

The hospital surgeon: or, a new, gentle, and easie way to cure speedily all sorts of wounds, and other diseases belonging to surgery. Also, a discourse on discover'd bones; and a way to dress, after trepanning, with a new instrument invented by the author ... / [Augustin Belloste].

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T H E
Hospital Surgeon :

O R,

A New, Gentle, and Easie Way to Cure
 speedily all sorts of *Wounds*, and other
Diseases belonging to SURGERY.

A L S O

A Discourse on Discover'd Bones,

A N D

A Way to Dress, after Trepanning, with a
New Instrument invented by the Author.

I N T H R E E P A R T S.

- I. The Advantages of *this* Way, and Mischiefs of a *con-*
trary Practice, propos'd and confirm'd by *Reason* and
Authority.
 - II. Observations on WOUNDS of all Kinds, and in
 every Part of the Body; quickly Cur'd by this Method.
 With Practical Reflections.
 - III. An Idea of the Author's New Practice in WOUNDS
 and other Cases, and his Easie and Effectual Remedies;
 with some Observations and Remarks.
-

By Mr. BELLOSTE, Surgeon-Major to the
 Hospitals of the French King's Army in *Italy*.

The Third Edition, with Amendments.

To which is added,

A Treatise of BANDAGES,
 by L. VERDUC.

L O N D O N,

Printed for J. & B. Sprint and J. Nicholson in *Lit-*
tle Britain, and A. Bell and R. Smith in *Cornhill*. 1713.



The Translator's Preface.

WE could, possibly, have found out a Patron, had it been thought necessary, under the Protection of whose Name this Stranger might have come abroad into our English World; but as we look upon Dedications to be, for the most part, empty Formalities, as little minded by every one else, as what is said in 'em is believ'd by the Writer, so we doubt not but this Book will every where meet with a becoming Reception, seeing it is sent out on such a friendly Errand, as to heal our Sores, and pour Oyl and Wine into our Wounds.

Surgery, in consideration of the Antiquity, the Usefulness, the Necessity, and Excellency thereof, has ever been in the highest Esteem, among all those other Arts that were invented for the Service of Mankind. For the Improvement of this Noble Profession, the Author of the ensuing Treatise has been at no small Pains, having these 28 Years labour'd therein, in some of the most celebrated Countries of the World, with an unwearied Diligence, and assiduous Application; the Fruits of whose Care and Fatigues the Courteous Reader is here presented with.

Several of the Learned and Ingenious, not only of this, but also of some former Ages, have been very sensible, that this Art was very far from

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having attain'd to that Perfection whereof it is capable; yea, that Abuses had slipt into Practice which were unknown to those renown'd Persons, who at first were famous in this Faculty. 'Twas this Consideration produc'd that learned and elaborate Treatise of Cæsar Magarus, Doctor of Physick, and Professor thereof in the University of Ferrara, entituled, *De rara Vulnerum Tractatione, & Turundarum Abusu*. To the same also we owe many other Chirurgical Composures, that from time to time have appear'd in the World; some finding fault with one thing, and some with another, in the Ordinary Way; yea, some have gone so far, as universally to reject it.

It is not fitting, and would be extreamly unjust, to say any thing in disparagement of the Works of such as have endeavour'd to oblige the Publick by their Labours; only this, we think, may be said without Offence to any, That the Book of Cæsar Magarus is written in Latin, rare to be found, and very long, and consequently of no use to the English Reader: And as for others, they have either superficially only, and transiently complain'd of the Imperfection of their Art, or then having signified to us in general the Defects of the Common Medicines and Method, don't enter into a Detail of the Reasons that make 'em miscarry in particular Cases, or make known unto us either the Name, Nature or Composition of these other Remedies which we are to use in the place of the former.

The following Treatise, which was altogether de-

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design'd for the Reformation and Improvement of Surgery, is without any of these Inconveniencies. Herein the Author has discover'd to us the Disadvantages of the usual Remedies and Method, in the differing Cases that occur, by particular Reasons, drawn from the Nature and Essence of the Things whereof he discourses. He not only describes to the life the Way he would have us to take, but also, as to Wounds and some other Cases, points it out to us cloath'd with all the most minute and requisite Circumstances, in particular Instances of Cures of all sorts; done on all Parts of the Body. He gives us an Account of the Names, Natures, and Compositions of the Simple and Easie Remedies he uses, and which he has found attended with constant Success, not confining himself, or others, to one or two only, but exhibiting as was convenient a competent Variety. When he blames the Ordinary Practice, and substitutes a better in the place of it, he accompanies his invincible Reasons with several Authorities of the most considerable Authors. Moreover, he has taught us to evite the Exfoliation of Bones; and has given us a New Way of Dressing, after performing the Operation of the Trepan, with an Instrument of his own inventing.

He seems to have hit upon the right Way of carrying the Knowledge of the Art he professes to the farthest extent it can go; which is, by giving an exact History of what he has learnt therein by Experience, without vouching upon the Credit of others, whether Ancients or Moderns,

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what himself has not prov'd by a sufficient number of Trials. Had this Course been hitherto taken in all the Arts and Sciences, they had not remain'd to this day of the Dwarfish Stature we find 'em; neither had the World groan'd under the bulky Lumber of an infinite number of Useless Books, which, for the most part, are but imperfect and mangled Transcriptions from the Works of others. Had Physicians done so, their Art had not been still term'd Conjectural; nor had the ill Success and jarring Opinions of, by far, the greatest number of those who bear that honourable Name, expos'd it to Contempt, and render'd it so obnoxious to be slighted, even by the Vulgar.

But to return to our Author: All we will further say of him, is, That he is an unfeigned Lover of Mankind, Conscientious, Sincere, and Communicative of his Knowledge without Reserve; and all this accompanied with an unusual Modesty: The Truth of which desirable Character his Book will abundantly justify.

We will no longer detain the Reader in the Entry; only 'tis convenient he should know, that this Treatise, in the Original, is printed with the Approbations of some of the most eminent Physicians and Surgeons in France, which are omitted in this English Impression, that was designedly contriv'd into this small bulk for the greater Conveniency of the Reader; of whom all we have to demand in behalf thereof is, that he would Read, Try, and Judge.

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I Am sufficiently convinc'd of the Truth of what is deliver'd by *Hippocrates*, in his *Aphorisms*, that *Life is short*, and *Art is long*. And indeed it appears extreamly difficult, for one Man duly to acquit himself in the Practice of *All the Parts of Surgery*; the Capacity of the *Mind* seems too limited to be able entirely to grasp so extensive an *Art*.

Tho' I have, for these Eight-and-twenty Years past, practis'd *Surgery* under different *Climates*, and in divers *Hospitals* of the *Army*, yet I am so far from thinking to have attain'd to the Knowledge necessary in this Art, that I own my self scarce to have had the Time to improve, and make some Remarks on the Curing of Wounds, to which chiefly I apply'd my self.

However, having had many Opportunities of discovering the Mischiefs occasion'd by the Use of *Tents*, and by the *Long and Painful Manner of Dressing the Wounded*, and often *uncovering their Wounds*; I was mov'd to Compassion by their Sufferings, and thought my self oblig'd in Conscience to give my Advice herein. Besides, seeing all Men are allow'd

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the liberty to speak their mind with reference to the *Arts* they profess, I see not why I shou'd be abridg'd the Privilege others assume to themselves, possibly on much slighter Grounds.

'Tis not to be question'd, but among the great number of *Surgeons*, wherewith *France* abounds, some will applaud the Excellency of my *Method*; but I am apt to think it will not please all. I hardly ever knew any that practis'd *Surgery* as I do, and there are few of all the celebrated *Authors* we have, that deliver any such *Doctrine*; which, being contrary to the Practice of many *Surgeons*, will not, from the most part, meet with the Reception it merits.

'Tis a noble thing, said a *Wise Philosopher*, to be evil spoken of for doing well: There is no cause then, why any shou'd be asham'd to communicate to the *Publick* what he has learned, when the *World* may reap any Advantage thereby. Nothing is so inconsistent with *Christian Charity*, and that *Love* we owe to our *Neighbour*, as to refuse to let him light his Taper at ours. Knowledge, like *Light*, may be imparted and not lessen'd.

It is not my Design, by this *Method*, that possibly will appear to be new, to destroy the *Foundations*, and principal *Rules* left us by the *Ancients*, concerning the *Curing* of *Wounds*: I am willing only to make known my *Observations* on this Subject, and to point out what I've perceiv'd to be pernicious in the ordinary *Practice*; withal to shew what is certain and use-

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useful in the *Method* I my self have follow'd for several Years; which, I hope, will be so much the more useful and reasonable, as it is founded on the Principles of the *Circulation*.

I know it is a pretty bold Attempt, to go about to suppress *Tents*, which have been us'd for many Ages; and I am not ignorant, that *Custom*, on many Occasions, has the Force of a *Law*. But notwithstanding all this, I design to maintain the Privileges of *Nature*, and to shew, beyond Contradiction, that *Reason* and *Experience* are on my Side; tho' at the same time, I run the Hazard of being universally censur'd for the *Newness* of my *Method*.

I don't altogether condemn Those, who were the first Inventers of *Tents*, *Dilaters*, and *Setons*: They have had their *Reasons* for using them, as I have *Mine* for laying them aside. Many things have formerly been imploy'd in *Physick* and *Surgery*, which now are no more in use. The *receiv'd Rules*, the *Order of Curing*, and also the *Application of Remedies*, have been chang'd from time to time: That which is *new* at this time, will one day be *ancient*, as what to day is *ancient* was once *new*.

'Tis true, the *Ancients* did lay the *Foundations* of *Surgery*; they have said many things, but not all; neither was their *Knowledge* commensurate to the *Subject*. They had the honour of *Inventing*, but have left that of *bringing to Perfection* to *Posterity*. However, it is not to be doubted, but that they took all requisite
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Care to avoid being deceiv'd, and to inform themselves of the *Truth*; but if they had done All, Nothing had been left us to do.

Add to this, that if that *Prepossession* in favour of the *Ancients*, and the *blind Submission* to their *Dictates*, had not been laid aside, we had not seen the great number of skilful *Physicians* and *Surgeons* which *this Age* hath produc'd; who, after having shaken off the tyrannical *Yoke of Antiquity*, found out Things no less Necessary than Curious, that otherwise would have remain'd till now in Obscurity, and had possibly been unknown to *Posterity*.

Wherefore, it is not impossible, that in the Active Part of *Physick* also, which is *Surgery*, frequent *Experience*, and continual *Diligence*, may have discover'd *Abuses*, that had crept into *Practice*, and were authoriz'd by *Custom*.

It can't be deny'd, that what belongs to the *Fabrick* and *Constitution* of the *Body of Man* always was, but yet it has not ever been equally known. The *New Discoveries* have made a considerable Change in the *Knowledge*, *Judgment*, and *Cure* of *Inward Distempers*; and I see no reason why there ought not also to be some alterations in the *Cure* of *Outward Diseases*, and especially those of *Wounds*, which depend on the same *Principles*, and have the Advantage of the same *New Inventions*.

I suppose it will not be thought strange, if after I have labour'd for the space of fifteen or sixteen Years in *Hospitals* of the *Army*, I have

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have made some *Discoveries* in the *Curing of Wounds*: For *Use* we know compleats a *Workman*. I have formerly seen the most Part of *France*, I have travell'd over a Part of *Germany*, and all *Italy*, but have hardly found any Place where *Tents* were not in *Use*: Several there are who find fault with them, but few will give themselves the Trouble to lay them aside. Some before me have written against 'em; but, I believe, I have been the first my self who had the boldness entirely to suppress 'em in Practice, except only in case of excessive *Bleeding*, and in some *First Dressings*.

Hippocrates, *Galen*, *Celsus*, *Fabricius ab Aquapendente*, and many others cited in this Treatise, have been very near of my *Opinion*; and I have quoted some Passages of these famous Authors, that countenance my *Method*. I have instanc'd in some Places, out of *Ambrosius Pareus*, as being a well known Author, and celebrated for the Cure of *Wounds*; but it appears, by the Remarks I have made, that he is inconsistent with himself in many Places of his Works; which can't chuse but perplex the Mind of the young Surgeon.

Jacobus Marcus in his Preface to the *Summary of Bandages*, quotes *Septalius*, a famous Physician of *Milan*, and *Cesar Magatus*, a renown'd Professor in the University of *Ferrara*, who, as he says, condemn'd the *Use* of *Tents*, and the two frequent Dressing of *Wounds*; and adds, that to this *Method* they had suited their
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Practice in these two *Cities* for a long while.

I know 'tis not length of *Time* that can give a *Value* to *Things* ; it is only their own *Excellency* ; and every Thing must once have a *Beginning*. I hope therefore, if my *Reasons* are approv'd, and some Credit given to my *Experiments*, none will judge it necessary to wait till an *Age* is expir'd before they will list themselves on my Side. I know not whether my *Reasonings* will be of Force enough to perswade, but the infallible Proofs I have given of the Goodness of my *Method*, in the great Number of *Cures* I have wrought thereby, will, I hope, suffice to convince the *Publick*.

I grant, it is difficult at first to come over to the Opinion of another, when it is contrary to our own ; but when the Life of Men is concern'd, we ought not to delay one Minute to free our selves from Error, and to put off those Prejudices that often hinder us thorowly to penetrate into the *Truth* of Things. The *Opinions* we receive in our younger Days, and the most part of the *Maxims* we take upon trust from the *Ancients*, are ordinarily the Cause of the *false Steps* we make in the chief Concerns of our Calling. The Life of the *Wounded* is indeed in the Hands of the *Surgeon*, who has him under his Care ; wherefore he ought to use all Diligence, not only to attain a competent Measure of *Skill*, but also to find out a *Sure and Speedy Way* of curing *Wounds*. It will be objected to me, That a great number
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ber of *wounded Persons* have been, and are every Day cur'd with the Use of *Tents*, and also by following the *Ancient Method* in all its Circumstances. I answer, 'tis true: And if all those who are dress'd after this manner were in danger of being lost, it would be downright *Malice* and *Cruelty* to use it; neither had my Endeavours been at this time needful to suppress it, since it would have been rejected long e'er now: But this I affirm, after I have made Tryal of both the *one* and the *other Method*, and have carefully consider'd the Difference between 'em, that those who are cur'd by that of the *Ancients* have need of a healthful Constitution; besides, it is never without Danger, much Pain, and requires a great deal of Time; all which Inconveniences are avoided by embracing that which I propose.

In this *Hospital* we have by this *Method* cur'd *Wounds* of divers sorts, having had *Wounds* of all *Parts* under our Care: Wherefore this happy Success can't in Reason be ascrib'd to the Temper of the *Air*, which in some Places is favourable to certain *Parts* of the *Body*, as hath been observ'd by *Guy de Chauliat*, who speaking of *Wounds* in the *Head*, says, that they are more easily cur'd at *Avignon* than at *Paris*; and that those of the *Legs* are cur'd sooner at *Paris* than at *Avignon*. The *Air*, I confess, where I am, because of the Situation of the Place, is not so replenish'd with gross Parts as in plain and low Grounds, but still 'tis hurtful to *Wounds*,
both

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both by reason of the *Nitre* wherewith it is stor'd, and because of its Activity and Penetration : But I have never yet been able to remark, that it was either more beneficial or hurtful to one Part than to another ; and I have always us'd all possible Precaution to hinder its Access to all *Wounds* whatsoever ; as will appear by the Sequel.

I shall not in this *Treatise* discourse of the *Nature* and *Differences* of *Diseases* that belong to *Surgery*, this is already sufficiently done to my hand by others ; and the learned M. *Verduc*, Doctor of *Physick*, hath lately oblig'd the Publick with a compleat *Peice of Surgery*. I will therefore concern my self only with my own *Practice* ; and if any thing else chance to fall from my Pen, it will be only what I *thought* necessary for *Understanding* my *Subject*.

Tho' in many places of this *Book* I advise the Use of *general Remedies*, and a suitable Course of *Diet*, among the *Diversions* necessary in the curing of *Wounds*, yet I don't pretend to assume to my self what belong to *Physicians*, according to whose Directions they ought to be us'd ; but I wrote in an *Hospital*, where the whole Ordering of the *Wounded* was altogether committed to me. It shall ever be a *Law* to me, especially when the Occasion will allow, to keep my self within the *Baunds* of my *Profession*. That Man who wou'd acquit himself in his *Imployment* as becomes him, will find enough to do, tho' he
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keep himself to what properly belongs to *Surgery*: And those who pretend to know all things, most commonly know nothing at all. But after all, I judge it highly advantageous for a *Surgeon* to know, on certain *Occasions*, how to make a seasonable use of general Remedies, as well as of Topicks, Vulnerary Drinks, &c. For *Opening* of a *Vein*, a *Potion*, or a *Clyster*, when seasonably administer'd may save the *Life* of a wounded *Person*, or at least prevent many *Accidents*.

I have divided this little *Treatise* into three *Parts*: In the first, I treat of *Tents*, and the Mischiefs that always accompany the Use of 'em: After I have made it appear, that the *Air* is pernicious to *Wounds*, I add a *Dissertation* on *Uncover'd Bones*: And then I describe my *Way* of *Dressing*, after performing the *Operation* of the *Trepan*, with a *New Instrument* of my own *Invention*.

The second *Part* contains a *Collection* of some *Cures* that I have done, according to my *Method*, with a *Reflection* after each; which I justify by the *Authority* of several *Citations*. There wou'd be reason to think that I had accommodated *Nature* to my own *Sentiments*, and the *Success* of my *Practice* might be call'd in question, if I had not related many very important *Experiences*, and such as were publicly perform'd: For, without doubt, the establishing of a new *Method*, as I have already said, is a pretty bold *Attempt*, especially
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in a Time when *France* seems to have advanc'd *Surgery* to the highest pitch of *Splendour*, but particularly *Paris*, to which I owe my *Birth* and *Education*: Knowing therefore that *Experience* is much more convincing than *Reason*, I have quoted several *Cases*, and given a brief *Account* of several *Cures*, in a *Manner* as *Natural* as possible.

The third Part will be no less useful to the *Young Surgeon* than the other two; 'tis a general Idea of my *Practice*, with some *Observations*, and a description of the simple *Remedies* I use in the Cure of *Wounds* and *Diseases* belonging to the Province of *Surgery*: Their *Virtue* is sufficiently attested by the advantageous *Effects* which they produce; and the greater number of *Patients* cur'd by their Means, ought to gain them some *Repute*.

I have done what I could to give this Book a plain and easy *Stile*: If the Language is not fluent, nor the Expressions inviting, and agreeably order'd, it ought not to be surprizing: *Simplicity* and *Plainness* best becomes the *Truth*. A Book written in an *Hospital*, in the middle of the *Alps*, without any *Assistance* or *Advice*, and which is founded only upon *Practice*, neither can, nor ought to be attended with vain Embellishments of *Eloquence*. In a Word, I expect to persuade not so much by what I can say, as by what I have done. I hope the Reader will take in good part this *Essay*, and will not condemn a *Design*, the only *Aim* of which is, *The Glory of GOD, the Comfort of the Afflicted, and the Perfection of Surgery*.

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The Hospital-Surgeon :
 O R,
 A New, Gentle, and Easie Way, to
 Cure speedily all sorts of WOUNDS.

P A R T I.

Plainly shewing, by Reason and Authority, the Advantages of this Way, and Mischiefs of a contrary Practice : With a Discourse upon Discover'd BONES ; and a Way to Dress, with a New Instrument of the Author's Invention, after the Use of the Trepan.

C H A P. I.

Of the Four Ends propos'd in the using of Tents.

THE Use of *Tents* in Wounds being reputed of so long standing in Surgery, and but too much approv'd of, by the Universal Practice, at this Day ; it will be necessary for us, before we deliver our own Method, to give our
 B Thoughts

Thoughts thereon ; which also we will confirm by Reason and Authority.

Fabricius ab Aquapendente, in his 8th Chapter *Of Wounds*, reckons up only three Uses of *Tents* ; but many after him makes mention of four. One is to keep open the Orifice of the Wounds : Another to carry the requir'd Medicines to their Bottom : A third, to further the coming away of Extraneous Bodies : And a fourth is, to drink in as it were, and to retain the Filth and Excrements therein generated.

Our Design is at present to consider, whether these Ends, so far as they are expedient, may not be obtain'd without the Assistance of *Tents* : For I would not be thought, without Reason, to make any Change of the Order receiv'd in managing of *Wounds* ; nor rashly to lay aside any thing that might conduce to the Relief of the Wounded, or facilitate and shorten the Cure.

