untied or unpinned, the Blood was at full Liberty, and poured out ſo faſt, as ſometimes to deſtroy the Patient before it could be ſtopt.

THIS Inconvenience gave riſe to a new Method of compreſſing the Veſſels, by griping the great Veſſel of the Thigh or Arm with the Hand, and quitting the Gripe from

from time to time, as we now looſen the Tourniquet, in order to diſcover the Orifice of a bleeding Veſſel; but *Parey* and *Wiſeman* ſay, that there were few Men capable of making an effectual *Stricture* with the Hand, and therefore prefer the ancient Practiſe of Ligature.

HOWEVER, the prodigious loſs of Blood which attended upon Amputations, was not eſteemed ſo great a Misfortune by the old Surgeons, as it would have been in theſe Days; they had an Opinion, that a large Effuſion was wholſom, and if they found themſelves Maſters of the *Hæmorrhage* immediately, they ſuſpended the Operation for ſome time, that the Stump might bleed plentifully; believing that the Blood near the mortified Part retained the gangrenous Principle, and that the Evacuation of it was therefore neceſſary [9].

As inconvenient as this Bandage muſt appear in compariſon of the Tourniquet, it was nevertheleſs a prodigious Improvement on the Method of Amputating followed by the Ancients, who us'd no Compreſſion at all, as

9 Hildanus, 803.

we learn from [1] *Æginæta*, who ſays, that *Leonides*, in order to obviate the Danger of the *Hæmorrhage*, during the length of Time neceſſary to ſaw through the Bone, had ingeniouſly adviſed the Inciſion to be made ſo far only round the Bone, as not to wound the great Veſſels, and then to ſaw through the Bone before they were divided. The Diſcovery of the Tourniquet, like many other uſeful Diſcoveries, ſeems ſo obvious, when we once know it, that one would be amazed it was not thought of by every Surgeon accuſtomed to Amputations; but it is certain, no Body ever uſed it till towards the latter End of the laſt Century. The firſt Account I meet with of it, is in the [2] *Currus Triumphalis*, &c. I have juſt now quoted, where the Author recommends it as a new Device: But *Dionis* ſays, that *Morellus* invented this Inſtrument at the Siege of *Beſançon*; (1674) however it was evidently firſt introduced into Practice between the Years 1670 and 1680.

In the Year 1718, M. *Petit* invented another kind of Tourniquet, which being made

[1] *Lib.* 6. *Cap.* 84. [2] *Page* 30.

with

with a Screw is manageable by the Operator, and does not require an Aſſiſtant like the common Tourniquet; it alſo compreſſes the Artery more partially than the other, and from this Circumſtance becomes a very uſeful Inſtrument to leave upon a Stump, when we fear a *Hæmorrhage:* It is likewiſe an admirable Contrivance to ſtop an Effuſion of Blood, till the Surgeon can prepare himſelf, when in Engagements, during the Heat of Action, he cannot poſſibly operate ſo faſt as the Occaſions preſent themſelves; and on this account it may be remarked, that every military Surgeon ſhould be furniſhed with five or ſix of them. After having ſaid thus much in favour of *Petit*'s Tourniquet, I muſt alſo confeſs, that where we have the Advantages of an Aſſiſtant, I have found the common Tourniquet more handy, and therefore always employ it in Amputations rather than the Screw Tourniquet.

ANOTHER Defect in Amputations, till the Eſtabliſhment of the Needle took place, was the difficulty of ſtopping the Blood, though a multitude of Applications had their vogue for

In-

Infallibility one after another, as is uſual where an abſolute Specific is unknown: But the actual Cautery was certainly the moſt to be depended upon, and was therefore through a ſucceſſion of Ages down to our own Days, more frequently employed than any of the other Means. We read, however, of ſeveral Objections that were ſtarted againſt this Practice, even when it moſt prevailed; among others it was ſaid, that if the Cautery was too hot, the Eſchar would drop off immediately; and if it was not ſufficiently hot, the Orifice of the bleeding Veſſel would remain open; in both which Caſes the *Hæmorrhage* would continue; and, I ſuppoſe, it was difficult to aſcertain the proper degrees of Heat, becauſe it was admitted on all hands, that ſeveral died under the Operation from this Cauſe [3].