CHAP. II.

Of the First End of Tents.

IT is unquestionably certain, that *Nature's* Endeavours are ever bent towards the supplying of what has been taken away by violent means from our Bodies, and uniting the Divisions made therein : We ought not therefore to
keep

keep open the *Orifice* of a Wound, but if need-ful, it may be widen'd at the first Dressing; and thereby what is design'd in the first Use will be sufficiently attain'd. However, I don't altogether disapprove of the Use of *Dilaters*, and sometimes of *Tents*, when they are required to contain and support Astringents, to stop the Bleeding, or to hinder the Reunion of fresh Incisions, that sometimes are necessary in the first dressing of *Gunshot Wounds*; especially when there is any suspicion that *Extraneous Bodies* are lodg'd in the Wound, or some Splinter of a Bone that Nature is not able to reunite. But *Tents* are not only useless, but extreamly hurtful, particularly in *Gunshot Wounds*, that of themselves are oftentimes sufficiently enlarg'd by the coming away of the bruis'd Flesh, commonly call'd the *Escar*; before which we need not fear the closing up of the Wound.

It was never known that a Wound did fill up, while any *foreign Body* remain'd within it. Now the *Escar* is an Extraneous Body, in regard of those Parts to which it immediately adheres, and must therefore of necessity be separated from them: Moreover, Nature can't effect a Reunion of the Flesh till first she have free'd her self of what keeps asunder the Parts to be joyn'd.

Fabricius ab Aquapendente is of the same Opinion, Part I, Book 4, Chap. 9. where he

says, that *Nature never cures a Wound, so long as any thing is in it that offends her.*

I do believe there is no-body but will grant that the Separation of the *Escar* is a Work of Nature, that is most speedily perform'd where the Natural Heat is most vigorous: Now, seeing new Flesh is bred easiest at the Bottom of the Wound, 'tis there also where it first begins to fill up; and therefore the Orifice is last of all freed from the *Escar*, and supply'd with new Flesh: for which Cause we have no Reason to fear its sudden closing; neither does there appear any necessity of using *Tents*, to avoid that Inconveniency.

As for Wounds made by sharp Instruments, they have no need of *Tents*, seeing they don't want to be dilated, but only to be clos'd up: Now what thwarts Nature's Intention not only may, but ought to be laid aside.

Finally, *Contused Wounds* can't be united, till what is bruised is remov'd either by the force of the Natural Heat, or the Application of Dissolving Medicines, or by Suppuration: and consequently it appears, that in this Case also, as well as the others, *Tents* may be forborn, and so the first *End* propos'd in using them is not to be allow'd.

CHAP. III.

Of the Second End of Tents.

THere will be no need of a great many Reasons to demonstrate, that it is an easy matter to make the *Remedies* pass to the *Bottom* of a *Wound*, without the Assistance of *Tents*; for to this Purpose nothing more is requir'd, than to give a pretty soft and thin Consistence to those *Ointments*, *Balsams*, and other suchlike Remedies, as are commonly us'd in curing of *Wounds*.

When a simple Division is made in a healthful and well-temper'd Body, Nature stands not in need of any thing else, but the *Natural Balsam* of the Parts, or the *Nutritious Juice*, in order to procure a Reunion, especially if it is in fleshy Parts, in which Case the *Tents* and *Ointments* do only irritate the *Parts*, cause Fluxions of *Humours*, putrify the *Flesh*, alter the *Nutritious Juice*, and so occasion long and very great Suppurations, which rather hinder than promote the Cure.

CHAP. IV.

Of the Third End of Tents.

THat the Discharge of the *Extraneous Bodies* is at all furthered by *Tents*, is a thing not to be imagined: Yea, on the contrary, we have more Reason to believe that they conduce very much to retain them. For supposing that any thing remains in a *Wound*, as a *Bullet*, Pieces of Bone, of Cloaths or Wad, &c. it is almost impossible ever to draw it forth at the same Place by which it enter'd, unless it be at the first or second Dressing: And this happens very seldom, tho' never without great Pain, and much Time or Trouble.

There is no Probability that a Body so heavy as *Lead* can remain for any considerable time in one Place, unless it stick in some Bone or Joynt. The *Flesh* has not solidity sufficient to detain the *Bullet*, but gradually yields to its descending Weight: and supposing it did not stir of it self, yet so far wou'd a *Tent* be from furthering its coming out, that it would rather fix it faster, and push it deeper into the *Wound*: Now the *Matter* ever follows the *Bullet*, and makes to it self one or more Cavities; it gathers together, encreases, ferments, and commonly brings on a Fever; the Part is weaken'd, the Body
wasted,

wasted ; and, in fine, the wounded Person frequently is brought to an untimely End. The like Accidents may also be produc'd by the Splinter of a Bone, or some such other thing, after the same manner. Hence it is, that on the least Suspicion, whether from the Complaint of the Wounded, or any other Appearance of a foreign Body remaining in the *Wound*, Search is made thereinto with Instruments, and with the Fingers, but for the most part to no purpose, as I have often seen, and all this to satisfy themselves, and to shew to the By-standers and to the Patient, that no Diligence has been spar'd to further the Cure. This Method is no less hurtful than cruel, and by exasperating the Parts, causes Fluxions, and brings on Putrefaction, yea, oftentimes incurable Fistula's. But when all these afore said Means fall short of Success, then a lower Part is sought out, therein to make a counter-opening, which sometimes, when the Patient is of a strong Constitution, effects the Cure.

Pieces of Garments, of Wad, of Linnen, &c. are often carried by the *Bullet* into the *Wound*, and there remain after it is drawn out, being deeper lodg'd : These things are but too capable of occasioning troublesome Accidents ; and *Tents* conduce not a little to keep them there, by obstructing the Passage whereby they might be expell'd.

It is certain, that a *Tent* always swells in the Wound, and filling up the *Orifice*, keeps in the *Matter*, which not being longer to be contain'd within the narrow Bounds of the Wound, spreads it self into the neighbouring Parts, glides between the *Muscles*, and carries along with it the *Extraneous Bodies* which are there corrupted and putrify'd, and infecting the Wound, occasion Mortifications, or Abscesses very hard to be cur'd.

I say then, to conclude this Chapter, that it is altogether in vain to use *Tents* with a Design thereby to facilitate the Discharge of *Foreign Bodies*; and that they rather conduce to keep them in, than assist in furthering their Passage. But if by Chance it should fall out, as sometimes it does, that the Wound closes up when there is some *Extraneous Body* within, it will occasion an Abscess, either under the ancient *Escar*, or somewhere else, more convenient for Nature, by the opening of which only, whatever is hurtful and unprofitable will be discharg'd.

As for *Leaden Bullets* that have not been drawn out at the first Dressing, their remaining in the Parts can do no great hurt, because they are friendly to Nature; and in process of Time, by their own Weight, slip down between the Muscles, and often appear

pear under the Skin, from whence they may be taken out, without either Trouble or Danger. The most Part of Surgeons are convinc'd of the Truth of what I say : Only this I must acknowledge, that we ought to endeavour to draw forth such Bullets as are either lodg'd in a Joynt, or in hazard of falling into some Cavity of the Body ; as that of the Scull, of the *Thorax*, or of the lower Belly, where they might be irrecoverably lost.

CHAP. V.

Of the Fourth End of Tents.

AS for the fourth pretended Use of *Tents*, I grant that they are always soak'd with the Moisture of the Wound ; but as they retain that Humidity, not suffering it to pass out, so they are thereby swell'd up, and enabled to intercept the Passage of all the other Matter that is generated : Now I would willingly hear a Reason for keeping in a Wound Excrements, which Nature is so solicitous to throw out ; for being corrupted by their abode, they alter and destroy the Constitution of the Parts that contain 'em. Seeing then the longer the Matter is detain'd, the more it is deprav'd, I am

perswaded 'tis much better to give it a free Passage, not interrupting its Course, than to shut it up with *Tents*, and force it to take other ways.

Having therefore demonstrated, that the Ends that have been design'd by the Use of *Tents*, in so far as they are for the Advantage of the Wounded, may not only be attain'd without 'em, but are really hindred thereby, I will endeavour in the following Chapter to take the part of *Oppressed Nature*, and to assert her Liberty by Reasons founded on the Circulation of the *Blood*, and supported by the Authority of many Authors.

CHAP. VI.

Consequences deduc'd from the preceding Chapters.

Nature hath been diversly defined by Authors, *Julius Alexandrinus* calls it *The Author, the Principle and Efficient Cause of Natural Beings*. In this Sense it is regarded in *Physick* as the Cause of *Health*, and the *Physician* of *Distempers*; and is by *Van Helmont* consider'd in three different States; to wit, either in its full Strength and Vi-
gour

gour, or as impair'd and weaken'd, or as altogether oppress'd and prostrate.

These things might be apply'd to our present Purpose; however, that I may give a more clear and intelligible *Idea* of *Nature*, which may better suit with outward Diseases, I shall look upon her as the *Chief Worker of whatsoever concerns our Health*: and I am perswaded, seeing she has fram'd every thing according to the Law of their being, she will also maintain them in their necessary *Union*, unite them when divided, and in a Word, restore them to their first state, when any way fallen from it.

This *Union* is so necessary for maintaining *Health*, and preserving *Life*, that all, or at least the most part of *Diseases*, proceed from a Defect therein: For things of a foreign Quality are one Way or other mixed with the *Humours* of the Body, which disordering and interrupting the *Union* of their Parts, change and deprave the good *Temperament* and Qualities of the *natural Balsam*, called *Radical Moisture*; and from hence come *Diseases* and *Death*.

In outward Maladies also, and in Divisions of the harder or softer Parts of the Body, manifest to the external Senses, it is plain, that *Nature* suffers, and consequently must strive with all her Might to re-unite the divided Parts. The Surgeon, as her faithful

faithful Minister in curing Wounds, ought to imploy his utmost Care to assist her, while she labours to effect that so necessary *Union*. To this End he should not only leave her at Liberty, putting no Hinderance in her Way, but also free her from whatever may thwart her Design. Finally, he must assist and imitate her, mind her *Inclinations*, observe her *Proceedings*, and follow her as it were step by step, that he may be ever ready to lend her his requir'd Help.

The Art of Physick turns upon this Principle, that *Nature has the chief Hand in curing Diseases*; 'tis with her the Physician ought to consult, and without her Consent as it were he ought never to do or undertake any thing: And, in a word, he only is the ablest *Physician*, who has most earnestly apply'd himself to the study of *Nature*.

I acknowledge, there are many Cases wherein *Nature* alone is not sufficient, and in these she must be help'd out by the Hand of *Art*: as in the drawing out of *Extraneous Bodies* from Wounds, cutting off mortify'd Parts, opening Abscesses, restoring broken or disjoynted Bones, and other like Operations belonging to the Province of *Surgery*. But let a Surgeon be never so superficially acquainted with *Nature*, he may easily perceive, that by *Tents* and *Dilators* she is oppress'd, depriv'd of Liberty of acting,

ing, and directly oppos'd in her Design, which is to re-unite the divided Parts.

Fabricius ab Aquapendente, whom I mention'd before, asserts, that *Nature never cures a Wound, so long as any thing is in it which she can't retain*: For in this he is agreed with the most Judicious, that 'tis *Nature* that works the Cure; and at the same time shews, that a *Tent* is such an Enemy to her, as neither ought nor can be us'd but to her hurt and destruction. *Galen* also, in his third Book of Method, says, that 'tis not the Remedies, but *Nature* that closes up the Wounds.

Wherefore, Experience having convinc'd me of this Truth, I set my self to consider *Nature's* Designs, her Inclinations, and the way she takes to effect the Cure of Wounds; and have observ'd, that *Tents* do ever oppose, and prove a Hinderance to her. 'Tis every Day to be seen, that *Nature* can suffer nothing foreign to abide with her; she endeavours with all her might to free her self from *Tents* and *Dossels*, with which Wounds are ordinarily cram'd up: For tho' they did not occasion Pain, as we may be well assur'd they do, yet being *Extraneous Bodies*, *Nature* can't endure them without trouble; and let them be never so small or soft, they must necessarily press always upon some *Vessels*, of which the Body is nothing else but a Contexture.

According to their bigness and hardness, *Tents* do more or less disturb the course and order of the Circulation of the *Blood*, so far as the *Wound* reaches: They squeeze out the most subtil part of that, or other *Liquors* contain'd in the *Vessels* they press upon, which by the *Matter* already in the *Wound* is converted into its own Nature, and becomes a *Ferment*; that being retain'd, grows hot and corrupt, and so alters the containing and neighbouring *Parts*, and oftentimes imparts its vicious *Qualities* to the *Mass* of *Blood*, by *Vapours* sent into the *Veins*; yea, the *Matter* it self is suck'd up by the *Veins*, their *Orifices* being dilated by its *Fermentation*, *Moisture*, and *Stay*; and this circulating with the *Blood*, entirely corrupts it, and causes *Fevers* that end in *Death*, unless *Nature*, by some critical and healthful *Motion*, throw out the *Corruption*.

Ambrosius Pareus in his ninth Book, treating of *Wounds*, Chap. 5. forbids the Use of *Tents* in few Words, being therein supported by the Authority of *Galen*, who in the fourth Chapter of his *Method*, affirms it to be necessary in all *Wounds*, whether simple or compound, that nothing be between their *Lips* that may hinder *Re-union*. The same *Pareus*, in his ninth Book, Chap. 7. recommends the Use of long and thick *Tents* in the
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Beginning, and afterwards advises to make 'em more thin and short; but does not here forbid their Use. In the same Book, Ch. 15. he takes the part of *Tents*, in opposition to a certain Physician, that had written against his *Method*.

These differing and contradictory Opinions in one and the same Author, must of necessity throw the young Surgeon into perplexing Doubts, so that often he can't know what is best, or what Way is most secure. 'Tis certain however, that the Mischiefs of *Tents* was known to *Galen*, because he forbids their Use; and also to that Physician who found fault with the Practice of *Pareus*; his Name I know not, but by the Acknowledgment of the same Author, he altogether lays aside the use of *Tents*, and orders to dress a Wound but once in four Days. This Method therefore is not so new as at first I thought with my self, for I had form'd my Design before I was aware of what I have here quoted; and it was *Experience* only that opened my Eyes.

Galen justifies further my Opinion, in his third Book of *Method*, and ninth Chapter, when he says, that in every Wound there are two sorts of Excrements, a gross and a subtil, which, as he affirms, hinder the generation of Flesh. Now if this be so, it is very preposterous to keep them in the Wound
with

with *Tents*. If it be said, that the *Tents* may be made so little, as not altogether to fill up the *Orifice*, nor hinder the Passage of the *Matter*; I answer, that tho' they be made never so small, yet will they fill up the Mouth of the Wound; because they ever swell up to the bigness of the Space they are in: But supposing the most subtil matter to escape, yet the more gross and clammy is by them retain'd, and is enough to occasion grievous Accidents. Now, if small *Tents* prove such a hindrance to the curing of Wounds, what may be expected from those that are long and hard, and pass to the very Bottom? And yet these also are used by many Surgeons, who for want of applying themselves to the Consideration of *Nature*, and her Intentions in the curing of Wounds, continue to follow a Method that is both cruel and destructive.

Tents, *Dilaters*, and *Setons* always occasion Disorders in the Places where they are apply'd; if they touch the *Nerves*, they cause extremity of Pain, that is often the Original of many Evils, and follow'd by many grievous Accidents, such as Convulsions, loss of Sense, &c. If they bear upon a *Tendon*, its Action is hurt, and Motion ceases: If they press the *Vessels*, as they almost ever do, the Circulation of the Blood is disturb'd.

But

But suppose a Tent should only press together the * Fibrous *Papillæ* that compose the Skin, which are of a quick sense, being the * *Mamellons Fibreux.* Instrument of *Touching*; this alone were enough to disturb the Order and Distribution of the Spirits, which now moving in a tumultuary way among these Fibrous *Papillæ* of the Skin, contract them by the irritation and pricking which they cause. Now the Fibres being shortned, and the Skin contracted, the Vessels must of necessity be doubled or squeez'd together, and consequently the Circulation diminish'd, or entirely suppress'd. In these Cases there is not so much Blood carried back by the Veins, as was brought by the Arteries: Now, if the Circulation is altogether stopt, a Mortification ensues; if considerably diminish'd, an Abscess; but if the Humours ouze into the Wound from the Capillary Vessels, large and tedious Suppurations are occasion'd.

The Hardness and Swelling are caus'd by the Matter that is stopt and diffus'd about the place; and therefore all the Accidents are more or less grievous, and vary according to the force of the Compression, the quantity of diffus'd Matter, the good or bad Disposition of the Blood, of the Humors, or of the Part affected, and the different Degrees of the Natural Heat, which hastens
or

or keeps back the Fermentation and Putrefaction.

From what hath been said it appears, that the Blood and Humours are not carried or attracted (as some Authors love to speak) to the afflicted Part more abundantly than at other times, altho' the Spirits run thither in much greater plenty. On the contrary, it is evident enough that the Blood circulates less in the wounded, than in the sound Parts, because it moves with greatest ease in these latter: And it is a Law of Nature, that a Body in motion always moves towards those places where it finds least Opposition.

The Truth of this is clearly demonstrated by the Accidents, which some time ago follow'd on certain Malignant Fevers, in Places not far distant from hence. They caus'd an Obstruction, and Swelling in the lower Belly, so considerable, that the Circulation was stopt, and a *Gangreen* ensued: But on the contrary, the Blood was violently, and in too great quantity, carried upwards; it could not be contain'd within the Vessels, broke thro' all Obstacles, and caus'd sharp Pains, Abscesses, Deliriums, and Death.

Upon a serious view of the Accidents that most commonly attend Wounds, I believe that for the most part they proceed
from

from the Disorder of the Circulation of the Blood, occasion'd by broken pieces of Bones, Bullets, or some other foreign thing remaining in the Wound. Tho' these things are not of such a Figure as to cause an Irritation, nor can of themselves produce any Puffrefaction, yet they commonly bring on Abscesses. We ought not then to ascribe these Accidents to *Pain*; for sometimes they come without it; and this often is present where those don't happen. But I am of Opinion, that these Extraneous Bodies press the Vessels that are dispers'd, through the place where they are, and stop the Blood, which slipping into the Pores and Spaces of the Flesh, by its stay and fermentation, is there corrupted, and chang'd into the Matter of an Abscess.

'Tis true, Leaden Bullets, or other things of a like nature, have been long in the Body, and yet no Abscess hath follow'd; but this may be attributed to the largeness of the Place wherein they happen'd to be lodg'd, so as not to occasion any Disorder; or because, sliding between the Muscles, they did not hinder the Course of the Humors. The other Accidents that ordinarily attend *Gunshot Wounds*, are also occasion'd by the Defect of the Circulation; as I shall observe in the sequel of this Discourse, where it shall be made appear, that *Tents* and *Dilaters* us'd
in

in this sort of Wounds, hinder the fall of the Escar, the dissolution of what is bruised, and the passing out of whatever ought to be brought away.

This will, without difficulty, be granted by those who well understand the Course of the *Blood* and *Humors*, and the Union and Order of the Parts that compose the Body. All the Parts are so united one to another, that the least Separation can't be made without Pain, Effusion of some Humor, or some other Disorder. Experience shews, that it is not only the Air that rots the Bones, but also the Nourishment of the Nervous Parts, when it is alter'd by a malignant Acid, and generally any Matter that has Acidity enough to cause a Fermentation and Corruption in the place of its abode, when kept in by Tents or other such Obstacles.

Tho' *Doleus*, in his Surgery, is not altogether against the using of *Tents*, yet he shews, that we ought to do it with great Caution: From whence it appears, he judg'd them dangerous.

Etmullerus is of the same mind, in his *Physical Surgery*, where he joyns such Accidents with the Use of *Tents*, as ought to affright those who make use of 'em. He advises the using of *Pledgets*, and quite to lay aside *Tents* in Wounds of the *Nerves* and *Tendons*, and in those of the *Foynts*. Hence it appears
that

that this Author was no great Favourer of *Tents*; for which reason he orders the Use of the *Vulnerary Balsam* in the Cure of Wounds; which promotes the generation of Flesh, and causes a speedy Union; to both which the Use of *Tents* is directly contrary.

All the famous Physicians who have treated of Surgery, and the Curing of Wounds, are well nigh of the same Opinion. I could reckon up a great number, if I thought that these I have adduc'd were not enough. It appears, as I have said in the Preface, that *Septalius* and *Magatus*, both Renown'd Physicians, that practis'd Surgery in *Italy*, follow'd this Method for the space of 40 Years, with very good Success.

M. Caufape, Doctor of Physick, in his Observations on the frequent Use of Bleeding, altogether discards the Use of *Tents*, without any Reserve. He supports his Opinion with Reasons, which I thought of before his Book came to my Hands: But we may be sure that Author did not write on this Subject before he was fully convinc'd, by his own Experience, of what he advanc'd. It would be an unpardonable Rashness for one to write and maintain that, of which he doubted the Truth, and to establish a Method on false Principles.

I very well know that many will oppose what I advance on this Subject, which is the common Fate of all Opinions that appear new; but of this Matter *Experience* only is the most competent Judge, whose Testimony shall be deduc'd at large, and with all Faithfulness, in the Second Part of this Work.

In this First Part I make account sufficiently to explain the Reasons that oblig'd me to lay aside the Use of *Tents* and *Dilaters*: I can't approve their Proceeding who use 'em because others have done so, or because the Ancients have order'd it. The Glory or Blame of the *good* or *ill* Success, say they, accrues not to us; we have Custom and Antiquity for Our Warrant. But *Arts* and *Sciences* ought never to be shut up within such narrow and unequal Bounds, *Knowledge*, *Reason*, and *Experience* would be injur'd to the highest degree, if we should impose upon them such severe Restrictions, and take from 'em that Liberty, which should last equally with the World.

CHAP. VII.

*Reasons to demonstrate the Mischief
of Tents.*

MAny of the Ancients, and some of the modern Writers, have spoken of *Tents*, as Things indifferent ; such Authors I mean as having written of Surgery and the Cure of Wounds, seem to have brought these things to some perfection. They leave it to the Discretion of the Surgeon, either to use them or not, according as they judge convenient : They did not think this Matter of such moment, as to require their Attention ; they look'd on these Means with unconcern'd Eyes, referring themselves therein to the Honesty of those who first wrote of 'em. 'Tis apparent they had not observ'd, as I have often done, the Mischiefs occasion'd by *Tents*, the Use of which destroys indifferently the Vulgar with Persons of Merit, whose loss in a State is always to be regretted.

We need not be surpriz'd at what we see happen every Day, in the Cure of all sorts of Wounds ; 'tis not at this time only that one thing has been taken for another. Our Knowledge is not so great as to reach to all neces-

necessary Truths; nor do we perfectly understand the Causes of all the Accidents and Disorders that follow upon Wounds; all those who have treated on this Subject have endeavour'd to explain 'em according to their Opinions, as I have done my best to accommodate 'em to mine: But Occasions are now frequent enough, and therefore it will be easie for any one to inform himself of the Truth, and to distinguish who are in the right, and who not.

M. de la Charriere, in his *Book of Operations*, discoursing of Wounds, advises carefully to wipe away all the Matter of a Wound, and to fill up even the very least Corner with Dilaters or Doffils, to hinder its staying, lest it should be suck'd up by the Veins, and carried by the Circulation to the Heart. The same Author adds, That the Air is a most powerful Enemy to Wounds: Nevertheless it is impossible to dry up the Matter with all that Exactness he requires, what Diligence soever be us'd, without taking up some Time, during which the Air will do inevitably more harm than the Matter which therein might have remain'd; which often is not endu'd with all these ill Qualities, one is apt to imagine; as shall be made to appear in the Fourth Chapter of the Last Part of this Treatise.

This

This Author acknowledges that in *Contusions*, a little extravasated Blood squeezes together the Vessels, interrupts the Course of the Blood and Humours, and causes Fluxions and Inflammations. What then may be expected from a like Quantity of *Dossils* heap'd one upon another? They encrease the Division made in the Body, and oppose the Design that one ought chiefly to have Regard to in curing Wounds, which is Re-union. To this may be added, that they are more hard, painful, and contrary to Nature, than a little Blood of which he speaks.

As for what is alledg'd by him, that the Matter might otherwise be taken up by the Veins; it is not to be apprehended, unless it were of so great a Quantity as to ferment, or made so long a stay in the Part, as to open and dilate the Orifices of the Vessels. This may indeed fall out in Wounds of the Breast; as will appear in the second Part of this Book, and in those of the *Thorax*, where the Capacity and Heat of the Part are sufficient to produce that Effect. This also may happen in great Abscesses, whereof we will give some Examples at the End of this Work. Finally, this may arrive when the Mouth of a Wound is stopp'd up with *Tents* or *Dilaters*, which too often keep the Matter shut up from one Dressing to another: hence it encreases, ferments, and ordinarily

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acquires

acquires a vicious and malignant Quality, which may be communicated to the Heart by means of the Circulation of the Blood.

Of all those Mischiefs, *Tents* and *Dossils* may be accounted the chief Occasion. Now to avoid all these Accidents, and the staying of the Matter in the Wound, we need only leave open the Orifice, and put nothing into the Cavity which may increase the Separation of the Parts; to the end they may come together, when there is nothing to hinder their Re-union, nor any empty Space, where the Matter may make any considerable stay. These I think are good Reasons, and strong enough to overthrow an Opinion that is contrary to my ten or twelve years *Experience*.

The same *M. de la Charriere*, a little further says, that the Orifice of a Wound must be dilated when it is so little that it will not suffer *Dossils* to enter, that so it may be fill'd therewith: And I on the contrary widen it, that I may avoid the using of them, for Reasons mention'd before. Moreover it is to be fear'd, that a *Dilater* may be lost, and fixt in a deep *Wound*. Of this we have had sufficient Proof in the Person of one of our *Generals*, and many others wounded in the Battel of *Marseils*.

Wherefore if *Tents* may be laid aside, as has been done in this Hospital, even in deep Wounds of the most fleshy parts of the Body;
much

much more ought they to be forborn in others.

The same *Author* before-mention'd rejects the use of *Tents*, excepting in deep Wounds of the Breast, and lower Belly : But it may be seen in the second Part of this Treatise, where we discourse of Wounds in the Breast, in what manner we have cured many such of different Natures without the Assistance of *Tents*.

As for those in the lower Belly, I know it may be said to me, that if I have not us'd *Tents* to them, it is long of the difficulty of their Application, and stay in this Part, where, by reason of the continual motion, they can't be kept in, unless with a very streight Bandage. But the matter is otherwise ; for indeed I see not for what Reason *Tents* are required to this part any more than to others. Let us suppose now, that the expected Suppuration of the contained Parts that are wounded is already begun, 'tis impossible the Matter can come away while the Orifice is stop't up with a *Tent*, but it must fall down by its own weight into the lower part of that Cavity : Also what Matter or Blood may there be collected, can't be discharg'd by reason of the *Tent*, which is as a Dam to keep it in ; especially if we wait till the Suppuration of the Teguments, which is never great, be excited by Irritation or by *Tents*. Otherwise the Motion in Breathing, and the lifting up of the *Peritoneum* in Inspiration, will drive out the Matter as it breeds, if a free passage be allow'd it.

There is one Case wherein *Dilaters*, and sometimes *Tents*, become in a manner necessary ; and that is when a Wound is accompanied with a considerable Bleeding ; then they may be us'd to carry Astringents to the Aperture of the Vessels, and to support and keep them on ; chiefly in deep Wounds : For if at first we should joyn the Lips of the Wound, and apply Astringents upon them, the outward Bleeding might be deprest before that of the Vessels were restrain'd ; and so the Blood running between the Muscles would there be corrupted, and would spoil the Parts wherein it is contain'd, and those that border upon them, and might also occasion Suffocation, and a Gangrene. This is what I saw, at *Turin*, befall the Baron *de la Serra*, a Gentleman of *Savoy*, who being wounded with a Sword near the right Arm-pit, had a branch of the *Vena Subclava* opened : He was dress'd by a very expert Surgeon, who, whether by chance or otherwise, neglected to apply Astringents to the Aperture of the Vessel, tho' the Bleeding was very great : The Wound was joyned, and the Part loaded with Astringents, which were made fast with Compresses and Bandages. In the meantime the Blood continu'd to run from the Vein, and to diffuse it self between the Muscles of the Breast. Two or three Days past before the first Dressings were taken off, and then the *Thorax* was found to be Gangren'd.

The

The wounded Person died in a little time after.

The Cause of this Gangrene can't reasonably be ascrib'd to any thing else but the retaining of the Blood and Matter, which finding no Out-let, squeez'd down, by reason of their bulk, the Vessels and the Nerves, and hindred the Circulation of the Blood, and Course of the Spirits and other Liquors, so that the *Blood* became quickly corrupted, and caus'd all these Disorders. These same Accidents may be occasion'd by *Matter*, shut up in the Cavity of Wounds by *Tents* stopping their Orifice; especially if that Matter is considerable for its Quantity, and very much crowded.

When in my younger Days I frequented Hospitals, and practis'd with very able Surgeons, I have seen at the time of dressing, the *Tents* for the most part expell'd from the Wounds, in spite of the Bolsters and Bandage: Nature then clearly signifying her Intention. Nevertheless they continu'd still to use them, forcibly thrusting them again into the Wounds, though not without much Pain. What a strange Method is this? How is it possible for a Wound to close up, so long as a foreign Body is entertain'd within it? If a Pea, or a little Ball, be kept in an Issue, tho' for ten Years, it will still remain open: But if you take it out but for one half Day, you shall find it entirely fill'd up.

A Tent does the same to a Wound that the Ball does to an Issue ; and *Fistula's* that trouble so many People all their Life, are the Effect of Tents, that have been inconsiderately us'd in the Cure of their Wounds. The Humours take their Course through these places, which they find open : This becomes first habitual, and then natural and necessary, and thereby the Flesh is harden'd, and becomes callous. These Impurities which *Nature* sometimes evacuates by ways surprizing to us, being detain'd in one place, become a Bag of Matter ; and that same Nature, unwilling that any thing superfluous and unprofitable should remain with her, by a peculiar Sagacity makes a Virtue of Necessity, and uses these Passages she finds open to free her self from the Excrements and Humours that disturb her ; but at the same time a part of the * *Radical Balsam*, which is the Life and Support of the Parts, passes out also by the same ways.

* *Baume*
* *Radical.*

I know not to what I can better compare those Apertures in the Body, through which Humours take their Course, than to those of Trees, whether made by Nature her self, or the assisting Hand of Man, by which the Sap that nourishes both the Trunk and the other Parts passes out. The Difference only lies here ; that *these* help to encrease and preserve the

the Trees, but *those* to destroy and weaken the Body.

For certain it is that *Fistula's* considerably endamage the Parts, and those who have 'em are never in an entire state of Health; nay, they shorten their Days, whatever any may alledge to the contrary. But that which surprizes me most, is, to find the afflicted Persons brook the Inconveniencies they suffer with a kind of Satisfaction, fancying, that if in time they should permit their Sores to close up, then Death would undoubtedly quickly ensue.

Wherefore when there is nothing to hinder the filling up of a Wound, *Art* hath nothing else to do, but to observe *Nature's* Proceedings, which sometimes exceeds in the breeding of Flesh in soft parts, and sometimes in generating the *Callus* in hard parts. But 'tis observable, that in curing Wounds she proves oftner superfluous than deficient. Thus it appears, that Tents ought not to be us'd in Wounds, seeing Nature so very frequently throws 'em out, because she cannot bear the presence of what is foreign. Don't we see, that as soon as she is oppress'd with any thing hurtful, all her Endeavours are us'd to get rid of it? She has a thousand Means unknown to us, and often takes such secret and singular ways as are hidden from the most curious Anatomists.

That young Man, under the Care of *Fernelius*, who had swallow'd the Ear of Grass that came out some Time after by a little Abscess between two of his Ribs, is a sufficient Demonstration of this Truth. *Ambrosius Pareus* also relates, that he took from the *Grein* of a Woman, a Needle that had enter'd at the Hip of the same side. In fine, the consideration of the surprizing Ways whereby extraneous Things have been cast out of the Body, obliges us to conclude, that Nature is very wise, and can't endure the least Thing that is hurtful or disquieting. A little Dust in the Eye disturbs all her Oeconomy, and no rest is to be expected till it is out. A small Crum of Bread that goes not the right way, but is by some motion, or the agitation of a little Air thrown into the Wind-pipe, does it not endanger Suffocation? What endeavours are made to cast it out? The Air breaks forth with Violence from the Lungs, the whole Body is shaken, all its Parts are in motion, the Face is enflam'd, the Eyes run with Tears, Convulsions follow, and this admirable Masterpiece of Nature is all in Trouble and Disorder, and all this is for a Thing in appearance most inconsiderable. A Stone or a little Sand in the Reins, Ureters, Bladder or *Urethra* will scarce permit a moments rest for the violent Pain: And indeed our Life may be called an Image of Death, so long

as

as a Stone is lodg'd in any of these Parts: So true is it that Nature abhors what disturbs her.

Now 'tis to be observ'd, that according to our Method the *Dilators* and *Tents* with which the Wound was filled at first, must be taken out, so soon as the Bleeding is stop'd; and that the surest way for the Surgeon, is henceforth to leave off such dangerous Means altogether, because their use may irritate, and at the same by touching the Vessels, may open them and renew the Bleeding, which by protracting the Cure, occasions new troubles to the Wounded, as I have often seen.

Fabricius ab Aquapendente, Part I. Book 1. Chap. 2. speaking of transverse Wounds of the *Forehead*, advises to apply long and slender Compresses wet with the White of an Egg, one on each side of the Wound, and to press them together, so that the Lips may touch without stitchings, especially if we would avoid the Deformity of a Scar. Now I know no Reason why the same Method mayn't be put in Practice in Wounds of other Parts of the Body, made by cutting Instruments: Nor do I understand why such should be dilated, seeing they require only Re-union. For my own part, I have practis'd this way in many Places, and on different parts of the Body, with the desired Success.

Those who are not prepossess'd, or will reflect but a little on the *Common Method*, will be convinc'd that I don't without Cause reject it. 'Tis easie enough to apprehend the Cause of the perpetual Pains suffer'd by those miserable Persons whose Wounds are fill'd with *Tents* and *Dossils*; for, having thrust in to the Sore *Lint* twisted, hard and uneven, and apply'd thereon Plaisters and Bolsters, all is made fast with a Bandage that passes several times about the Part. Now, tho' this may seem not to be very streight, yet it is ever tight enough to press upon the Tent, and cause it to touch every where upon lively and sensible Parts: For the inward Parts of our Body are indeed very sensible, and unaccustom'd to the Touch of any extraneous Thing, so that the Wounded can't move in the least without great Pain; his wounded Members are utterly disabled, and by a kind of Necessity he is confin'd to his Bed, as a lame and impotent Paralytick, and always in one posture, which is no less (if not more) pernicious than the Wound it self, especially in Hospitals, where the Beds not being such as are requisite for the Ease and Comfort of the Sick, cause almost universal Excoriations, and oftentimes Mortifications and Gangrenes. This I have many times seen; and frequently through the Fault of those who

who follow the Ordinary Method of Dressing.

Not that the other Parts of our Body are destitute of Sense, any more than these I just now spoke of ; those that are so charitable as to visit Hospitals will attest this ; nothing is there to be heard at the Hours of Dressing but Cries and Howlings.

But we can't enough recommend to Surgeons, on this Occasion, to use their Patients in the most gentle manner possible ; for it must be own'd, that there are some among 'em that would think they had not acquitted themselves as they ought, unless they made those under their hands to roar out for some considerable time ; which makes many to think, that *Surgery* and *Cruelty* are inseparable.

CHAP.

CHAP. VIII.

*The Reasons of the Author's Practice,
with the Motives that induc'd him
thereto.*

FROM what I have already said, I know I shall be accus'd as if I only writ to find fault with the *Methods* now in use. Nevertheless I am not afraid to avow, that I am inspir'd with a much Nobler Design: I take no pleasure to trample upon the Monuments of the Dead, or to carp at the Living; 'tis Conscience alone that obliges me to maintain what I have advanc'd for the Good of the Publick. But as it will be an hard task to perswade some People of what is contrary to the Maxims they have suck'd in as it were with their Milk, it will be convenient to propose Examples of what ought to be follow'd, and to point forth what is to be shunn'd. For, in fine, 'tis here as in Religions, every one thinks his own Method the best.

Among the great number of those, who at this Day practice *Surgery*, there are very few whose *Methods* agree. Some, without departing an Hair's breadth from the Opinion

nion of the *Ancients*, blindly follow their Dictates; and it is enough that any thing has been advanc'd by such or such an Author, to make it pass into an inviolable Law. Others more Active and Ingenious, not regarding the received Custom, bestow liberal Jeers upon whatever is not the Product of their own Brain, and treading Antiquity under Foot, are every Day making new Systems of *Surgery*. I know not with which Party I shall be rang'd: But I have done my best to accommodate what the *Ancients* have deliver'd, to the Opinion of the *Moderns* and the Circulation of the *Blood*; imitating in this the *Bees* that gather from every Flower, what is fit for making *Honey*: And if *Experience* may have any Sway, my Practice ought to obtain, as being confirm'd by it.

Those who extol the Cures they have done, have also Reasons to support their Practice; which because of the Progress it has made, passes even at this Day for the best and most secure, in many Places. This Error hath taken so deep Root, and gain'd so many Followers, that notwithstanding all my Experiences, I doubt not but many will stand out against my *Method*, reject my feeble Reasoning, and treat me as a *Violater* of Custom and received Maxims, and a rash and inconsiderate *Innovator*. For with them
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it is a general Rule, That a deep Wound ought to be kept long open, in order to a perfect Cure. Yea, the Sick themselves being prepossess'd in favour of this false Opinion, believe that the Accidents which happen some Months (yea, some Years) after they have been cur'd, proceed from the too-speedy closing up of the Wound, alledging, *The Wolf was shut up in the Sheep-fold.* As for my self, I am perswaded, and am able to maintain it, that almost all such Accidents are caus'd by keeping the Wound *too long* open, whereby the Parts being much weakened, are hard to be restor'd to their first state; so that the least *Motion* or *Excess* renews the *Sore*, and brings back again the *Symptoms*.

As for *Wounds of the Head*, where the Scull is laid bare, Exfoliation infallibly ensues, if they are long kept open: If the *Cranium* is broken, the Alteration and the Accidents are yet more considerable, and cause often a Weakness, a Depravation of Sense, Giddiness, Head-ach, and other like Distempers, and sometimes a Corruption of the Membranes, and of the Brain.

It is most certain, that a *Wound* cannot be kept long open, but a great *Suppuration* shall follow; and then, in spite of all Precaution, the Matter that is every where diffus'd will glide along, and rest upon the Bone, and the
most

most subtile Parts, as *Galen* says, passing into the Capacity of the Scull by the Fracture, will fall upon the Membranes, from whence it can't be got out, but by the Operation of the Trepan; and if neglected, will bring on mortal Symptoms.

Wounds of the *Thorax*, or *Breast*, may be clos'd up without Danger; as will be more largely made out by Experience, in some places of the Second Part of this Work: For those which continue to suppurate for a long time, infallibly bring on the *Phthisick*, *Asthma*, *Cough*, *Shortness of Breath*, as also incurable *Fistula's*.

Tents cannot be kept in *Wounds of the lower Belly*, because of the perpetual Motion of the Guts; and consequently such are secure from the Pains and Infirmities that follow upon their use.

Wounds of the *Reins*, of the *Emulgent Veins*, and of the *Ureters*, if not speedily united, leave behind 'em incurable *Fistula's*, with a running of Urine at the Wound. The same happens in those of the Bladder.

In those of the *Joints*, if Tents be us'd, the Cure is very tedious, difficult, and dangerous; for very frequently there ensues a great Alteration of the *Tendons*, of the *Nerves*, and of all the Part; sometimes a *shortening or lengthening of the Member*,
with

with loss of the Nutritious Juice, and a Weakness that endures for Life.

Wounds of the *Extremities*, ply'd with Tents, cause an entire Dissolution of the Nerves, and often the loss of the Members : And those of *Carious Bones*, as well as those of a *Fleshy Part*, besides a great deal of Time spent in vain, occasion much Pain, Vexation, and Charge.

I have seen *Wounds* of all these sorts, some of 'em I have had dress'd with Tents, where powerful Digestives were us'd to procure great Suppurations. I have met with others that were follow'd by all such Accidents : But this I have observ'd, that such as were dress'd according to my Method, were preserv'd from all these troublesome Symptoms.