But beſides the Surgical Arguments that were offered againſt it, the Horror created by a red-hot Iron begat in ſome Men an invincible Antipathy to the Method; in Conſequence of which, ſtrict Bandage, powerful Aſtringents, potential Cauteries, and even ſuch

[3] Currus Triumphalis, *page* 14.

poiſonous

poiſonous Applications, as Arſenic and corroſive Sublimate, were made uſe of by ſome Surgeons: The dreadful Effects of this laſt Application may be eaſily gueſſed; but amongſt many Obſervations recorded of its pernicious Tendency, there is an Account of nineteen Men, who, one only accepted, all died after Amputation, and, as it was ſuppoſed, chiefly from the poiſonous Quality of the Sublimate [4].

THE great Danger and Uncertainty attending theſe Methods of ſtopping the Blood, having at laſt open'd the Eyes of ſeveral eminent Surgeons, the Uſe of the Needle and Ligature has by degrees crept into Practice: But ſome of the Moderns ſtill continue to believe with our Anceſtors, that a free uſe of the Needle muſt neceſſarily be attended with Inconvenience. I ſhall therefore enquire into the Grounds of this Opinion, in a ſhort Diſſertation on the Needle and Ligature, *&c.*

AMBROSE PAREY was the firſt who in theſe latter Ages attempted to explode the actual Cautery, and eſtabliſh the Ligature of

[4] Currus Triumphalis, *page* 10.

the

the Veſſels. In all Amputations he applies them by the means of an Artery Forceps; and adviſes us to comprehend ſome Portion of the ſurrounding Fleſh within the Ligature, rather than to tie the Veſſel alone, as it will more readily conſolidate under this Circumſtance; but in caſe the Ligature ſhould drop off, or fail in any manner, he then recommends the tying up the Veſſel with a Needle and Thread, in a different manner from what is practiſed in theſe Days; for the Needle he employs is ſtraight, which Circumſtance muſt have rendered it very difficult to manage, and was the reaſon why he was under the Neceſſity of paſſing it always through the Skin, in that Part of the Stump which was neareſt to the bleeding Veſſel: And yet, what is very remarkable, in his Account of the Sutures he recommends a crooked one in the ſewing up a deep Wound, though he has not adopted it in the Ligature of the Veſſels, where it is ſo infinitely preferable to a ſtraight one.

It is obſervable too, that though he aſſerts his Ligature never once fail'd where he

uſed

uſed the Needle; yet in Amputations he ſeems never to have employ'd the Needle, but after a diſappointment from the uſe of the Forceps.

HIS Invention of this Method he imputes to the favour of Providence, for, he ſays, he never ſaw it practiſed, nor ever heard of it; except that, in a Paſſage of *Galen*, he had read, there was no ſpeedier Remedy for ſtanching the Blood in freſh Wounds, than to bind up the Veſſels towards their Roots, which Doctrine he thought might be applied to the Veſſels of an amputated Limb.

HE reflects with great Horror upon the uſual Method of ſtopping the *Hæmorrhage* by actual Cauteries. The Pain from the Application of Fire he deſcribes as moſt excruciating, and productive of the moſt dreadful Symptoms, ſo that ſcarcely one third of thoſe who underwent this Operation ſurvived it, and ſome died even in the very Operation. Beſides, it often happened, that the Eſchar dropp'd off before the Extremities of the Arteries were cloſed; whence new Effuſions of Blood, and conſequently as frequent Repetitions of the Cautery, which,

which, if it prov'd effectual as to the *Hæmorrhage*, ſtill occaſioned a Deſtruction of the Parts near the Bone; and laying a great Portion of it bare, left the Patients without hope of a Cure, being obliged for the remainder of their wretched Lives to carry about an Ulcer, which, to complete their Miſery, abſolutely prevented them from wearing a wooden Leg.

[5] IT is ſaid of *Parey*, that he did not underſtand *Latin*, and one would believe it muſt be true, otherwiſe I think he could not but have read in *Celſus* [6] a very poſitive Recommendation of the Ligature. Indeed *Celſus* ſpeaks of the Ligature of the Veſſels ſo frequently, and with ſuch Familiarity, that the uſe of it ſhould ſeem to have been common in thoſe Days; nay, he expreſly prohibits the actual or potential Cautery, unleſs the Veſſel be ſo ſituated that it cannot be tied.