'Tis known to every one, that in *Wounds* made by cutting Instruments, Union is immediately to be endeavour'd. In order to this Design therefore, we ought not to fill such *Wounds* with Lint, as we have formerly said, for that this directly thwarts it. It is also very hurtful to use Digestives, because they disjoyn the Parts of the *Blood*, and corrupt it.

The Fall of the *Escar* in *Gunshot Wounds* cannot be prevented, whatever Diligence be us'd ; wherefore Suppuratives are here of no use, seeing Nature can do that Work with-

out their assistance, which only weaken and destroy the Temperament of the Parts to which they are applied. Large Suppurations therefore are not necessary in the curing of *Wounds*.

For, in fine, I can't discover any Reason why it should be judg'd requisite that a *Wound* should suppurate a long time, in order to be brought to a compleat Cure: And surely before we abandon our selves to such a dangerous Practice, it is necessary first to understand what *Pus* or *Matter* is, whence it comes, and what is the Necessity of it.

We may observe then, that *Matter* is nothing else but the *Blood* of ulcerated Parts, discharg'd into the *Wound* from the Orifices of Arteries that are cut or torn; and this mingling with the Nutritious Juice, brought to the Parts for their sustenance, renders 'em lame as it were, and useless. If by the Compression of *Tents* or *Dilaters* the *Blood* be squeez'd out of the Vessels, it may fill the Capacity of the *Wound*, whereas otherwise it would have held on its ordinary Course. We are not then to be surpriz'd, if the *Blood* and the *Nutritious Juice* are suddenly turn'd into *Matter*, seeing they are out of their Natural Place; for even as a small Rivulet may make a great Lake, if its Waters are kept in with
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a Dam: Just so the little Pipes that are laid open in a Wound, tho' but small, being press'd, as has been said, by a *Tent*, which divides 'em more, and hinders their Reunion, continually pour forth such Liquors as they contain; and the *Tent* serving for a Bank, a Lake is form'd in the Cavity of the Wound. We ought not therefore to wonder, if Plentiful Suppurations continue, so long as this Method is follow'd; and it is an undoubted Error to account such Evacuations profitable. *Etmullerus*, in his *Medicinal Surgery*, is of opinion, that a Wound would close up of it self, if it was not hinder'd: He says, we ought to endeavour to prevent the stench and putrifying of the *Natural Balsam* of the wounded Part, and to use *Balsamicks*, according to the Principles of *Helmont*, to hinder it from degenerating into a hurtful Acid, and to preserve it from corrupting.

In fine, he finds fault with the Surgeons for using first *Suppuratives*, then *Digestives*, and after *Mundificatives*, *Sarcoticks*, and *Glutinatives*, as they term them: *That Way*, adds he, *is too tedious, delays the Cure, causes Inflammation of the Part; alters the Nutritious Juice, and often turns the Wound into a sordid Ulcer.*

It is apparent by this Authority, that *One Remedy skilfully managed* is sufficient to answer

ower all the Intentions propos'd in the Cure of Wounds; that *great Suppurations* are hurtful; and that it is for the great Advantage of the wounded, to reject the *bulky Rubbish of unprofitable Drugs*.

As for such Divisions in the Body, where many small Vessels are quite cut asunder, if the Lips of the Wound are brought together, they will unite of themselves, pursuant to the Opinion of many *Authors*, and the Testimony of *Experience*, provided nothing Extraneous go between.

Now touching *Gun-shot Wounds*, that are so common in the Hospitals of the Army, I am bold to affirm, that my Practice has given me more Insight into their Nature, than all the Authors that ever wrote on the Subject. Not to enter upon a Debate concerning Bullets, it is evident, that the Effect they produce in the Body does something resemble Cauterizing; but tho' sometimes I use this Word, I can scarcely believe that they really cauterize; but being round, solid, and compact Bodies, they cause Contusions; they tear and bruise whatever is in their Way, and occasion a Heaviness in the wounded Part.

It is certain that the Bullet very often stops the Bleeding of the Wound, whether by the Disorder it causes in the Parts through which it passes, or by cauterizing with its touch

touch the Arteries and Veins : But be it how it will, the Course of the Blood is stopt, and the Passage between the Arteries and Veins is interrupted, so far as the Wound and Contusion reach. The Heart, according to the Law of Circulation, squeezes the Blood it has receiv'd into the *Aorta*, from whence passing into all the other Arteries, its Course is stopt at the Wound, where it can't as formerly be receiv'd by the Veins, and finding no free passage, it extends the containing Vessels, and forcing its Way, diffuses it self according to its own Quantity, and the Space it finds : Hence proceeds the Hardness, Swelling, and Inflammation so ordinarily in *Gun-shot Wounds*. If the Blood be there corrupted, or spoilt by some *Malignant Acid*, the Symptoms become yet more troublesome and obstinate ; and after the Fall of the Escar, Abscesses, or large and grievous Suppurations, ensue.

A simple *Contusion* only, for like Reasons, is capable to produce the same Accidents ; which being nothing but a disordering of the Fibres and little Pipes, that changes the Regularity and Situation of the Pores, the Circulation is rendred uneasy, and the Part choak'd up. From hence comes the Dulness and Absence of the Spirits, which if not speedily recall'd, can't but be attended with grievous Consequences.

I shall

I shall speak a Word or two of the Cure of a *Contusion*, in the last Part of this Book : Here I shall only shew, that *Tents* are very destructive to *Gun-shot Wounds*, in regard they hinder the Fall of the Escar, and coming away of whatever is bruise'd, which ordinarily is dispers'd by Suppuration. A *Tent* actually hinders the passing out of that *Matter*, and retains it in the Wound, where it causes all the Mischiefs whereof we have spoken. It may also, after the Escar is remov'd, renew the Bleeding ; bruising by its rubs, and bringing to Suppuration, the young Flesh bred upon the Orifices of the wounded Vessels, while the Escar was separating.

The multitude of those who are to be seen maim'd, and with wooden Legs, and *Fistula's*, can witness to their Sorrow the Pernicious Effects of *Tents*: Nay, how many are there, who by the Loss of their Lives shew the fatal Consequences of these means ! could they have spoken from the Grave, they would have said more than I can on this mournful Subject, and so the destructive Custom had soon been suppress'd. And after all the Pains suffer'd by these unfortunate Persons, their Complaints and Cries have not yet been able to cause a *Method* establish'd and authoriz'd by Antiquity to be laid aside :

aside : Neither has the ill Success of so many Cures in vain attempted, been hitherto capable to undeceive the Practitioners of Surgery.

However, I thought my self oblig'd to communicate to the Publick, what I knew upon this Subject ; that I might, if possible, procure for afflicted Patients, a *Gentle, Speedy, and Easie Method*, for the Comfort and Encouragement of such as so generously expose their Lives for the *Glory* of their Prince, and the *Good* of their *Country*.

All my *Practice* is levell'd at these Ends, as may be seen by the Sequel. I abstain from using *Tents* and *Dilaters*, as much as I can, and as the Case will bear : I occasion little or no Pain, save at the first Dressing ; and then I always widen the Wound, especially if it is a *Gun-skot* One, and do my best to draw out the *Extraneous Bodies* : Now on this occasion I have three things further to recommend, which are, to dress *Gently, Speedily, and Seldom*.

There is a Way of Dressing Wounds made with Iron Instruments, usual among the Soldiers, call'd the *Secret Dressing*, wherein they carefully suck the Orifice of the Wound, in order to draw out the Blood therein contain'd ; then they take *Samaritan Balsam*, or *Oyl* and *Wine* mix'd without boiling, and sometimes either of them alone, which they
squirt

quirt into the Wound from their Mouth, and without any other Dressings, cover, and bind it up, muttering some Words between their Teeth, to make the Method appear mysterious, which causes many People to think it magical.

But these Words are ineffectual, and their Virtue imaginary, serving only to palliate and authorize the Ignorance of such People, who know not what they do; and to deceive the Imagination of the wounded. These Cures, tho' accounted miraculous, have nothing in them supernatural, and may be perform'd without invoking the Assistance of *Demons*. 'Tis known to every one, that *Blood*, when it is out of the Vessels, coagulates, and corrupts in the Wound, if it make any Stay there, and that by sucking out the extravasated *Blood*, Suppuration is prevented, and also that is remov'd which might hinder the Re-union.

CHAP. IX.

That it is necessary to Dress Wounds Gently.

Gentleness is one of the Things that are indispensibly requir'd in the curing of Wounds.

Wounds. This Circumstance is so necessary, that without it other things have seldom the desir'd Success ; yea, so much as I possess'd in Favour of this Opinion, that when I see some that are rigorously handled, I often admire how they ever come to be cur'd : And indeed they never are, without a great many Accidents, that fall out in the Progress of the Cure.

'Tis common for a wounded Person to be seiz'd with a *Fever*, which being symptomatick, must be a consequence of the *Pain*. The *Inflammation*, that brings along with it such a numerous Train of troublesome Accidents, is often occasion'd by an Irritation of the sensible Parts. *Want of Sleep* proceeds ordinarily from nothing else, but the *Pain* is either over all the Body, or in one Part only. Now if by *Dressing gently* these three Accidents are avoided, we may quickly hope to see a perfect Cure.

Tents, Dilaters, and Setons, as hath been already sufficiently observ'd, are the principal Cause of the *Pain* that the poor Wounded endure, and the Occasion of so many hurtful Accidents ; their remaining in Wounds being infallibly attended with most destructive Consequences. If then we lay them aside, we may prevent the *Pain*, and what follows upon it ; and so having the Command of whatever may give us trouble

trouble in Dressing, we may manage the Cure as we please.

Finally, we ought to endeavour with all Care to remove so soon as possible what might cause *Pain*, and by *Evacuations* and *Diversions* wisely to withdraw what would foment it: And if it takes Place already, we must apply what is most proper to ease and overcome it: For, in a Word, Pain is the worst *formidable Enemy* in the Progress of any Disease whatever.

CHAP. X.

That it is necessary to Dress Wounds speedily, in order to prevent the Access of the Air.

IN this Chapter I endeavour to shew, that the *Dressing* of Wounds ought to be perform'd *speedily*, because Experience hath taught me, that the *Air* is a mighty Hindrance of their Cure: And this is one of the chief Reasons that oblig'd me to follow this Method: For tho' some Pain in Dressing is inevitable, yet by this means it lasts for so short a time, that the Wounded scarce perceive it. By this means the *Air* has not time enough to exert its Influence

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upon

upon the Flesh destitute of its Coverings ; and the nitrous Parts, with which it is thought to abound, can't pass to the Bottom of the Wound ; for I am of Opinion, it is the nitrous, clammy, and as some think, arsenical Qualities or Particles of the Air that destroy the due Temperament of the Parts, when depriv'd of their natural Cover, and that consumes, or at least alters the *Natural Balsam* or Nutritious Juice, which is as the *Cement* that unites the divided Parts.

All the *Ancients* as well as the *Moderns* are agreed in this, that the *Air* is an Enemy to Wounds : And Experience attests, that even the most pure and subtil Air, is ever attended with a certain sharp and clammy Acidity, that sticks to Iron and Steel and makes them rust.

'Tis the same *Air* that occasions so many Disorders, that alters and corrupts the *Bones*, hurts the *Nerves*, and destroys the *Tendons*, corrodes the *Flesh*, and utterly marrs the Temper of the Parts, by wasting the *Spirits* that preserve the *Radical Moisture*, which with a little Help, and oftentimes almost without any, unites broken *Bones* by a *Callus*, fills up *Wounds* with *Flesh*, cleanses *Ulcers*, and brings them to a Scar.

Hippocrates, Sect. 5. Aphor. 20, says, that the Cold is offensive to ulcerated Parts ; that

it hardens the Skin, causes Pain and Hardness, occasions Lividity, Shiverings, Fevers and *Convulsions*.

By the *Cold* here is to be understood the Air, by means of which Disorders are excited in us; it is corrosive, and therefore exasperates the sensible Parts; it hardens the Skin, thereby hindering the Transpiration of the *Vapours*, which being retain'd, cause Pain, Hardness, and Fluxions of Humours, and these produce Shiverings and Fevers, and oftentimes are follow'd by Lividity, *Convulsion*, and a Gangreen.

The Access of the *Cold Air* is indeed one of the Causes of the Pain, which is so common in Wounds remaining too long uncover'd, because it coagulates the Humours, and causes the *Blood* in the small Vessels to become more sharp, and so to ferment and corrupt.

A little Experience is sufficient to make one agree to these Reasons: We ought to second the Designs of Nature, that are ever aim'd at the preservation of what is most precious, such as the *Spirits*: Now we may be assur'd, that when a Wound is left uncover'd, or often open'd, there is occasion'd a considerable Loss of these same Spirits, whereby the Part is so weaken'd, that being unable to make the right Use of the Nourishment sent for its Maintenance, it is all

chang'd into corrupt Matter and Excrements.

That *Cold* is hurtful to Wounds, no-body doubts: All are likewise agreed, that the Air is at all times colder than the inward Parts of our Body. Now if the Touching of the Air only, rots the Bones; if it acts with such Force and Violence on Bodies so solid as they are, it will undoubtedly be yet more destructive to the Nerves and nervous Parts, that are so tender; as also to the *Tendons*, to the *Flesh*, and to all Parts in general, to which it has Access.

The Air moreover produces many other Accidents in Wounds: For, as has been said, the Spirits are dissipated by the long and frequent Attacks of the Air, whereby its acid Parts being at liberty, and not entangled, easily stick to the *Flesh*, and other uncovered Parts, which they corrode and tear with their Points; hence proceed pricking Pains, the Cause of which several are oftentimes at a loss to conjecture.

This same Acidity of the Air coagulates the Blood in the Mouths of the Arteries that open into the Wound, hinders its Course, and makes it to swell up the Vessels, and very often also to discharge it self on the Part: Hence are Tumors, Fluxions, Hardness, and if it ferments, large Abscesses; for Fermentation here is only the changing of Blood into Matter. Now the Blood having
nei-

neither the same Situation nor Motion as formerly, and its parts being disjoyn'd, easily corrupts, and ferments in a little time ; unless we believe that the Air can't congeal the Blood in the Vessels, which yet is beyond Controversie.

That the Air is very piercing, as appears from *Chilblains* and *Kibes* in the Heels, where it has the Force to congeal the Blood in the Veins and Capillary Arteries of the Parts afflicted. Since then it has such influence on Parts cloathed with the common Teguments, what will it have on such as want 'em? In fine, if it is able to coagulate the Blood in the Vessels where it may freely circulate, much more may be fear'd from its Acidity in Wounds, where the Course of the Blood being in a manner interrupted, the wounded Part receives but little Aid from the natural Heat, and the Spirits ; and the Blood it self, that precious Balsam of Nature, being unmov'd, and not receiving fresh and vigorous Supplies from the Heart, is corrupted, as was said formerly, and turn'd into Matter, insomuch that if we press the Places about the Wound, we perceive a certain clammy Matter to come out as from so many little Pipes, which oftentimes is corrupt and stinking.

Now if *Nature*, which is every way admirable, and always industrious in preserving,

don't in such a Case exert her utmost Efficacy, the Part must be mortified, in spite of all the Efforts of the inconsiderate Surgeon: And then if it is a Member that may be cut off, the next thing is to deliberate whether this ought, or may be done without danger. Sometimes 'tis doubted whether the wounded Person can bear up under the Rigour of so painful an Operation, considering his ill Temperament and Disposition of Body, which only are accus'd, as the Cause of all these Accidents; for the Wound of it self was inconsiderable, and might have been soon cur'd, in a Person of a stronger and better Constitution: Or otherwise the blame is laid upon some venereal Venom, Vice of the Patient, Disorder, &c. In fine, the *Patient* and his *Temperament* are always found Guilty, and fall Victims to Ignorance. I have been in many Places my self, where such things have happen'd, and where neither the Persons wounded, nor the Surgeons understood the true Cause of the supervening *Accidents*. It is however very requisite in this to employ all our Care, chiefly in *Hospitals* of the Army, where we seldom find all those Conveniencies that were to be wish'd, for correcting the Cold and the ill Quality of the Air, which frequently is infected, and corrupted. 'Tis in such Places where we ought to hinder it with all our Power to pass
to

to the inward Parts of our Body, or to get access to such Parts as are destitute of their Coverings, lest at the same time it impart to them its destructive Impressions.

It may possibly be objected to me, that if that acid and nitrous Quality of the *Air* can produce such Disorders in Wounds, we ought much more to be incommoded, by the frequent and necessary Use thereof in Respiration. But 'tis answer'd, that the *Wind-pipe* and *Lungs* putrify the Air, which is in a manner filtrated and prepar'd by them, and so becomes Friendly to Nature, which only uses the purest Parts, driving out by Expiration, together with the hot Vapours or Exhalations of the Breast, that which is useless and hurtful. But it is not so in Wounds that have no Spring. 'Tis only the *Lungs* that are fitted, and appointed for receiving the Air; they alone perform the Office of Bellows to prepare, purify, or to expel it, according to the necessity of our *Machine*.

Besides it may be said, that when the Air enters into places that are covered and furnish'd with Membranes, its Acid Parts slide upon them, and take no hold; but if there chance to be *Ulcers* in the *Lungs*, the Air will then cause considerable Disorders; and the *Cough* which afflicts such kind of Patients, proceeds undoubtedly from nothing

else, but the *Irritation* occasion'd by the *Air*, in parts depriv'd of their Covering.

Moreover, it must not be denied, that the *Air* abounds with very subtil and piercing Parts, because it will pass thro' the *Scarf-Skin*, the *Skin*, and other Teguments. There are many Examples which shew, that Persons have subsisted by means of the *Air* passing through the Pores of the *Skin*, when Respiration was altogether Supprest, whether by *Suffocation*, or other suchlike Accidents. Some have also been taken down from the Gallows, who were thought to have been a pretty while Dead, and yet with a little help have recover'd: Whence it is easy to infer, that *Nature* had found the means to furnish the Heart and Lungs with a sufficient quantity of *Air*, to refresh them during that Interval, by the *Pores*, seeing it could not pass by the way of the Wind-pipe. A like Consequence may be drawn from those that lay in a *Lethargy*.

We may therefore reasonably infer, that if the *Air* is so subtil as to pierce and pass through Membranes so close and compact, it ought much more to penetrate considerably beyond the Extent and Cavity of a *Wound*, where there is nothing to purify or subtilise it; as there is when passing through the *Pores* of the *Skin*, it supplies the place of Respiration: For since here the *Scarf-Skin* keeps

keeps back the more gross, earthy, and clammy Parts of the Air, we have reason to think that it ought not to produce any bad Effects in the places to which it comes. It were to be wish'd that *Wounds* were cover'd with something at the times of dressing, which might perform the Office of the *Scarf-Skin*, and exclude the acid and viscous Particles of the Air, together with the other *noxious Effluvia* with which it is fill'd : For if these *Exhalations* floating in the Air are the Original of so many Diseases, as some *modern Philosophers* affirm, why mayn't they occasion very *dangerous Symptoms*, when they take hold of and cleave to alive and sensible Parts ? Now, in regard these *foreign Particles* are capable of Alterations no less than the Air it self, we may be assur'd, that the ill Qualities which this has contracted in *Hospitals*, by the Breath and Transpiration of the Sick, are also communicated to those, since such *Atoms* have a Substance, and a certain Form.

These Carbuncles, that are so frequent in *Hospitals of the Army*, are a sufficient *Proof* of what I say. They are occasion'd, as some think, by the Arsenical Particles in the Air, which being taken in by Respiration, are thrown out by the strength of the Natural Heat upon some *Emunctory*. Now, since this falls out much oftener in *Hospitals* than else-

where, we may infer, that the Air also is here much more replenish'd with these subtil and impure Particles, by reason of which the Wounds (ill treated) without very great Care, become sometimes *cancerous*, always *putrid*, and often *Fistulous* and *incurable*.

I have learn'd by my long frequentation of Hospitals, that those Places where the Sick have remain'd for some Time, retain, long after they are gone, the ill Smell communicated by them. This I believe is owing to the impure Particles that stick to the Walls: Whence those who design afterwards to live in the Place, are oblig'd to plaister and whiten the Walls, that they may not be hurt by the pernicious *Effluvia* proceeding from them.

Cloaths, and other Goods, brought from Places where the *Plague* is, must be cleans'd and purify'd from the *Pestilential Particles* that cleave to 'em; without which Precaution they might excite a general *Pestilence* in the Places to which they are brought. 'Tis this which inclines me to think, that the nitrous and viscous Quality of the Air resides in those Particles or *Atomes*; which if they are capable to stick to a Body so smooth and polish'd as a Wall, and that for a long time, without losing either their bad Smell, or ill Qualities, much more will they do so to a Wound uncover'd, which is always moist,
and

and where they may get easier hold and act more readily, because of the Tenderneſs and weakneſs of the Parts.

The dead Fleſh of any Creature, if it is often handled and expoſ'd to the *Air*, ſuddenly putrifies: And a *Fæcus*, a Member, &c. if it be kept in a cloſe Veſſel cover'd with Spirit of Wine, may be preserv'd for ever; whereas on the contrary, a little *Air* will diſſolve it, and reduce it to nothing.

That the *Air* is a *mighty Enemy* to Wounds, is a Truth own'd by the modern Practitioners of Surgery, no leſs than by the Ancients; but there are few take ſufficient Care to hinder its Access to the Wounded Parts. Knowledge is in vain when not put in Practice. Nevertheless this is a thing ſo abſolutely neceſſary in the Cure of any Wound whatſoever, that without it nothing that a Surgeon's Art can perform is to any purpoſe, but all is hurtful and deſtructive.

From what has been ſaid, Conſequences may be deduc'd very uſeful in Practice. All the Regard I have for *Antiquity*, was not prevalent enough to keep me from declaiming againſt an Abufe, tho' eſtabliſh'd by Cuſtom; for Truth depends on the Things themſelves, and not on the Opinion the Ancients had of them. I know many have already expreſs'd themſelves on this Subject, much after the ſame manner as I have done. *Ceſus*,
who

who ought not to be reckon'd among the Moderns, has written something that looks this Way. In his *Book of Wounds of the Scull*, Chap. 4. He says, that Flesh breeds easily enough in any part of the Head, except a little above the Space between the *Eye-brows*, where often there remains an incurable Ulcer, because in that place there is a Cavity of the Bone full of Air, bordering upon the *Os Cribrosum*, which Air hinders the filling up of the Ulcer.

By all this then it evidently appears, that the Air is a powerful *Impediment* to the Cure of *Wounds*; and that the *speedy Method* of Dressing ought to be prefer'd to that which is yet in use in many places. And to conclude, it is certain that the Pain caus'd by the use of a *Tent*, its remaining in the Wound, the length of the Time taken up in Dressing, and the frequency thereof, of which last I shall speak in the following Chapter, are the genuin *Sources* of all the Accidents that attend Wounds. Wherefore we must *dress speedily*, and according to our *Method*, if we would prevent many dangerous Inconveniencies.

CHAP. XI.

That Wounds ought to be drest seldom.

G A L E N, in his Fourth Book of the *Composition of Medicines*, Chap. 4, orders to dress *Ulcers* but once in Three Days. This Method he acknowledges to have come from *Asclepiades*; and I can't but wonder that such a Practice has found so few Followers, considering 'tis so necessary and advantageous for the Patient.

If *Ulcers* require not to be drest every day, as this Author thinks, fresh Wounds do yet much less call for it. Nevertheless it is the Custom, in almost all *Hospitals*, to dress regularly twice a day; and, I believe, there is scarce one to be found that does otherwise, excepting that of *Brianston*, where they dress the Wounded, some only *once* a day, and others but *once* in two, three, or four days. If I had found this Method hurtful, I would not have been so wicked as to continue using it, much less desire that Others also might do the same.

Pareus, (*Book 13, Chap. 11.*) treating of *Ulcers*, seems to be much inclin'd to the Opinion of *Galen*, when he disapproves frequent Dressing: And yet in his Eleventh Book, Chap. the Fifth, speaking of Gunshot Wounds,

Wounds, he orders to dress them twice a Day, and often once every eight Hours.

It is surprizing, that so famous an Author as *Pareus*, who believ'd the Air extreamly prejudicial to Wounds, and adduc'd many passages from the Ancients to support that Opinion, should have left behind him Rules altogether repugnant to it. But 'tis probable he was so busied in compiling so great a Work, that he had not Time enough to make the necessary Reflections upon this Subject, which requires a very diligent Application : and this may be the Reason why in many Places he contradicts himself.

Fabricius ab Aquapendente, Page 1. Book 2. Chap. 7. discoursing of the way to preserve the Substance of the Parts in simple Wounds, affirms again and again, that it is enough to take off the Dressings once in three or four Days ; which he confirms by the Authority of *Galen*, where he Treats of the Cure of *putrid Ulcers*.

'Tis certain, that the seldomer a *Wound* is dress'd, the less it matters, provided it be not stuff'd with Lint or some such thing : The *Remedy* also has the more time to communicate its Virtue to the Part, which seems in some sort to be nourish'd thereby : And the Nutritious Juice has more liberty and time to restore the lost Substance, and re-unite the divided Parts. On the other hand,

hand, if it is often drest, the Strength of the Remedy being destroy'd, and its Virtue diminish'd, it becomes so weak, that it has no Effect, and its Moisture running away, like the Sap of a Tree when 'tis pierc'd, is mixed with Matter, and turn'd into Pus.

What *Nature* does in uniting broken Bones, may instruct us what we ought to do in the curing of Wounds: We see that a *Callus* is bred without the Assistance of any thing, by the wise Contrivance of *Nature* only, if so be that she is not by frequent Dressing, or indiscrete motions of the Part, diverted from her Work.

When the little *Fibrous Threads* begin to be form'd in a Wound, in order to unite the parts that are divided, and the *Nutritious Juice* is communicated to the Part, to restore it to its natural State; if then the Part is often disturb'd with frequent Dressing, if the Wound is search'd with the Fingers, or with a *Probe*, or a dry *Tent*, &c. what *Nature* has done, will be bruise'd and separated, and her Work destroy'd as soon as begun; so that if this Method is continued, the *Nutritious Juice* becomes thick, and hard, and cleaves to the Sides of the Wound, where it forms a *Callosity*, and often a *Fistula*.

Generation then, which is the principal Work of *Nature*, cannot be accomplish'd without Rest; so true it is that Repose is necessary

necessary to her in all her *Operations*. Hence it is that I cannot apprehend by what Reasons they are influenc'd, who by frequent and painful Dressing, without any Necessity, exasperate the Wounds ; and I protest, I could never my self endure so cruel a Method. Sometimes they search and found them with their Fingers, sometimes with an Instrument : And, not contented with this, if they fancy they have found any thing, desire their Friends present, and their Boys, to do the same : And in this miserable condition is the wretched Patient detain'd, sometimes an hour, and that most frequently twice a day. I dare not venture to name the Places in *France, Italy, and Germany* where I have seen the Wounded us'd in this manner, and that by such as held very considerable Posts, where a *good Method* was extreamly necessary.

At last, after much Time has been spent in raking into the Wound, they think they are bound in Credit, for the satisfaction of the Wounded and the By-standers, to draw out something, and shew it publickly, lest they should seem to have labour'd in vain. Now if it should chance that at length any little piece of a *Corrupted Membrane* is found, (which would not be strange in a Wound dress'd after this manner, where *Corruption* often causes great disorder) it is drawn out with
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abundance of Ceremony, and the Operator fails not to declare, with great Confidence, that *this* was it which *occasion'd* the Restlessness and Pain of the preceding Night. And now, you must think, the *Wounded Person* is half cured.

Heavens! what Abuse! Is it possible that any Man can be so much impos'd upon? I would gladly understand what it was that did separate this Shred of a Membrane, or these Fibres, &c. It will be answer'd, without doubt, that it is *Nature*, which endeavouring a *Re-union*, rejects that which opposes it. I demand again, How was it brought to this place? By the same *Nature*, will one say. And why then will She not go and drive that extraneous thing quite out of the Body, seeing She has done so much? She is able to drive out Bullets, tho' fasten'd in a *Bone*, (as I shall shew in the Second Part) to expel Splinters, yea, to bring 'em to the Orifice of the *Wound*, and that a considerable time after it has been clos'd up; why should we then apprehend that she will leave such things within, from which she may so easily free her self, either by the Orifice of the *Wound*, or by some other more convenient way? For 'tis certain that *Nature*, left to her liberty, ever takes the nearest way. Besides, all the Parts of the *Body* have an Elasticity, or Spring, whereby any Foreign Thing is natu-

naturally driven from the Center to the Circumference.

Anthony Benevent a Physician of *Florence* relates, that a certain Woman swallow'd a very large Needle, which two Years after came away by her Navel: And *Tarentus*, a Physician also, reports, that Maid, who had swallow'd a Needle about four Fingers breadth in length, voided it ten Months after by the *Urinary Passage*.

From hence it appears, that the Industry and Sagacity of *Nature* surpasses that of all the *Esculapian Family*: She knows what she does, and wants not to be instructed in the ways she ought to take, in Order to drive out of the *Body* whatever oppresses her, or is foreign and noxious unto her. The Surgeon ought only to employ his utmost Care to understand and follow her: He must study her Designs, and take all care not to divert her from her Enterprizes, considering she does nothing in vain.

After what I have said concerning *Nature*, I would not have any to think that I am One of those that regard her as a Deity, and ascribe to her a Reason, whereby she disposes of all her wonderful Works. Reason I take to be a peculiar Privilege of *Human Soul*; neither am I of the Opinion of *Empedocles*, that whatever She does is mysterious: 'Tis he that *Aristotle*, in his Third Book

Book of Metaphysics, ridicules for giving no other Reason for many things that were ask'd him, but this ; That it was Nature's Pleasure. All I say is, That if her Operations are marvellous, they are owing to her powerful *Author*, who has entrusted her with whatever we have that is precious.

But to return to my Subject : 'Tis fit I should advertise my Reader, that I would not have any follow my *Method of seldom Dressing*, unless first he hath entirely laid aside the Use of Tents and Dilaters, which, by retaining the Matter, would cause a Fermentation, whereby these same Tents and Dossils would likewise be corrupted. This is what fell out *not long ago* in a Cure to which I was call'd ; the Dilaters that had been us'd were carried along with the Matter that was discharg'd between the Muscles, and there putrifying, the *Corruption* was quickly communicated to the neighbouring Parts : Whence it appears, that this *Method* is attended with peculiar and inseparable Circumstances, that must not be neglected.

M. *Verduc*, in his *Patheology*, Tom. 1, fol. 439, advises not to do as *some Surgeons*, who every minute are opening the *Wounds* of those who are under their Care ; For, says he, by *too often* taking off the Dressings we hinder their re-uniting, and give Occasion to the Air to insinuate it self into the Wound,
and

and to coagulate the Nutritious Juice. This indeed is a most just and reasonable Thought. I remember, when I was at *Rome*, in the Year 1678, I chanc'd to see a little *Book*, written in Italian by the chief Surgeon of the *Hospital of the Holy Ghost*, whose Name I have forgotten: He therein discours'd of *Wounds of the Head* only, and prov'd, by very good *Reasons*, that they ought to be dress'd only once in three or four Days, and sometimes not so often. Moreover, in Dressing he did not altogether lay open the *Wound*, but kept always upon it some thin Covering; as is done at this day in many Places in dressing Burns, &c.

In fine, He took such great Care to hinder the Air from passing into and injuring the *Wounds* which he dress'd, that we may be assur'd he judg'd it a great Impediment to their Cure: Which was also his Opinion of frequent Dressing. In the same *Book* he adduc'd many Examples, among which were several Accounts of very considerable Cures accomplish'd by this Method.

It were much to be desir'd that every one, without regarding the publick Censure they might incurr, had the same Charity to reveal the *Knowledge* they have attain'd by their Care and Experience; for 'tis very probable that by the Universality of Mankind, almost an Universality of Knowledge is possess'd ;
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One has a Genius for one Thing, and the next hath a Genius for another, and each their different Endowments : So that in Civil Life, and particularly in an Art so necessary for the preservation of Mankind, every one *ought* to communicate without any Reserve.

After all, there is no Rule without some Exception ; and I freely own, that there are certain Cases wherein Tents ought sometimes to be us'd ; as in *Wounds of the Breast*, and in an *Empyema*, when we would hinder the total Evacuation of the *Blood* or *Matter*, to preserve the Strength of the Patient : or, in fine, on some other Occasions, where they may be judg'd absolutely necessary.

There are other *Wounds* to which Dilaters are necessarily requir'd ; as when the *Bones* being rotten or ulcer'd, we wait for their Exfoliation ; or when they must be kept open, in order to some further *Operation* to be perform'd upon 'em.

There are also other *Wounds*, to which of necessity we must occasion some Pain, whether by drawing forth *Extraneous Bodies*, or by setting *Broken Bones*, or by dilating their Orifice.

Others there are that will take up some Time in dressing ; as those of the *Head*, where we often suspect there may be a *Fracture*

ture of the Scull ; also when the Scull is broken, when some *Operation* is to be perform'd upon the *Bones*, in complicated *Fractures*, and when *Extraneous Bodies* are to be drawn out ; in such Cases we can't dress so quickly as were to be wish'd.

To conclude ; There are *some* that must be often look'd to, as when, notwithstanding our Care, the Suppuration is great ; also in Abscesses that are cavernous and deep, in very hot Seasons, and in Patients of an ill *disposition of Body*, who abound in Excrementitious Moisture ; or when Phlegmons, Erysipela's, Lividity, Grangrenes, or any other unexpected Accident ensue upon a *Wound* : For it is the Part of a prudent and skilful *Surgeon* to accommodate himself to emergent Occasions, and to correct the *Symptoms* as they fall out.

CHAP. XII.

*A Discourse upon Discover'd Bones ;
with the way to prevent Exfoliation.*

IT is almost an Universal Custom (at least I have seen it put in Practice wherever I've been) just as a *Bone* is uncover'd, to widen the *Wound* by Tents and Dilaters, and wait its *Exfoliation*. This is so superstitiously observ'd in many of the King's Hospitals, that
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it would be judg'd a very heinous Offence to do otherwise ; yea, or to neglect what hath been deliver'd by the Ancients ; as if we were eternally Oblig'd blindly *to follow* their Dictates.

Experience has taught me, on many Occasions, that nothing is more requir'd to prevent the spoiling a *Bone*, when only uncover'd, but to defend it from the Access of the Air : For this intent we ought to endeavour the *closing* the *Wound* with all possible speed, by proper Bandages and balsamick Remedies, without *dilating* it by Tents and Dossils ; thus the *Bone* will quickly be cover'd, and the *Exfoliation* thereof avoided, which will infallibly ensue if Time be given the Air to exert its pernicious Efficacy on it.

Many *Authors* have enjoind Stitching in such a Case. *Hippocrates*, and several after him, have approv'd thereof in *Wounds of the Head* ; which nevertheless may be united without it, unless they are large and transverse, and of the lower Parts, where Stitching oftentimes becomes necessary, by reason of the figure of the Scull.

If any considerable portion of the *Bone* is become bare by losing the covering substance, the *Wound* being large, 'twill take up a long time before 'tis clos'd up : In this case all our Care will not be able to hinder the alteration and rotting of the *Bone*, either by the Air ad-
mit-

mitted in the numerous Dressings, or by the *Matter* running along, or staying upon the *Bone*. To prevent therefore this Inconvenience, we must in the first Dressing pierce the *Bone* as nimbly as possible, in many places, with the Pyramid or Pike of the Trepan, by this means a Way is open'd to a *Marrowy Juice*, which thickening upon it, covers the *Bone* in a little time, without suffering it to lose any of its substance.

It is well known to *Surgeons*, that any considerable Portion of the Scull, laid bare by a *Wound*, can never again be cover'd with *Flesh* without the assistance of Art, because of the smoothness and glibness of its Surface: Upon this *Consideration* it was that many of the Ancients thought fit to rasp it, that it might become rough and unequal, and likewise to make way for the Orifices of the little Vessels, with which its inward Substance abounds, to supply it with *Blood* necessary to breed new *Flesh*, whereby it may be cover'd.

But the *Operation* which I have made upon it, on many Occasions, and which I here propose, appears to me to be more speedy, safe, and profitable than *Rasping*, wherein the Instrument passing to and fro many times on the whole Surface of the *discover'd Bone*, heats it, and alters it much more than the Pin of the Trepan, which only slightly touches it at certain distances, and yet pierces so far,

as

as to approach the middle Pith ; from which we must fetch the requir'd Assistance. Moreover the *Rasp* lessens much the thickness of the Bone ; whereby those that have undergone that Operation, are subject to Pains in the Head : add to this, that it also leaves after it an unseemly Scar.

This Operation may be us'd, when the first, yea, or both Tables of the Scull are broken ; provided no inequality be left on the inward Surface thereof that may occasion Accidents, which will appear in a small time : For if we delay to procure a covering to the Bone, the most subtil Part of the Matter may slide into the Fracture, and there cause some Alteration, or Inflammation, (for, according to *Galen* and *Celsus*, the Bone is liable to this Inconvenience) and even yet more troublesome Accidents. Now, since the first Operation of this nature which I perform'd was of the Scull, I shall begin to justify this Practice, by shewing how it is nourish'd.

The Scull, according to the Opinion of many, has its Nourishment from three different Sources : First, by Vessels proceeding from those of the *Dura Mater*, and passing into the *Cranium*, thro' its internal Surface, or that which is nearest the Brain : Secondly, from the *Diploe* or middle Pith a Medullary Juice is imparted to both Tables, whereby they are nourish'd and sustain'd : And thirdly, by its

external Part, it receives Nourishment from the *Pericranium*, wherewith it is every where cover'd and defended.

When therefore by some external violence the Bone is depriv'd of the *Pericranium*, and remains uncover'd; 'tis certain that the Air by its Acid and Nitrous Points, takes hold on its outward Surface; and in a little time alters and rots it, and then it must needs exfoliate, because it is bereft both of its Nourishment and Defence.

It becomes necessary then to make an Amends, and to draw Nourishment from the neighbouring Parts instead of that which is lost, that at the same time by covering it anew, it may shelter it from external Injuries. Now this we can have from no nearer Place than the *Diploe*; but in order to that, we must give it an easie Passage, and open to it a Way to fulfil at once the *Intention* of Nature, and that of the Surgeon. This is accomplish'd by piercing the Bone, as we have said, whereby the *Diploe* sends forth at these little Holes the most subtle Part of *marrowy Juice*; which congealing upon the Bone, in three, four or five Days, sometimes sooner, sometimes later, entirely covers it.

Other Bones that have Marrow, are nourished from within, by the Vessels of the Membrane which covers the Marrow; and from without, by the *Periostium*, or Membrane
where

wherewith they are invested: For this Reason we may perform this *Operation*, when there is occasion, on the Bones of the *Shoulder, Thigh,* and *Leg*; and those who doubt of this, may be convinc'd by a Tryal.

That which ought to recommend this *Method*, and procure it an easie Reception, is, that thereby the Cure is accomplish'd in twelve or fifteen Days, or so; whereas otherwise it will take up near sixty; for about forty Days are requir'd to the Exfoliation of the Bone, and twenty more to fill up and cicatrize the Ulcer. Our Way is so exceedingly advantageous to the Wounded, that it ought not to be rejected; nor can it, without departing from that Charity we owe our afflicted Neighbour, who by Delay in such Cases is extremely endanger'd, especially in an *Hospital*, where the corrupt and infected *Air* ruins in time the strongest Constitutions. I have often seen, and it is but too ordinary, that the Wounded Persons being cur'd, and just ready to go from the *Hospital*, have been suddenly seiz'd by *Malignant Fevers, Loosenesses, Bloody Fluxes,* &c. occasion'd by their tedious stay in such dismal Places, and *Death* often has been the first thing that deliver'd them from all their Miseries. Therefore we ought to endeavour a speedy Cure, and to spare no Pains to prevent that tedious *Exfoliation*. But if the Wounded are sent to us with the Bone alter'd, or if we can't

avoid this Accident with all our Care, we must endeavour to help on the Separation with all Speed ; for as a *Gangreen* in Fleſhy Parts wants the Aſſiſtance of Art to put a ſtop to it, ſo does Rottenneſs, which is a *Gangreen* of the Bone ; wherefore Exfoliation muſt be haſten'd by external Remedies, that it may go no further ; for ſometimes it extends from one End of the Bone to the other.

It is the *Surgeon's* Province to pick out ſuch Remedies as are proper for this Intention. The Ancients and Moderns have left us good ſtore of this kind ; but above all, we muſt avoid the uſe of Acid Spirits, which encrease the Rottenneſs, and have the ſame Effect on a Bone, as *Aqua fortis* on Iron. The actual Cautery is a great Help on theſe Occaſions ; as alſo *Euphorbium* infus'd in Spirit of Wine.