PAREY, after the Publication of his new Invention, was attack'd with great Vehemence by ſome of his Cotemporaries, who eagerly defended the uſe of Fire, the Virtue of which had been delivered down from the Ancients as

[5] *Vide* Goelickium. [6] *Lib.* 5. *Cap.* 26. *Lib.* 7. *Cap.* 19, 22, 24.

almoſt

almoſt ſacred in many Diſorders: He was weak enough, upon this Occaſion, to juſtify his Practice by Authorities from *Hippocrates*, *Galen*, *Avicenna*, and many other Writers who ſpeak ſlightly of the Ligature; by this Meaſure he would have given away the Glory due to his Diſcovery, but it was not in his Power, either to benefit his Cauſe, or injure his Reputation by this Proceeding. It was notorious that the Surgeons, for many of the preceding Ages, had us'd the actual Cautery, and however the Ligature might have been practis'd in *Celſus*'s time, it had not been much attended to ſince, though [7] *Albucaſis* likewiſe mentions it; ſo that the Paſſages he refers to, in the Writers after *Celſus*, were eſteemed of no great weight, being perhaps conſidered only as a few Exceptions to general Rules, or, if obſerved at all, rather as ſpeculative than practical Doctrines.

IT remain'd therefore to be decided by the future Succeſs, whether this Method ſhould ſtand or fall; and though perhaps there never was a conteſted Point ſo clear in itſelf as this, yet it has undergone the common Fate of uſeful

[7] *Page* 149.

Inven-

Inventions; it has been oppos'd and abus'd. But, in all Probability, it will at laſt be more generally eſtabliſhed, though at preſent it is not received with that univerſal Acceptation one would wiſh and expect.

For the Objections which aroſe immediately againſt the Ligature of the Veſſels upon any Occaſion, or under any Circumſtance whatſoever, are nearly the ſame which prevail with ſome of the Moderns againſt an unlimited Extenſion of its uſe; ſo that though they employ the Needle in Capital Operations, yet it is done ſparingly, abridging the Application of it to two or three of the largeſt Veſſels, and ſtopping the others by Compreſſion, Styptics, or Eſcharotics.

The Objections urged againſt this Method, beſides its ſuppoſed uncertainty, were its Tediouſneſs in compariſon of the Cautery; the Pain of the Puncture, which they pretend to equal that of the Cautery; and the Danger reſulting from the Puncture. They believ'd, that if the Needle prick'd any nervous Part, or the Nerve itſelf, an Inflammation would neceſſarily follow; from the Inflammation, Convulſions; from Convulſions, Death.

When

WHEN we find theſe Prejudices ſo eagerly embrac'd by the moſt eminent Practitioners of the ſucceeding times, and amongſt others by *Fabricius ab Aquapendente*, and [8] *Hildanus*, whoſe Writings were eſteemed almoſt as Oracles during the laſt Century, it is not wonderful the Eſtabliſhment of this Method ſhould be reſerved for our Days.

I CANNOT find in all the Works of [9] *Aquapendente*, that he ever us'd a Needle; and though he ſpeaks of the Ligature and Forceps, it is but rarely that he applies it; nay, he argues againſt the uſe of them in the following Quotation from *Galen. (Lib.* 14. *Meth.) Quod ſi laqueis tentes arterias ligare, ſympatheiæ oboriuntur, id eſt, affectiones per Conſenſum.*

AND that the Cautery was his Remedy againſt an Effuſion of Blood, we learn, amongſt other Proofs, from his manner of amputating a Breaſt, which he adviſes to be done with a red-hot Knife, or a ſharp Knife made of Horn, or Wood, dipt in *Aqua Fortis*, by which Artifice he ſuppoſes the Veſſels will be cauteriſed as the Inciſion advances [1].

[8] Hildanus, *Page* 812. [9] *Page* 86. [1] *Vide alſo* Hildanum, *Page* 803, 804, 813, *who adviſes the ſame Method.*

IT is true, that in many Parts of his Works he gives us a lively Picture of the deplorable State of Surgery with regard to Amputations. He acknowledges the dreadful Uncertainty they were under of ſtopping the Blood by the actual Cautery; and, chiefly on this Account, recommends an Amputation of a gangren'd Limb to be made an Inch, or an Inch and a half below the Extremity of the Mortification.

WITHIN theſe laſt fifty Years this barbarous Practice has by degrees fallen into Diſuſe, both in *France*, and *England*; but it is not abſolutely diſcarded in every Part of *Europe*. The learned and ingenious *Heiſter* is ſo far from totally rejecting the actual Cautery in great Effuſions of Blood, that he ſeems to extenuate the Cruelty of it; granting, however, that it is generally ineffectual in Wounds of the crural or brachial Artery; and therefore in theſe Inſtances recommends the Ligature as moſt ſafe [z].