The Rules I have propos'd to prevent Exfoliation are inconfiſtent with the Opinion of many *Italian Surgeons*, who maintain, that the Bone, ſo far as it hath been touch'd by the *Air*, will infallibly exfoliate. I have heretofore had great Debates on this Subject with ſome People, who through a Stiffneſs of Opinion, without any Ground, would neither yield to *Reason*, nor *Experience*, not being able to bear what was contrary to their own Principles and Practice.

C H A P. XIII.

How to Dress with a New Instrument, in cases where Trepanation is us'd, and other disorders of that Nature.

Wounds of the *Head*, accompany'd with a Fracture of the Scull, are such as require an expert *Surgeon*: I am convinc'd, and I suppose none will deny it, that the *Air* is hurtful to them: In this both Ancients and Moderns are agreed.

Nevertheless, 'tis certain, that a great Part of the Accidents that follow upon them, proceeds only from the little Care that is taken to hinder the Access of the Air into the Wounds, whether the Scull be only bared, or broken, or also Trepann'd. I have discours'd of discover'd Bones in the foregoing Chapter, and have now only two or three Words more to speak of such Wounds, where the Scull has lost some of its Substance.

When the *Dura Mater* is uncover'd, I prepare a Plate of Lead very thin, and very smooth, pierc'd into Holes in several Places, without any Inequality, cut and fitted to the Bigness of the Opening; and to make it more exact, I sketch it out with the Crown of the Trepan, that I have us'd, or am to use in this Operation: Or its Measure may be taken from

the Piece of the Scull cut out by the Trepan. On each side of the Plate is left a little Ear, somewhat longer than the thickness of the Scull; these little Ears I bend both one way, so as they may be perpendicular to the *Plate*; and so much of them as exceeds the thickness of the Scull, I bend outwards again, that thereby they may rest upon the Scull, and by which, as by two little Handles, I may lift them up with Pincers, if need be, at each Dressing; these two little Handles may be cut something broader than the two pieces that joyn them to the Plate, which must be of an equal breadth. When I use it, I dip it in some proper Medicine pretty warm, and apply upon it a very soft Pledgit of fine Lint.

I have found very much Good by this Method, and have observ'd a five-fold Advantage in the Use of this *Plate*. First, the *Matter* or *Blood* contain'd within the Scull passes out at the Holes of the Plate, and is imbib'd by the soft Lint that I put over it: And if it has acquir'd any mischievous Quality by staying there, which often falls out, the Lint by which it is soak'd up, detains it from touching the *Dura Mater*, and imparting the Contagion thereto; and consequently, there is less hazard of its Alteration.

In the second place, this Plate, by lightly pressing upon the *Dura Mater*, facilitates the coming out of the *Matter* or *Blood* extravasated under the Scull.

Thirdly,

Thirdly, It hinders the breeding of a *Fungus*, and the bunching out of the *Dura Mater* beyond the Scull, which otherwise often comes to pass, obliging us either to cut off, or consume with Catharticks, that which so stands out; whereupon very grievous Accidents sometimes ensue.

A fourth Advantage is, That it hinders by its slight pressure the *Dura Mater* in its continual motion to strike against the Inequalities and pointed parts of the Scull, that remain after a Piece has been rais'd by the Operation of the Trepan, or entirely separated by some external Violence.

And finally, it protects the Brain and its Membranes from the assaults of the Air, performing in some sort the Part of that Piece of the Scull that was taken away.

When we are assur'd that there is, or are in doubt that there may be, some coagulated Blood under the Scull, we may for some time omit the use of the Plate, that we may leave it a free passage; afterwards we may use it, the danger of the Accidents being over, and then leave off, lest it hinder the re-union and generation of the *Callus*.

When the Operation of the Trepan is perform'd on the Basis of the Scull, as is usual to be done without scruple, the bunching out of the *Dura Mater* is more to be fear'd, and so this Plate is absolutely necessary to support it,

and keep it in : But for the Operation on this place, as well as for that on others, we must endeavour, as far as the Case will bear, to chuse the highest part, that the Plate may have the less weight to sustain. We may safely use it for 14 or 15 days, if we judge it needful, and it may be made of Gold, Silver, &c. according to the desire and ability of the Patient ; but for my self, I always use a leaden one, for every-body knows this Metal is friendly to Nature, and is vulnerary and drying.

Tho' there were no other Advantage reap'd from the use of this Plate, but only that it defends the Brain and its Membranes from the Insults of the Air, this were enough to recommend it to our Esteem. 'Tis certain that the Air acts not with that force when its acid parts find a hindrance, or when they must pass thro' such little holes as those of this Instrument, and sometimes I don't lift it up but in 2 or 3 days, when it purges freely, and the Accidents abate.

M. *Verduc* affirms, that the *Fungus* which breeds on the *Dura Mater* is caus'd by the attacks of the Air. In a word, all the Ancients and Moderns agree in this, that the Air is a pernicious Enemy to the Membranes and Brain.

It is not then without cause that Nature, as a good and provident Mother, hath taken care to encompass the Brain with two Membranes, the *Scull*, the *Pericranium*, the *Teguments* and the *Hair* on every side, to cover it from the im-

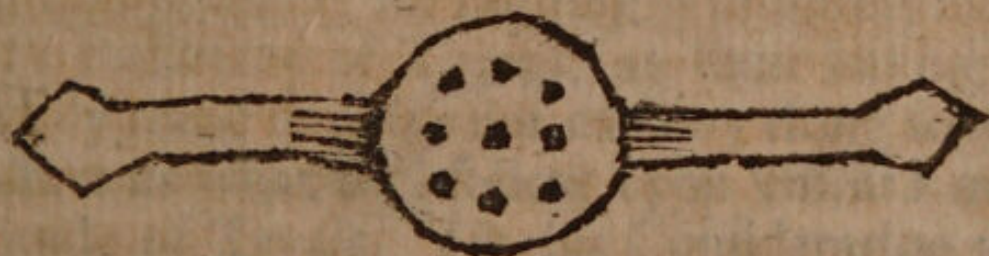
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pressions of the Air, which of all the Elements is most hurtful to it; and the most part of those that have been trepan'd, or by a Fracture of the Scull have lost some part of its Substance, without having the *Brain* or its *Membranes* hurt, are subject to a great many very troublesome Accidents.

The reason of this may be easily conceiv'd, for (at certain Seasons, and in certain Constitutions, in which the Skin is more relaxated) the Air being endow'd with more piercing and subtil Parts, finds nothing sufficient to stop its course, and passes, notwithstanding the *Callus*, which is never so solid as a Bone, and striking upon the Membranes, which are extreamly sensible of Cold, occasions those Pains that such kind of People are subject to.

That the Description of this Plate may be the better understood, we have here subjoin'd its Figure.

The Figure of a Plate with nine Holes, to be us'd when the Crown of the Trepan is larg.



A little Plate with five Holes.



The Figure of a Plate ready for Use, with the little Ears bent.



The

The Hospital-Surgeon.

PART II.

Further evincing the Excellency of the Way here propos'd, by a faithful and particular Account of Wounds of all kinds, and in all Parts of the Body, thereby brought to a quick and happy Cure. Together with useful and practical Reflections.

CHAP. I.

The Reasons of writing this Second Part, with a general Proposal of what it contains.

THO' sound Reason, supported by Authority, may appear to be a Proof of the Goodness of any thing that's convincing enough to sustain the weight of what Consequences might thence be deduc'd, yet does there oftentimes still remain an Uneasiness and Hesitation in the Mind, no otherwise to be remov'd but by *Ocular Demonstration*, as 'twere, and *Experience*; for nothing so infallibly shews the Possibility of Things, as their having already come to pass; nor can any thing so well assure us what will follow upon 'em, as a multitude of Tryals. 'Tis this Consideration that induc'd me, in this Second Part, to give a History of some *Wounds* handl'd according to my

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Method, that justify my manner of *Practice*. Had I thought it requisite, I could have fill'd a great Volume with Cures that I have done these ten or twelve Years, and which were all brought to a happy conclusion, and compleated in a very small time ; but, to avoid tediousness, I resolv'd to set down as few as possible, to relate only one of each sort, and each Part, and had once design'd, tho' I since found my self necessitated to exhibit many ; of which, tho' some at first may appear altogether alike, yet if they be more narrowly scan'd, they will be found to differ from each other in some very material Circumstances.

As for the Order observ'd in these Relations, I have follow'd that of the Dignity of the Parts, beginning at the *Head*, and ending with the *Limbs*, not minding the Series of Time wherein they hapned. I have describ'd all things just as they were, without either adding or diminishing, having no other design, but to make the Easiness and Expedition of this Method appear, by the Examples I here relate.

CHAP. II.

Of the Head.

Obs. 1. **A**FTER the War broke out in *Savoy*, there was brought to the King's Hospital at *Lucerne*, where I was then Surgeon-Major,

Major, in July 1690, a Soldier call'd *La Grandeur*, of the Regiment of *Poudeux*, which is now that of *Gatinon*, who had receiv'd a Wound on the right side of his Head with a pretty large Bullet, which grazing upon the most convex part of the Bone of the *Sinciput*, had only carried away the common *Teguments*, not hurting the *Skull*; but the *Membrane* that invests it was so bruise'd, that it appear'd livid. I know, if Time had been given, it would have come to Suppuration, whereupon the Alteration and Exfoliation of the Bone must needs have ensu'd; to prevent which, I tore off with my Nails the *Pericranium*, so far as it was bruise'd, which was something more than the bigness of a Silver Shilling, and forthwith I struck the uncover'd Bone in several places as nimbly as I could, with the Pyramid of the Trepan, and then cover'd it with some Lint wet with Spirit of Wine: The rest of the Dressing was charg'd with a simple Digestive, upon which I put *Emplastrum de Betonica*, and above all the Cap.

After two days I took off the Dressings, and found the Bone cover'd with a lively red, from whence I conjectur'd, that it would soon be cover'd with Flesh. Two days after this it was dress'd in like manner as before, and then the Bone was half cover'd over, upon which I let it alone for three days more; so that in seven days time the Bone was quite hid with new Flesh,

Flesh, which was instead of a *Membrane* to it; and now nothing more was requir'd, but by dressing it every other day, to attend the Fall of the *Escar*. Finally, in the space of 18 days, the Wound was fill'd up, and compleatly cur'd.

Reflection. If this Wound had been manag'd after the ordinary Method, I leave it to Consideration, whether the Cure would have been so speedily accomplish'd. From that time forward I ever kept to this Method, which I have us'd on many Occasions, and never found the Wounds open'd again, or that Exfoliation, or any other evil Accident ensu'd.

This and the following Example I judg'd sufficient to establish our Way of Dressing: And indeed, seeing it has been attended with Success in such cases, we ought to remain assur'd that it will prove no less effectual in *Incision-Wounds*, and others also where the Bone is laid bare, whether by that which inflicts 'em, or by the Suppuration of the *Pericranium*. But we must observe, if the *Pericranium* is bruise'd or discolour'd, as in the preceding Case, and *Suppuration* appears unavoidable, the securest way is to tear it off, and speedily uncover the Bone, that the 'foresaid Operation may take place; for by this means the Corruption of the Bone will be prevented, which might be occasion'd by the lodging of the corrupt Matter thereon, and then the Operation would be too late.

C H A P. III.
Of the Head.

Obs. 2. **A** Certain Soldier, nam'd *Chateau-Montagne*, of *Aligny's* Company in *Villars's* Regiment, together with a Companion of his in the same Company, was, during the Campaign in the Year 1694, brought to the Hospital establish'd for the King's Army at *Briançon*. The first had receiv'd a Cut on the middle of the *Os Sincipitis* of the left side, by which the Bone was uncover'd the bigness of a Silver Crown-piece. At the second Dressing I made eight or ten little Holes with the Piercer upon the discover'd Bone, not reaching so deep as the middle Pith or *Diploe*, that so I might try if I could accomplish my Design without piercing thro' the first Table. I apply'd upon the Bone so far as it was laid bare Lint dipt in *Spir. Vin.* dressing the rest of the Wound with the simple Digestives, *Emplastr. de Betonica*, and the Kerchief.

I staid two days before I drest it again, and then found my Operation had not been without Effect; the Bone was made reddish, and the Holes made by the Piercer (to which this Effect was owing) began as it were to sprout forth; which made me conclude, that *Nature* would accomplish the Work she had already begun.

begun. For the first eight Days he was dress'd but four times, after which the Bone was all cover'd ; and in eight or ten Days more, wherein he was dress'd but every third Day, the *Wound* was fill'd up, and a good and firm *Cicatrix* form'd. He came into the Hospital on the 25th of *May*, and upon the 11th of *June* he went out perfectly cur'd ; all that were in it being Witnesses of the Operation, and the Speediness of the Cure.

His Companion had several *Cuts* all over his Head, which he had receiv'd on the same Occasion, but especially a deep one upon the upper and middle part of the *Forehead-bone*. Finding that in none of them the *Scull* was fractur'd, I judg'd it sufficient to join together their Lips ; only in the last, during the first Days, I left two small Threads of Lint dipt in Spirit of Wine, with the Ends hanging a little out of the Wound. Four Days after, I caus'd to be remov'd whatever might hinder the re-uniting of the Lips, dressing only once in 3 Days, because no Accident appear'd.

The Suppuration in this last *Wound* was but very inconsiderable ; and no Bones came away, neither was there any Exfoliation : So that this Man was likewise cur'd, and return'd unto the Regiment with his Companion.

Reflect. Had I only recounted one Cure of this nature, done in a place at a great Distance

stance from *Paris*, the Truth thereof might readily enough have been call'd in Question; but these, with many others of the like kind, having been publickly perform'd in an *Hospital*, to which every one had free Access, and as it were in view of the *World*, ought not only to remove all Scruple as to the Truth of the Matter of Fact, but also to establish the Reputation of a *Method* attended with Expedition and Security. The Excellency and Usefulness of the little *Operation* perform'd upon the uncover'd Scull may be easily made apparent to every one, being founded on *Reason* and *Experience*. But besides, M. *Fouve*, a very expert Physician belonging to this *Hospital*, was an Eye-witness of the happy Success of my late *Cures*, he having been present from the Beginning to the End.

I should but weary my Reader, and my self also, if I should go about to reckon up the number of those, who in 3 Years time have in this *Hospital* been cur'd with surprizing expedition of Wounds of the Head; as well such upon whom the *Scull* was cut more or less, as those who had lost of its Substance.

I am not the only Person, that has conquer'd the Scruples commonly enough entertain'd about Wounds of the Head. *Ambrosius Pareus* reports, that he cur'd in a small time a certain Person, that with an edg'd Instrument had a large piece of the *Forehead-bone* entirely

entirely separated, and hung over upon the Face by the Skin only, which yet was easily enough re-united.

In the *Skull*, as in other *Bones* of the *Body*, when a Piece is separated, whether by a Cut or Fracture, so as yet to adhere to the encompassing Membrane, it is sufficient artfully to restore it to its natural Place, in such a manner, that it may have the same Situation and Disposition as formerly, that so the Pores may answer, and the *Nutritious Juice* necessary to form the re-uniting *Callus*, may be freely admitted; which could not be done without extream Difficulty, if it were placed either too high, too low, or aside; in which Cases, the natural Order and Situation of the Part being alter'd, it is impossible it can fit so close to the *Bone* from whence it was divided, but that many little Distances must intervene, that are liable to be fill'd with *Lympha*, *Blood*, or *Matter*, or all together. Now this alters the wounded Part, corrupts its Aliment, and brings to Suppuration, that Membrane by which only the divided Part was ty'd: So that Nature must then of Necessity throw it off as an *Extraneous Body*.

From hence we may readily conclude, that it is not at all necessary to permit *Wounds* of this kind to come to *Suppuration*, or keep 'em open in Expectation of the coming away of *Bones*, which may be avoided without danger.

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This our *Method* is also confirm'd by the Authority of *Rhasis*, and *Serapion*, Authors celebrated by Antiquity; who treating of *Wounds of the Head* accompany'd with a Fracture of the *Scull*, tells us, that it was their Custom to stitch them, even when the Fracture pass'd through both Tables. *M. Verduc* also in his first Volume, *Chap. 18. Of Wounds in the Head*, makes mention of a Fracture of one of the *Ossa Sincipitis*, that reach'd from the *Sagittal* to the *Lambdoidal Suture*, which was cur'd without having recourse to *Operation*.

The *Diploe* or middle *Pith*, plentifully supplies the *Scull* with *Nutritious Juice*; from whence it is, that when the *Scull* is broken 'tis more easily united, than any of the other *Bones*, tho' indeed its *Callus* is less firm: And provided the *Brain* with its *Membranes* are safe, we need not fear any Danger from the Fractures of the surrounding *Bone*: But tho' this indemnity of the *Brain* and its *Membranes* may sometimes fall out; yet is it scarce to be expected, but that the violence that occasions a Fracture in the *Scull*, should by the sudden Jolt or Concussion produce some Disorder in such a soft glandulous *Body* as is the *Brain*. Great Carefulness therefore and Attention is here requir'd: For a *Rupture* or *Dilatation* of their *Orifices* and *Anastomoses* of the *Vessels* that are frequent enough in such Cases, and cause Effusion of *Blood*, does not appear at first; as
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I have oftentimes observ'd ; but so soon as the Accidents begin to shew themselves, Operation must not be neglected.

It will possibly be objected to what I have said concerning carefully placing the broken piece of *Bone* in the same Situation it had formerly, that the Bones of other Parts of the *Body* may be re-united by Means of a *Callus*, even when so ill plac'd that there is a necessity of breaking them anew, in order to restore them to their natural Figure. But the Answer is easy ; for there is a Difference between the Case we here treat of, wherein a Piece or Splinter of a *Bone* is separated from the whole, and that now alledg'd, where the Nutritious Juice that comes from the one as well as the other Part, meets, diffuses it self, coagulates about the Fracture, and so forms that which we term a *Callus* : For in our Case, the Alimentary Liquor proceeds, and is communicated from one of the Parts only ; and if it find no Pores rightly dispos'd to receive it, there being nothing to which it can join it self, it is alter'd and corrupted ; and the loosen'd Piece shares with it in the same Fate.

As for the Operation of *Trepanning*, which I have often perform'd, considering that nothing extraordinary hath therein occur'd, I will pass it over in Silence.

CHAP. IV.

Of the Head.

Obs. 3. **A**Bout the Conclusion of the Year 1689, a little before the War of Savoy, the *Vaudois* cut off almost all the Inhabitants of *Pramol*, which depends on the Valley of *St. Martin*. I was at that time Surgeon-Major to the *Hospital* of the Army of his Royal Highness the *Duke of Savoy*: Thither were brought a great number of Men, Women, Maids and Children, in a most deplorable Condition; and among others, a young Girl about 9 or 10 Years of Age, who, besides others in the Body and Arms, had receiv'd 18 or 19 blows on the *Head* with a Cutlass, each whereof had pierc'd the *Scull*, some even to the *Dura Mater*; some Pieces of the *first Table* were carried away, and some of *both Tables* entirely separated.

I caus'd, in the first place, such Parts to be shav'd as would bear it, and afterwards I gently rub'd the whole Head with a Lini-ment made of *Unguentum de Betonica*, the Yolk of an Egg, and Spirit of Wine, mix'd together: In this mixture I likewise dipt large Pledgits, with which I cover'd all the Head, without either *Tents* or *Dilaters*; above these I put *Em-plastrum de Betonica*, and over all the ordinary Cap.

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What her Age and Strength would allow, was done for diverting the Humors; and the first Dressings were left untouch'd for 2 Days; which *Method* was continu'd for 15 Days: When we took off the Plaister, almost at every dressing, we found pieces of Bones sticking to the Pledgits: What was altogether separated, came away with Ease: And in fine, such Bones as yet adher'd to the *Pericranium* were re-united, and what was wanting in the *Cranium* was speedily supply'd. When I perceiv'd the Suppuration to diminish, I dress'd but once in 3 Days. This Course I found so successful, that in the space of about five Weeks the *Cure* was perfectly accomplish'd. This poor wounded *Girl* was known to almost all *Pignerol*, being very remarkable by the loss of one of her *Ears*, which she had sustain'd on this afflicting Occasion.

Reflect. This Cure is altogether to be ascribed to *Nature*, as being entirely her Work; and had not great Circumspection been us'd, in prohibiting the access of the Air in this case, where the very Membranes of the Brain in several places were discover'd, it could not have had so speedy, easie, and successful an Upshot, especially had it been manag'd in the ordinary way: For besides, that the Cure would have been unsufferably tedious, a thousand dangerous Accidents might have hapned, especially
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in an Hospital, where long-winded Cures are seldom attended with Success. In fine, notwithstanding the Novelty that may be charg'd upon this Method, it is supported by the Authority of *Hippocrates*, who, *Lib. 5. Aphor. 17*, affirms, That the *Air* is an Enemy to the Brain, the Bones, the Nerves, and to our Nature in general. *Galen*, in his Book *de Usu Partium*, *ch. 1*, says, That the Air is prejudicial to *Ulcers*; by which Word he means all Sores, and adds, that in trepanning we ought to take special care not to cool the Brain, as well during the Operation as when it is over.

The Access of the Air is not only hurtful to the Wounds of the Scull and Brain, but also to those of the other parts of the Body: And tho' in these the Accidents are neither so sudden nor so violent, yet they ought to be regarded with all necessary Care; for if you ever so little neglect the conservation of the Natural Heat and Spirits, the wounded Member must needs fail, and frequently the Patient himself shares in the same Destiny.

C H A P. V.

Of the Face.

Obs. 4. **I**N the Year 1689, I being in the same Post, and at the Place before mention'd, when the *Vaudois* were driven from
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the Valleys of *Lucerne*, a certain Officer, whose Name civility obliges me to conceal, was wounded with a broken Sword in the left Cheek, towards the corner of the nether Jaw, about an inch below the Ear, and the *Ductus Salivales* were torn. He was at first dress'd by a Surgeon, who (according to his usual manner) dilated the Wound, by thrusting into it as much Lint as it could contain. A considerable time pass'd without any appearance of a Cure, and by little and little it became fistulous. I was call'd by the wounded Person to give him my Advice and Assistance; and forthwith I consum'd the Callosity, by touching it lightly with Tents dipt in dissolv'd Causticks. I caus'd him to be fed with Jelly-brath, to be taken with a Quill, that there might be no occasion to move the lower Jaw, ordering him also to keep himself very quiet, without either speaking or moving; and when all the Callosity was taken off, I applied to the Wound the Balsam of *Peru*, and pressing together the Lips with long slender Bolsters, I cover'd it with the Styptick Plaister of *Crollius*. Thus he was cur'd, not without difficulty, tho' at first it might have been done with great ease.

CHAP. VI.

Of the Face.

Obs. 5. **B**Eing in *Pignerol* in the Year 1691, the *Chevalier Vauban*, a Captain in the Regiment of *Beaujolois*, sent for me to see his Brother, who was run with a Sword into the Cheek. The Wound had been drest by a Surgeon, who at first thrust into it a Tent both thick and long, which pass'd into his Mouth; and continuing the same Method for six or seven Days, the Patient was thereby thrown into a violent Fever, and his Head and Face were exceedingly swell'd, by reason of the great flux of Humors.

After we had laid aside the Tent, we found it necessary to have recourse to such means as might divert the Humors; but the Accidents which so great an irritation of the Parts had occasion'd could not easily be remov'd; nevertheless they were at length conquer'd, tho' not without difficulty, and by means of *Sarcoticks* we compleated the Cure; but an ugly Scar remain'd behind, occasion'd by the inconsiderate use of the Tent.

Reflect. The Face being the Image of God, and as it were an Abridgment of all the Beauties of Nature, which as a little World repre-

senting in Miniature what is more voluminously display'd in the great bulk of the vastly-extended Universe, ought doubtless to enjoy some Privilege over the other Parts of the Body ; hence it is that all the Authors, both ancient and modern, tho' for the most part they have allow'd the use of Tents in all other Wounds, yet they've unanimously condemn'd it in those of this Part, which nevertheless have been cur'd with wonderful facility, and by the use of the very weakest Sarcoticks.

Fabricius ab Aquapendente, in Wounds of the Face recommends the use of the dry Stitch, to avoid the deformity of a Scar: And indeed, seeing we are to preserve the Beauty of the Countenance as much as possible, they are to be accounted very unskilful Surgeons, and but ill instructed in what belongs to their Business, who imploy Tents on such Occasions: The *Saliva* seems to be that Balsam which is peculiar to the Face, assign'd thereto by Nature, which has also granted to all the other Parts one proper to them.

CHAP. VII.

Of the Tongue.

Obs. 6. **I**N the Year 1689, a Lieutenant of the Militia of *Mondeviis*, having his Mouth open, as he gave orders to his Soldiers,
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in an Encounter, receiv'd a Bullet that broke and tore all his *Tongue* into 5 or 6 pieces, which were not altogether separated, but stuck together on the upper part. He was carried to the *Hospital of Lucerne*, and dress'd out of hand by M. de la Ram'e Master Surgeon at *Turin*, and well skill'd in his Business; but finding that with all his Care he was not able to stay the Flux of Blood, which was considerable, he desir'd my Advice in this Affair.

Having search'd his Mouth in order to discover from whence the Blood came, I found the Bullet lodg'd under one of the corners of the lower Jaw-bone, having only fretted the Skin of that part; and finding no other Place from whence the Blood could come, but from the Veins under the *Tongue*, call'd *Raninae*, I propos'd to heat red-hot 3 of those small cauterising Irons that are us'd for the Teeth, and to apply them to the *Raninae*; which being accordingly done, the Bleeding was stopt, and the wounded Person speedily cur'd.

Reflect. The *Ancients* order'd to stitch the Wounds of the *Tongue*, unless the pieces be altogether separated, in which case Operation is to no purpose, and the Re-union impossible: *Fabricius ab Aquapendente* is of the same Opinion: But as for my self, I can see no manner of necessity for such Stitching, for that *Nature* alone, when left in Repose to her self, does

excellently accomplish the Uniting of the divided Parts without it. Every body knows, that the *Tongue* is seated in the *Mouth* under the arched *Palate*, and made up of innumerable little nipple-like Bodies, encompass'd on all sides by the *Teeth*, and supported in such a manner that its parts are kept together, and cannot fall asunder. The *Spittle* is its *Balsam*, and oftentimes the only Remedy necessary to cure its *Wounds*. This is what I have observ'd in the preceeding *Cure*; for this Gentleman's *Tongue* was, after some small time, altogether so well, that scarce any Signs of the Division of its Substance could be discern'd; but whereas it had been torn by the *Bullet*, and scorch'd with the *Cautery*, it must of necessity have lost of its Substance; nevertheless *Nature* found the way to make up what was wanting, and to effect a compleat Union of the divided Parts: From whence I have Reason conclude, that what the Ancients have left us in Writing is not always true.

I have dress'd a great many Fractures of the lower Jaw-bone, but chiefly two Soldiers, who were wounded in that part, at the Battle of *Marsaille*, One of whom had more than half of the Bone broken to pieces; notwithstanding which, both had been, and are at this time amongst the Invalids, being disabl'd and much deform'd. Of these I will not speak more particularly, having observ'd nothing extraordinary in their Case.

CHAP.

diments, speedily heals up the Wounds of the Neck: and this gives a great Confirmation of the Reasonableness of my *Method*; for those who fear, lest the Omission of *Tents* should bring on Abscesses, Bags, and Sinuses, have more reason to apprehend such Accidents in the *Wounds* of this, than in those of any other Part.

'Tis well known, that this part is obnoxious not only to the *Bronchocele*, Afflux of cold Humors, and Quinsie, but also to *Pblegmons*, St. *Anthony's* Fire, and all other Indispositions in general that afflict the whole Body: For this Part, by reason of the Glands that here are very numerous, is always charg'd with abundance of Humors, which render it subject to all such Disorders as proceed from the humors thrown out upon the parts.

It must also be own'd, that there is not any Part in all the Body which, in proportion to its bigness, contains near so great a number of *Blood-Vessels* as are here to be found.

And in fine, if it were true that the use of *Tents* would prevent Fluxions, Collections of Matter, Bags, and Sinuses, I know no other place of the Body, that when wounded, would be in more need of them than the Neck, which is extreamly subject to such Accidents.

Wherefore, since Wounds of the Neck, which of all the Parts is most liable to dangerous Symptoms, may not only be cur'd without *Tents*, but even much more safely and speedily

dily than with 'em, we may conclude, that the Wounds of other Parts ought to be treated also with the same Gentleness, and set at Liberty from the Tyranny of *Tents*.

CHAP. IX.

Of the Breast.

Obs. 8. **B**Eing at *Pignerol* in the Month of *April, 1692.* *M. de Fontaniere*, Commander of the King's Batalion, receiv'd a Thrust with a Sword, about 2 Inches above the nipple of the right Breast, glancing towards the Arm-pit, which enter'd the Body between the third and fourth Rib.

He was dress'd by one of the Surgeons in *Pignerol*, before which he had lost, according to conjecture, about between 7 and 8 Pounds of Blood; and notwithstanding the Dressings, the Flux of Blood did still continue; for which Reason I was sent for by the wounded Person and his Friends. I search'd the Wound in presence of him that had formerly dress'd it, and took out of it between 8 and 9 Ounces of Blood: And lest at first I should appear ridiculous, I permitted it to be dress'd with a *Tent*, and immediately after caus'd him to be let Blood, and advis'd his Friends to dispose him to set his Affairs in Order. All the signs were dangerous; his *Pulse* was weak

and convulsive, he had frequent Swoonings, and Pains all over his Body. A Clyster was given him, and some weak Cordials in good Brath. A little after the Bleeding, he was seiz'd with a Fever: And all these Accidents concurring, made us question whether he could outlive that Night; which yet he did with great Pains all over the Breast, and perpetual restlessness.

In the Morning, which ended the first Day of his *Wound*, we took off the Dressings; and found that it had bled all Night; and took between 6 and 7 Ounces of Blood half corrupted out of the Wound, which we then dress'd, as the day before. The *Clyster* was repeated: We gave him *Aperatives* and *Vulneraries* in Syrup of Violets: And in his Brath a Diaphoretick made up of some Grains of *Vitriol calcin'd*, and the Powder of a *Human Scull*, which gave no small Relief, being a *Specifick* in such sort of Wounds.

After the Dressing, the Blood yet run from the Wound into the Bed; and as we were preparing to bleed him again, news was brought him, that he behov'd to change his Lodgings, and to remove for his greater security, to some Place at a considerable distance from that where he was. On this occasion, his Removal threatned no less than Death; for this was but the beginning of the second Day of the *Wound*. I was willing to see it before his Departure, tho' it had been dress'd.

dress'd but a little time before: But having perceiv'd, at the last Dressing, that some *Blood* run from one of the Arteries that pass along the lower part of each Rib, and having only out of complaisance continued the *Tent*, I design'd then to use one of another sort, there being now no time to lose.

Accordingly I prepar'd a soft *Tent*, indifferently thick, and blunt at the end, that it might rest upon the Rib, without touching the *Pleura*, or passing into the Cavity of the Breast: This being dipt in a simple Digestive, and roll'd in Vitroil finely pulveriz'd, I apply'd with a broad head, as is usual, together with the rest of the Dressings, and the Plaster of *Andreas à Cruce*. After having taken some Brath, he was put into a Chair and carried to his new Lodgings, where he might remain more conveniently: And by the way he only lost a little Blood, tho' many were of Opinion, he could never have come alive to the end of it.

He rested a little that Night; and in the Morning, which ended the second Day, the *Fever* was still pretty violent; the *Wound* was without Moisture or Blood; the *Pleura* was re-united: He felt a Heaviness, and breath'd with some difficulty. The *Wound* we dress now with a small Dilater only, to which, for more security, a long Thread was ty'd, applying the other Things as before. I

bled him in the Arm; and encreasing the Dose of the Diureticks with the Syrup of Maiden-hair, order'd an *Emulsion* to be taken at Night with 2 Grains of *Laudanum*.

All these things succeeded so well, that the next Day, which was the end of the third since he was wounded, I found the Fever diminish'd: He breath'd more freely; felt little or no heaviness; and in the Night-time had voided such abundance of *Urine*, that we might reasonably enough suppose this to have been a *critical Evacuation*; he had also spit store of bloody Matter. The Wound being now in a very good condition, from this time forward I dress'd it with a Plaister only.

At Night I observ'd a Moisture upon him; which made me believe, that *Nature* might accomplish the rest of her work by *Sweat*. Wherefore, that I might not let slip so favourable an Occasion, and to assist Nature, I caus'd to be prepar'd for him a Potion with the distil'd Water of *Carduus benedictus*, and of *Scabious*, four Grains of *Diaphoretick Antimony*, half a Dram of the *Confection of Hyacinth* and of *Alkermes*, a little of the Powder of *Hyacinth*, and 2 or 3 drops of the *Spirit of Sal-armoniac*. This *Remedy* being given so seasonably, procur'd a thorough *Sweat*; and in the Morning, which ended the fourth Day of the Wound, the Fever was gone, the weight upon the *Diaphragm* remov'd, and he breath'd without difficulty: And finally, all these Symptoms vanishing, the Wound

Wound was only drest with a Sarcotick Plaster, as if it had been a simple Excoriation.

The Day after, which was the fifth of his *Wound*, he mounted his Horse without help, and went to *Diblon*, a more pure and temperate Air, where he no longer kept his Bed, and found not the least Inconvenience thereby. There I purg'd him twice, which was done not out of any absolute necessity, but as an expedient precaution: I advis'd him also for a time to live somewhat moderately. Thus the *Wound* which appear'd to us first *Mortal*, and was attended with a numerous Train of *dangerous Symptoms*, was in five Days time compleatly cur'd, to the Amazement of all *Pignerol*.

Reflect. This Method of Practice will appear at first to be ridiculous and rash, to those who have not consider'd so much as I have done the surprizing Works of Nature, nor those secret Passages she finds out to discharge her self of what is troublesome to her in like Cases, nor how in particular she oftentimes effects a *Crisis* by the way of *Urine*.

But seeing Experience has frequently taught us, that an *Empyema* in the Breast has been carried off by means of *Diureticks*, the Matter, as the Ancients thought, passing to the Urinary Vessels through the *Vena Azygos*, but much more probably through *Ways* to us yet unknown, why may not a little extravasated

vasated Blood contain'd in the Cavity of the Breast, or lying upon the *Diaphragm*, be discharg'd by the same Ways, or by those of *Sweat*, especially if Nature be therein assisted by the use of *Diaphoreticks*?

By these Ways then, now mention'd, the Breast may be sufficiently freed from Humors that Oppress it; especially in a young and vigorous Body: neither is there now a days Place for any to doubt of this, since so many People in our Days have been Eye-witnesses of it, who can yet testifie the same.

There is therefore no Reason to be so obstinately bent for using *Tents* in *Wounds* of the Breast, unless it be to carry *Astringents* to some place, that otherwise they could not reach; or to support and keep them on: But in all other Cases they ought entirely to be laid aside. For by exasperating such parts as they touch, they are apt to renew the *Flux of Blood*; they hinder the closing up of the *Wound*; and by widening the *Division* of the *Pleura*, occasion *Inflammation* upon it.

In like manner when a *Tent* is something long, it frequently falls out, that it touches the Lungs, and bruises 'em by reason of their continual motion and beating against its Points, yea, oftentimes it enters into, and divides their Substance, making its way thro' the investing Membrane, now brought to Suppuration. In Wounds also where the *Lungs* are not spoil'd, there

here being only a simple Division of their Substance with a sharp Instrument, a *Tent* may encrease the Separation, and by irritating the Parts, cause a discharge of Humors thereupon, and great Suppurations, which end ordinarily in incurable *Fistula's*.

Moreover, a *Tent* presses upon the Muscles of Respiration, and permits not the Patient either to cough, spit, or breath freely: It hinders the Circulation of the Blood, by bearing upon the Vessels; so that the wounded Person is in danger of Suffocation, by the collection of *Blood*, *Matter*, or *Pblegm*, and oftentimes of all three together, unless they are by some means discharg'd: Nay, even when there is not a sufficient quantity of one or all of these, to produce such an Effect; and when the *Lungs* are yet at liberty to perform their wonted motions, these Humors will there ferment, and corrupt, and occasion putrifaction in the parts that contain 'em.

But after all, this Accident may sometimes have an happy Event; and a bad Cause may by chance produce a good Effect. For our Body, as we are inform'd by *Anatomy*, being nothing else but a Contexture of Vessels, it may happen in Wounds of the Breast, that the Blood or Matter collected in the Substance of the *Lungs*, or upon the *Midriff*, may there undergo a Fermentation, by vertue of which together with the Heat and Moisture of the
part

part they may open and dilate the Pores of the Veins; and by this means the Humors being taken into and mix'd with the Blood, rarify, subtilise, and dispose it to throw off the *Offending Matter*, either by Sweat, Urine, or other *Crises* of the like Nature, according to the Disposition of the Body.

And surely we need make no great difficulty to believe, that such a thing might happen in a Wound of the Breast, if we will consider what befel *M. de la Place*, a Captain in the Regiment of *Barrois*, who voided by Stool the *Matter* of a great *Abscess* in his *Arm*, occasion'd by a Wound he had receiv'd in that Part; of which we will give you a particular Account in the last Chapter of this Book; as also of another wounded in the last Campaign, from whom the *Matter*, that was contain'd within the Breast, was drawn away by opening the *Vena Mediana*, designing only to bleed.

In fine, we may say, tho' the ways by which these *Crises* were effected are not altogether known to us, yet it is very certain that there are such: And since *Nature* is not ignorant of them, we ought to leave to her conduct the Success of a Work, whereof she ought to have all the Honour, and which she alone brings to pass; our part being only to wait upon her, and assist her in her Design.

Galen in his 5th Book *de Locis*, has observ'd, that *Matter* contain'd in the *Breast* is often-times

times carried off by *Urine*; the same he likewise affirms in his 6th Book, *de partium Morbis*.

Andreas à Cruce, a famous Physician of *Venice*, in the first Section of his 4th Book of *Surgery*, in express terms forbids the use of *Tents* and *Pipes* in the Wounds of the Breast; he advises only to use a *Plaister*, the Advantage of which I have thorowly experienc'd.

Fabricius ab Aquapendente, Part I. Book 2. Chap. 42. says, That he has often seen the *Matter* contain'd in the Breast in a *Pleurisie*, or *Peripneumonia*, discharg'd by *Urine*. He relates an Authentick History of a *Wound* piercing into the Cavity of the Breast, which having been dress'd as a simple Wound of the common Teguments, the Patient was on a sudden surpriz'd with such Symptoms, as plainly discover'd the Nature of the Wound. That he might be reliev'd with as much ease as possible, and not put to the Torment of a Counter-opening, it was thought expedient to dilate the Wound; but it was so well clos'd up, that the Operation of the *Empyema* was resolv'd on next Day. But during the Night, sage Nature had accomplish'd her Work, a Glass full of *Blood* being voided by the Urinary Passages, whereby the Spitting of *Blood*, difficulty of Breathing, and all the other Accidents were compleatly remov'd.

The same Author recommends on such occasions the use of strong Diureticks, unless a
Fever

Fever hinder it. And in the above-cited Chapter he says, there are some who will not allow *Wounds of the Breast* to be kept open, but suffer 'em to close, lest otherwise the natural Heat might be dispers'd, and the cold Air should enter in, and spoil the neighbouring Parts. He adds, that the use of *Tents* occasions *Fistula's*.

Ambrosius Pareus, Book 10, Chap. 32, approves the Practice of those who make use of *Tents* in *Wounds of the Breast*; and elsewhere commends such as imploy 'em not: So that, as to this point, he seems to have been undetermin'd, and inconsistent with himself.

In the same Chapter he also speaks of a Cure done by himself without *Tents*, and afterwards affirms, that the *Fistula's* which follow upon *Wounds of the Breast* are oftentimes occasion'd only by the use of *Tents*. The same Author, in the 51st Chapter of the 17th Book of his Treatise of *purulent Matter and Blood that may be carried off by the Veins*, demonstrates by many Reasons, that such an Evacuation may be; and shews, that *Galen* was of the same mind.

Hollerius, in his Commentaries, is of the same Opinion; and *M. Verduc*, Tom. 2, c. 28, affirms, that *Wounds of the Breast*, the more they are expos'd to the Air, are so much the more dangerous.

It would be a very tedious Task to recount all the Authors that have approv'd of this Method,

thod, altho' it is but little put in practice :
And it would be a very easie matter to bring
many Examples of Cures wrought by Nature
thro' secret and occult Passages conveying Hu-
mors and Matter into other Parts than what
were at first affected.

CHAP. X.

Of the Breast.

Obs. 9. **A** Bout the end of the Year 1693, was
brought to the King's Hospital at
Briançon a Grenadier of the Regiment of *Tou-
raine*, together with a Servant of *M. de Lesse-
raine*, formerly Commissary at *Pignerol*.