I HAVE taken notice of the Diſuſe of the Cautery in *France* as well as *England*, though the *French* have not all of them ſubſtituted the

[z] *Page* 78, *Vol.* 1. *Page* 499. *But he ſays that the Moderns do not approve of it, becauſe the* Eſchar *often falls off after the third Day.*

Needle,

Needle, wherever the Fire was before demanded; but have ſupply'd other means in common with the Needle.

[3] M *GUISARD* ſays, that in the Uſe of the Ligature it is neceſſary to enquire, whether there be a Nerve near the Veſſel to be taken up; in which Caſe it ought to be put out of the way, leſt it ſhould be laid hold of with the Fleſh; for, if it ſhould be tied up with the Veſſel, it would cauſe excruciating Torment to the Patient, and perhaps bring on a Delirium or Convulſions.

[4] M. *LE DRAN* ſays, there are three ways of ſtopping the Blood: The firſt is by a Button of Vitriol, the ſecond by a Button of Allum, the third by the Ligature; each of theſe Methods has its Advantage and Diſadvantage. The Vitriol is very apt to diſſolve, and ſpreading, cauteriſes all the neighbouring Parts: The Allum being only ſtyptical is not ſo much to be depended on againſt a freſh *Hæmorrhage*; and the Ligature, though the moſt ſecure, is liable to this Inconvenience, that it is very difficult not to tie the Nerve accompanying the Artery, which in a few Days brings

[3] *Page* 319. [4] *Page* 559.

on Convulſions that oblige us to cut it off. In the ſubſequent Lines he goes on to inform us, what are the different Circumſtances which indicate the uſe of theſe ſeveral Methods.

IT appears then from the foregoing Specimen, that though they all acknowledge the ſuperior Efficacy of the Needle, there are ſome who ſtill adopt it under certain Limitations. The greater Part maintain avowedly the original Opinions, while others ſeem aw'd by them, where they do not confeſs their Fears. Nothing would therefore tend more to the Perfection of Surgery, than the Removal of theſe Apprehenſions; becauſe there is no Branch of the Buſineſs ſo common as this, at leaſt where the Health and Life of the Patient depend ſo much on one particular manner of Treatment, in preference to all others.

IT was formerly found by Experience, that if the *Eſchar* fell off from a large Veſſel in a few Days after the uſe of the actual Cautery, the *Hæmorrhage* generally returned; a Circumſtance admitted to be very common. Now, if the actual Cautery was attended with this Conſequence, how much more liable to the ſame

Incon-

Inconvenience muſt the potential Cautery be, which, though it acts in nearly the ſame manner, does not form ſo deep and ſo hard a Cruſt, and will therefore be more readily diſpos'd to drop off before the Extremity of the Veſſel is conſolidated: but if the potential Cautery be uncertain, all ſtyptical Remedies muſt neceſſarily be more ſo.

I SUPPOSE it will be ſaid, that the potential Cautery is, in theſe times, only recommended for ſmaller Veſſels, after tying up two or three of the largeſt; but every Practitioner of great Experience knows that where ſix, ſeven, eight, or more Ligatures are employ'd, we often ſee a freſh bleeding from the dilated Veſſels when the Symptomatic Fever riſes high: Nay, notwithſtanding the great Profuſion of Ligatures practis'd in *England*, we never think ourſelves abſolutely ſecure againſt another *Hæmorrhage*: How frequently then muſt this Accident happen where only one or two of the principal Veſſels are tied?

IT is true, that to obviate theſe freſh Effuſions of Blood after an Operation, Compreſſion of every kind is preſcribed: by the Hand, againſt the Extremities of the Veſſels; by

Bandages round the Limb, and ſometimes even by the Tourniquet. Now it muſt be granted that a Bandage may be apply'd with that Influence, as to prevent the leaſt Diſcharge of Blood; yet in this Caſe, the *Hæmorrhage* is not reſtrained by a partial Stricture of the bleeding Veſſel, and at its Extremity only; but by an univerſal Obſtruction of the Circulation in that part of the Limb below the Bandage. Of how dangerous Conſequence ſuch an Obſtruction may prove, after a Continuance of many Hours, needs not much Argument to evince; eſpecially when we conſider, that in general, the Patient labours under an impair'd Conſtitution; and perhaps too, in ſome Inſtances, the Part itſelf where the Obſtruction is brought on, may, from its Neighbourhood to the diſeaſed Member, be more particularly unfit to ſuffer this temporary Stagnation.

But, what is very ſingular, it happens that thoſe Operators who employ the Ligature ſo ſparingly, from this horrid Apphehenſion of compreſſing the Nerves, incur nearly as much Danger, if there be any, from the few they apply, as thoſe who uſe the Needle where-

ever

ever they discover a bleeding Vessel; for the principal Nerves are so contiguous to the two or three Arteries which they do tie, that it is almost impossible to take up a Quantity of Flesh with those Vessels, but the Nerves must also be comprised within the Ligatures. It follows then, from this State of the Fact, that those partial Friends of the Needle, so far as they use it, incur the Inconvenience they suppose it subject to; whilst, at the same time, they are restrain'd by their Fears from the Prosecution of it, where it is so little liable to their own Objection.

And that these dreadful Consequences from the Ligature of the Nerves are imaginary, may be understood from the following Reflexions: That it is only the Extremity of the divided Nerve that is tied, and which would, in the other Method of Applications, be acted on [5] with Violence; so that the Injury will be nearly the same in either Case; at least, when practised upon those Nerves that occur in the usual Amputations. Again, if they produced Convulsions, the Effect would most probably appear immediately under the Operation, or a few

[5] Wiseman, *Vol. II. page* 229.

Hours after, and not ſome Days after, as is now pretended; when the Convulſions are plainly the Conſequence of the dying ſtate of the Patient, and not the Cauſe of it, having no Characteriſtic to denote them from the Convulſions attendant upon a common Fever, or any other Sickneſs in the laſt Hours of Life. But to finiſh in one Word; the Succeſs of an Operation is found, by Experience, not to depend in any degree on the greater or leſs number of Ligatures; which would be notoriouſly the Caſe, if the frequent repetition of them was productive of Convulſions: On the contrary, the Symptoms are nearly common to both Inſtances, where we employ many or few.

IT is not difficult, however, to account for the Popularity of this Doctrine, from the Idea we have of the Mechaniſm of the Nerves; but Experience here is a Leſſon to us how little we ought to confide in ſpeculative Opinions: The moment *Parey*'s new Method was publiſhed, the Objection was ſtarted, not from Obſervations in Practice, but as they thought, the palpable Reaſon of the thing: And yet ſo little do we underſtand the Nature of this Subject, that, to the Confuſion of Theory, it

has been discover'd by the Operation for the Aneurism in the Bend of the Arm, that the great Nerve contiguous to the Artery may be tied, not only without fatal Convulsions, but even any notable Inconvenience. It is an Accident hardly ever avoided, though indeed it is caution'd against by Surgical Writers: But whoever is desirous of knowing what Effects it produces, may read the Account of them in the *Bonon. Instit. Vol.* II. *Part* II. *Page* 65. where we have the Histories of the Dissections of these Parts in Patients on whom *Valsalva* had performed the Operation some Years before their Deaths: And the Author of these Histories is so little intimidated by the danger of tying the Nerve, as to advise Surgeons not to embarrass themselves on this Article, but to finish the Operation with all suitable Expedition, and without any regard to a Precaution of so little Importance.

I HOPE I shall not be censur'd for labouring to establish a Point which no Man of Eminence in *London* contradicts. It is a sufficient Apology for me, that the Writings of the ingenious Surgeons I allude to, being in the Hands of our *English* Students, may possibly mislead them,

if

if not warn'd againſt the Danger. Beſides, Improvements of all kinds are ſo ſlowly propagated, that this, amongſt others, is not univerſally practiſed in the diſtant Counties of our own Kingdom; and therefore a farther Enforcement of its Advantages will not, I believe, appear to be a uſeleſs Undertaking.

POST-

POSTSCRIPT.

I HAVE not in the foregoing Chapter made any alteration, with regard to what I had publiſhed in the former Editions of this Work, on the Subject of Styptics for ſtopping a *Hæmorrhage* from large Veſſels; but within theſe three Years, a new Remedy has been offer'd to the Public for this purpoſe, which has met with the Approbation of ſome of the moſt eminent Surgeons in *Europe*, who have experimented its efficacy in ſeveral Inſtances: nevertheleſs, as it hath not yet been ſufficiently practiſed on the Femoral Artery, to warrant the recommendation of it on large Veſſels, in preference to the Ligature, I have forbore to ſpeak of it in the Body of the Book. Should it hereafter be found equally ſecure with the Ligature, it would certainly be a moſt uſeful diſcovery, becauſe it removes one of the moſt painful Proceſſes of an Amputation: on the other Hand, ſhould it be found to fail ſometimes in the Femoral Artery, the Succeſs of it will

will probably be doubtful in Veſſels ſomething ſmaller than the Femoral Artery; and then, the uſe of it will be confined to the leſſer order of Arteries. The Remedy I ſpeak of, is the Agaric of Oak, though it is aſſerted, that the Agaric which grows on the [1] Beach Tree, is equally powerful. The Author of this Invention has received a Gratuity from the King of *France*, for the Communication of his Diſcovery to the Academy of Surgery at *Paris*; and as the Academy has publiſhed a Declaration of their Opinion upon this Subject, I ſhall here give a Tranſlation of the Piece.

A Topical Remedy for ſtopping a Hæmorrhage *of the Arteries without a Ligature, publiſhed by the Royal Academy of Surgery.*

" WE the underwritten Maſters in Sur-
" gery, being appointed by Monſieur
" *De la Martiniere*, the King's firſt Surgeon,
" to receive the Report of M. *Broſſard* Sur-
" geon at *Châtre* in *Berry*, touching the Re-
" medy which he has uſed with ſucceſs, for
" ſtopping a *Hæmorrhage* without a Liga-

[1] *Memoires* De l'Academie De Chirurgie, 538. *Vol. II.*

" ture,

" ture, in one Amputation of the Leg done
" by M. *Bouqot* Junior, at the Royal Hoſpi-
" tal of Invalids; two other Amputations
" done by M. *Faget* Senior, at the *Charité*,
" and an Aneuryſm perform'd in private Prac-
" tice by M. *Morand*, and all of them in the
" Preſence of M. *De la Martiniere*,

" Do certify, that the ſaid M. *Broſſard*, has
" ſhewn us a Peice of prepared Fungus, that
" grows upon old Oaks, which he has aſ-
" ſured us is his Secret; and that having re-
" quired of him to ſhew us the Plant in
" its natural State, and the Manner in which
" he prepares it.

" *Firſt*, He laid before us ſeveral Pieces
" of that kind which is call'd by the Bota-
" niſts *Agaricus pedis equini facie. Inſtit.*
" *R. h.* 562. *Fungus in Caudicibus naſcens*
" *unguis equini figurâ. G. B. pin. fungi ig-*
" *niarii. Trag.* 943. ſo call'd, becauſe it is
" uſed as Match.

" M. *Broſſard* prefers the Agaric which
" grows upon old Oaks, that have been lopp'd,
" and he adviſes it to be gathered either in
" *Auguſt* or *September*, and afterwards to be
" kept in a dry Place.

Secondly,

" *Secondly*, He prepares it for uſe in the " following Manner. He cuts away with a " Knife, the outſide Coat, which is hard and " white, down to a fungous Subſtance, which " is ſoft, and gives way to the Fingers when " when preſſed, like Shamois Leather. He " then ſeparates this Subſtance from the hard " Part with the Knife, and cuts it into " Pieces of different thickneſſes, which he " beats with a Hammer, till it becomes " ſo ſoft as to be eaſily tore. When it is " thus prepared, he applies to the Orifice " of the bleeding Artery, a Piece larger " than the Orifice itſelf, obſerving to put " the inſide of the Agaric next to the " Wound; upon the firſt Piece, he lays a " ſecond ſomething larger, and over all, the " proper Dreſſings.

" M. *Broſſard* has ſometimes uſed a coarſe " Powder, made of the Fungous Part of the " Agaric, when it is Worm-eaten; but he " does not recommend it as equal in Vir- " tue to the Subſtance, and ſays the Pow- " der is better when the Part is not Worm- " eaten.

" This

POSTSCRIPT.

" This is the Declaration made by M.
" *Broſſard*, at *Paris*, *May* the 7th. 1751.

" Signed *La Martiniere*, *Morand*, *Foubert*,
" *Broſſard*.
" *Upon this Declaration, the King has granted*
" *a Gratuity and Penſion to M.* Broſſard.

" *P. S.* The Succeſs of this Remedy is
" every day more and more confirmed.

FINIS.