The first was run into the side-part of the
Breast, between the third and fourth Ribs,
with a Sword, which past into the Capacity of
the *Thorax*, and pierc'd the Lungs. The usual
Symptoms appear'd at first, and *Diversions* was
made. The first and second day some *Blood*
came from the *Wound*, which was dress'd only
with the Plaister of *Andreas à Cruce*, without
either Tent or Dilater; *Diureticks* and *Dia-
phoreticks* also were us'd, and upon the fourth
day he voided abundance of *Urine*, by which
critical Evacuation he was freed from the *Fe-
ver*, *Difficulty of Breathing*, *Weight upon the
Midriff*, and *Spitting of Blood*; and on the
fourteenth day he was compleatly cur'd.

The

The other had receiv'd just such another Wound, piercing in like manner, only higher by one Rib. The *Symptoms* were so violent, that tho' it was immediately dress'd, yet was there no hope of Cure. He was treated after the same manner with the former, but was much more easily cur'd, by means of an universal Sweat, whereby that very day all the Accidents were removed. In eight days time he went out from the Hospital entirely cur'd.

Were I to give a particular account of the numerous Cures of the like nature that have been done according to this Method, there would be enough to fill a large Volume, all which were neither attended with any evil Accidents during the time of the Cure, nor follow'd by any after it; nor did they ever leave *Fistula's* behind 'em. I shall speak of *Gunshot Wounds* in the following Chapter.

CHAP. XI.

Of the Breast.

Obs. 10. **I**N the Year 1692, was brought to the 'foresaid Hospital of *Brianson* a Prisoner of the Army of *Savoy*, who was wounded with a Bullet, which entred near the right Breast towards the Armpit, and pass'd out of the Body four Fingers-breadth from the sixth *Vertebra* of the Back, having in its way broke asunder the 4th Rib. I

I enlarg'd both the Orifices, but mostly that of the Back, which was somewhat lower than the other. We dress'd him only once a day at first, without either Tents or Dilaters, and from the hinder Orifice came forth a certain thin watry Humor, which Evacuation continued till the falling of the Escar, after which he was dress'd only once in two days. I kept the last-mention'd Orifice open from time to time by means of a prepar'd Sponge, conjecturing there were some Splinters of Bone to be discharg'd; which accordingly came to pass, without any pain, about the 18th day of the Wound: From that time I endeavour'd to heal it up, applying between the Orifices Compresses dipt in warm Wine. During this Cure, I could observe no sensible Crisis, nor did any Accident happen. It was finish'd in 30 days.

Reflect. In this Wound the Lungs were intouch'd, for any thing that appear'd, a Rib only being broken, and the *Pleura* hurt, which indeed had been sufficient to produce fatal accidents, had any other Method been follow'd; for if in this case Tents had been us'd, or had the Wound been cram'd full of Dossils, as has been often done on such occasions, the Matter proceeding from the dissolution of the Escar and Contusion being pent up between the two Orifices, and still encreasing, and finding no vent, would infallibly have broken
into.

into the Cavity of the Breast, from whence it could not have been drawn forth, but by the Operation of the *Empyema*.

An Accident like unto this hapned this Year to a famous Officer of our Army in *Savoy*, who having receiv'd a Wound that was thought to penetrate, and really did so, was dress'd with Tents; but the *Matter* finding the way by which it should have been discharg'd from the Body, intercepted; and passing among the broken pieces of fractur'd Rib, diffus'd it self into the Capacity of the *Thorax*; and in this condition he died, having his Breast full of *Matter*.

CHAP. XII.

Of the Breast.

Obs. 11. **U**Pon the 22d Day of *June*, 1693, the Marquis de *Larray*, Lieutenant General, took by Storm a Post in the Valley of *Barcelonetta*, and on this occasion had 25 or 30 Men wounded, who were sent to our Hospital of *Briançon*: Among others, there was one call'd *Simon Cotaut*, of the Regiment of *Vendosme*, and Company of *Berole*. This Man had receiv'd a Bullet, which went in hard by the sixth *Vertebra* of the Back, breaking in its passage the transverse Process on the right side, and came out on the forepart of
of

of the *Thorax*, between the second and third upper Rib, towards the left side.

This Wound was attended with all the most dangerous Symptoms that use to appear when the Lungs are wounded, and was indeed one of the most considerable that had been under Cure in the Hospital.

There was not here any need of dilating the Orifices, the largeness of the size of the Bullet having done it to some purpose. The Wounds were dress'd without any Tent, only with large Pledgits and a good agglutinative Plaister, the Compresses and Bandage being such as usual: Diversions were made without delay, and a course of Diet appointed. He was dress'd but once a day, and that with all possible speed.

The hinder Orifice of the Wound did blow with such force, that all the By-standers were surpriz'd thereat, and such a prodigious quantity of *Lympha* did issue from it, that oftentimes it was necessary to change the Linnens twice a day. Diuretick and Vulnerary Positions were given.

This large Evacuation continued for about 12 or 14 days, after which the wounded Person was dress'd but once in two days. The 21st or 22^d day the Aperture of the *Pleura* on the Back was perfectly clos'd up, the other having done the same some days before. There was nothing came away as we could observe, either from the broken Process or the Ribs that had

had been touch'd in the passage of the Bullet, and in 35 days, or thereabouts, the Orifices were both entirely fill'd up.

Reflect. This wounded Man was sent to the Hospital as one of whom all Hopes had been laid aside; for the Surgeon-Major of the Regiment, who at first dress'd him with great care, told his Captain, his Death was unavoidable.

This same Captain, about a Month after, coming to *Briançon* with the *Lieutenant-Colonel* of his Regiment, who had been wounded with a Sword, was much surpriz'd when he was visited at his Lodgings by this Soldier, who was at that time as vigorous as before he receiv'd his Wounds, on which he had then only a Plaster. The Surgeon also testified to me his Amazement, enquiring in what manner I proceeded to perform that Cure in so small a time.

This Cure is of it self sufficient to evince, that in Wounds of the Breast there is no need of *Tents*; and moreover, does demonstrate, that the Operation of the *Empyema* is attended with much better Success, when perform'd on the hinder, than on the lateral Parts of the *Thorax*; for this Operation is done with design to give passage to the *extravasated Blood*, and to evacuate the *Matter* contain'd in the Cavity of the Breast, for which Purposes this place is much more convenient than the others, the Humors being thereby discharg'd as soon as bred,

bred, unless they be retain'd by *Tents*. By this Method the *Patients* are not troubled with violent *Agitations*, but enjoy a profound *Quiet*, the *Parts* have liberty to perform the necessary *Motions*, and *Nature* acts without Constraint, ever finding the ways open, by which she may deliver her self from what is contrary and hurtful unto her; so that nothing is then to hinder her from closing up the Wound whenever she finds her self dispos'd so to do.

If *Gunshot Wounds* of this nature, notwithstanding the havock a Bullet makes in the places thro' which it passes, are so easily and speedily cur'd by this Method, we have all the reason in the world to believe, that Wounds made by sharp Instruments, where there is ordinarily only a simple Solution of Continuity, may be cur'd with much greater facility.

But we must observe, that in this Way of Dressing great care is to be had of covering such Wounds with good substantial Pledgits, of such bigness, that there may be no danger of their being push'd into the cavity of the Breast by the weight of the incumbent Air: And upon the Pledgits we must apply a strong and agglutinative Plaister, such as that of *Andreas a Cruce*, which must likewise be sustain'd with a Compress four double, and all kept on with the Napkin and Scapulary; all which Precaution is necessary to withstand the entry of the Air, which otherwise, the use of *Tents* be-

being laid aside, might pass into the *Thorax*, and there produce fatal Accidents.

M. *Verduc*, to. 1, ch. 14, advises not to use *Tents* in *Wounds of the Breast* for too long time, lest thereby incurable *Fistula's* be occasion'd.

CHAP. XIII.

Of the Breast.

Obs. 12. **W**Hen I was at *Lucerne*, there was brought to the Hospital, in the Year 1688, a Soldier of the Regiment of *Saluce*, who was wounded with a *Stillette* (which is a Weapon made in form of a Poinard) on the side of the *Cartilage Ensiformis*, the Wound, as was evident to be seen when 'twas dilated, passing upwards by the short Ribs, and piercing the *Midriff* in its fleshy part.

He was drest with a Pledgit only, cover'd with an Incarnative which was pretty liquid: The necessary Diversions were perform'd, and such a Diet was order'd as suited best with the greatness of the Wound, and the Strength and Constitution of the Patient. He was dress'd only once in two days. The Suppuration was but very small, and in the space of 8 or 9 Days he was compleatly cur'd.

Reflect. If this Wound had been drest with *Tents* after the ordinary manner, I leave it to be

be judg'd by every one, if such agreeable Success could have been expected, seeing the *Tent* would unquestionably have caus'd fearful Irritations of the *Diaphragm*, which without such Irritation is with great difficulty brought to re-unite, because of its perpetual and necessary Motion. In fine, this Wound, how inconsiderable soever it might appear, had certainly prov'd Mortal, if it had been stuff'd with an *Extraneous Body*; which by encreasing the division of the *Midriff*, would have prov'd an Impediment to its Action: For every body knows that Wounds in its nervous Part are deadly; and that those in the fleshy Part may become so, when exasperated by ill Treatment, or neglected.

CHAP. XIV.

A Remark on One wounded in the Breast.

Obs. 13. **I**N the last mention'd Year, and in the same *Hospital*, one of the wounded dy'd on the 5th or 6th Day of his Wound: And because it had not at all appear'd to be mortal, the Bullet having but glanc'd upon him, whereby the fifth Rib was only broken, and the *Pleura* slightly hurt, I open'd him, that I might discover the cause of his Death. At first I was of Opinion, that an *Asthma*, with which he was afflicted when

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alive,

alive, and which had almost quite disabled him for Service, had conduc'd much to the shortning of his Days; But I was convinc'd of my mistake, when I perceiv'd all the Parts in the Breast in a very good Condition; only the *Heart* had its *Ventricles* fill'd with *Polypus's* of the thickness of a large writing Quill, and about the length of the little Finger; there being 4 in the right, and 2 in the left *Ventricle*.

If we may give credit to Dr. *Lower* of Oxford, in his Treatise on the *Motion of the Heart*; we may easily enough account for the Death of this Man. He says, that in order to continue the *Circulation* of the Blood, and to send a convenient quantity thereof thro' the Vessels, the two *Ventricles* of the *Heart* must be of an equal *Capacity*, and moreover that they must have a like *Strength* to undergo this Labour. Now this Equality not being to be found in the *Heart* of him of whom we speak, its motion must needs have been deprav'd by the Disproportion of the weight of the *Polypuses*; and by the Inequality of the capacity of the *Ventricles*: Or because the *Heart* being overcharg'd, could not contract it self without much difficulty; so that remitting much of its Motion, it became weak and languishing: And the *Midriff* also, to which it is always ty'd, did lose its necessary vigour; especially after his receiving the Wound: By reason of which, the Breast could not be dilated without trouble

ble and pain, because of the broken Rib, and of the Solution of Continuity of the *Pleura*, Intercostal Muscles, and Muscles of Respiration: Wherefore the *Heart* and *Lungs* being depriv'd of their necessary Relief, Suffocation and Death were unavoidable.

Tho' this is a Subject foreign to our present Design, yet we judg'd it would not be amiss here to take notice of it, for Caution and Advice to others in a like Occasion.

CHAP. XV.

Of the lower Belly and Loins.

Obs. 14. **I**N the same Year 1688, a Soldier of the Regiment of *Montferrat*, call'd *Sans Soucy*, was wounded by a Bullet, which entring before at the Region of the *Navel*, came out behind at that of the *Reins*, piercing the right *Ureter* as it pass'd along. He was at first dress'd by one of the Master-Surgeons of *Turin*, who us'd to assist us; which he perform'd after his own Way.

The Orifice which was in the Belly, notwithstanding the *Tents* which he us'd, was clos'd up, after the falling off of the Escar of the Teguments: But it fared otherwise with that in the Back; for that Surgeon being careful to keep it open with a thick and long *Tent*, hindering also the Re-uniting of the *Ureter*,

which occasion'd the *Urine* to come forth at the *Wound*. I having seen him one Day, advis'd the Surgeon speedily to take away the *Tent*, if he would avoid an incurable *Fistula*; but my Words were to no purpose; for had he comply'd with 'em, he would have thought he had offended against the Rules of *Art*, and ancient receiv'd *Maxims*, with which my Advice was inconsistent.

Some Days after, seeing this Wound in a very bad Condition, being cover'd with a whitish Flesh almost without Sense, and ready to become a *Callus*, I was willing to prevent the fatal Consequences of that indiscreet Dressing: Wherefore, with a dissolv'd Caustick, I consum'd all that appear'd callous about the Lips of the Wound, causing also some of it to pass into the Cavity thereof, and leaving out the *Tent*, I expected the Discharge of what the Caustick had mortify'd: When the Flesh had regain'd its usual Colour, without loss of time, I syring'd into the Wound some Balsamick Water. I also us'd the Balsam of *Peru* alone for some Days, and after that, the Styptic Plaister of *Crollin*, with little longish Compresses that were plac'd on the two Sides of the Wound, to press together the Brims. Thus the Wound begun to be fill'd up, and the *Urine* did by little and little resume its former Course; and in about 18 or 20 Days the wounded Person was perfectly cur'd.

Reflect.

Reflect. In the Progress of this Cure may evidently be perceiv'd the difference between the Method us'd by many Surgeons fondly conceited of their own Opinions, and that I practise; for, in this Case, had the first been continued but for eight days time, the Wound had become either extreamly difficult, or impossible to be cur'd. This is confirm'd by the Wound in the Belly, the speedy Cure whereof is to be attributed to the motion of the *Intestines*, which, contrary to the Design and Desire of the Surgeon, expel'd the *Tent* so soon as applied, in such sort, that it was compleatly cur'd a little after the falling off the Escar.

Wherefore we can never too much blame those who are so obstinately wedded to the use of *Tents* in Wounds of the lower Belly; they ought altogether to be laid aside, in spite of all the Objections may be made in their behalf, for which undoubtably there is no real Ground. Experience gain'd by Practice has so undeceiv'd me touching the Use of *Tents*, that I have left off the Use of 'em, not only in the lower Belly, but even in all other places of the Body, unless upon a very pressing necessity. But in Wounds of the *Emulgent Vessels of the Reins, Ureters, and Bladder*, as also in those of the *Joints*, they occasion Accidents which oftentimes prove mortal, or otherwise leave behind 'em Infirmities that ever after render Life miserable.

CHAP. XVI.

Of the Ventricle.

Obs. 15. ONE of the principal Deputies of the Hospital of *Brianſon*, in the Spring of the Year 1695, receiv'd a Wound in the upper and middle part of the right *Hypochondrium*, piercing in appearance to the *Ventricle*, or to the *Pylorus*. I could not find out the depth of the Wound with the Probe, notwithstanding all the poſtures I could put the Patient in, but an Accident that immediately fell out discover'd the Truth of the matter; for tho' he had ſupp'd very ſlightly, he vomited up again all he had taken, mix'd with pure *Blood*. I immediately dilated moderately the Wound, that a free paſſage might be left to the *Blood* that poſſibly was extravasated in the Lower Belly, or to the *Matter* which might afterwards breed there. I dreſt him with a Pledgit only, on which I applied a ſuitable Plaſter and Bandage. I bled him a little after, and order'd a very exact Courſe of Diet: The *Blood* was thin, muddy, and corrupted, whereby I perceiv'd the ill Habit and ſickly Diſpoſition of his Body. He ſpent the Night reſtleſſly, becauſe of Pains over all the lower Belly, and a violent Fever, which kept him from Sleep. In the Morning I repeated the Bleeding: He had ſeveral Motions to vomit, but could not; and no-

nothing at all came from the Wound, which was dress'd as before.

There being two Enemies to be grappled with, I propos'd to continue the Diversions without interruption, which was also approv'd of by our Physicians. We us'd *Potions, Juleps,* and *Ptisans*, such as were most proper for purifying the Mass of Blood, and blunting the Points of the Acids; to which I added some *Vulneraries*. *Suppositories* were us'd to procure Stools, but to no purpose, which oblig'd us to give him from time to time half a pound of *Decoction* in a Clyster, but with small Success. This Method we continued for seven Days, without being able to observe any considerable change, either as to the *Fever* or *Pain*, in which time he was let blood six or seven times. In fine, toward the seventh or eighth Day of the Wound his Belly was open'd; at first he had a kind of *Bloody Flux*, but afterward he voided *pure Blood*, tho' in no great quantity. I caus'd some *Vulnery Plants* to be boil'd with his Brath, and made him take for some days fasting a small Spoon full of our *Samaritan Balsam*, call'd that of the *Scripture*. The Fever and Pains abated a little, which gave me some hopes of Recovery. The voiding *Blood* by Stool continued till the 14th Day, and then all the dangerous Symptoms disappear'd, and the Wound was compleatly cur'd, without having afforded any considerable store of *Matter*.

Reflect. 'Twas only the Situation of the Wound, together with the Accidents which follow'd, made me conclude, that either the *Ventricle* or the *Pylorus* was wounded. Having therefore no certain Sign to direct my Judgment in this Affair, I try'd if the Sword which had given the Wound could make any discovery, and found it mark'd with Blood ten inches, or thereabouts. There needed no more to assure me of the Nature of the Wound; but that which altogether convinc'd me, was the Blood voided by Stool the seventh day of the Wound: This having been collected in such a quantity as was sufficient to press and push forward the Excrement contain'd in the Guts, at length made way for it self; and if we had delay'd to bleed him, or done it more seldom, he would certainly have had a great and very dangerous *Flux of Blood*, besides a number of other Accidents that infallibly had follow'd.

It appears then that the True Knowledge of Wounds which pierce into any Cavity of the Body, and hurt the inward Parts, depends on the *Accidents*; and 'tis of high concern to a young Surgeon, not to confide too much in his Probe, thereby to give his Opinion. He ought also to make all requisite Diversions, and to endeavour with all necessary Care to avoid and prevent Accidents, which too often, when arriv'd to a certain height, become Proof against all our Endeavours.

A great many wounded Persons, have been sent to me, dress'd at first as if their *Wounds* had been but slight, which nevertheless I have found to be deep, and very considerable. It is sometimes not possible to put the Patient in the same *Posture* he was in when he receiv'd the Wound: So that it is an easie matter to be deceiv'd, if we trust to such uncertain Tryals, as those made with the *Probe*: The Parts may have chang'd their Situation, or they may be swell'd; or clotted Blood gather'd together in the Wound, may oppose the *Probe's* Passage; or, when it can't trace the Way of the Instrument that made the Wound, it may slide along between the Interstices of the *Muscles*. Oftentimes the Wounded either know not in what Posture they were, or are mistaken therein; or they are not in a Condition to give an Account. Finally, it is much better to exceed in *Exactness*, which can't prejudice the Patient, than to take up with an *Uncertainty*, which may cost the wounded his *Life*, & the Surgeon his *Reputation*.

Moreover, it appears by the Success of this *Cure*, that the *Orifices* of penetrating Wounds, afford but very small Assistance to the cure of the inward wounded Parts; For it is next to impossible to convey thro' them Remedies to those Parts that want 'em, and for which they are design'd: This I am bold to affirm, contrary to the Sentiments of the An-

cients and of *Fabricius ab Aquapendente*, and some Moderns. It is also scarcely to be expected, that the Blood which flows from these Parts, should come forth by the *external Orifice*, as we have observ'd, unless the lower Belly be quite fill'd up with Blood. And in fine, the keeping open of the Wounds is more pernicious than profitable; serving only to introduce the *Air* into Places, where it almost never fails to occasion Irritations, disquieting Pains, Coagulations, Obstructions or Corruptions, and oftentimes all these Evils together.

Galen affirms, that Wounds in the Bottom of the Ventricle, if not great, are curable: But *Celsus* is of Opinion they are mortal: Now, how to reconcile such opposite Sentiments, I know not. However, that they are not absolutely Mortal, this Cure is a sufficient Proof: But it is nevertheless true, that they are very dangerous, and their Cure uncertain, being attended with many Accidents, the least of which may prove fatal: Such as *Vomiting*, a Disorder peculiar to this Part; or a Flux of Blood from the branches of the *Arteria Celiaca*, the *Vena Gastrica* and *Gastropiploica*; whither scarce any *Astringents* can reach, and where they can't be kept on: Also *Convulsions* may be occasion'd by the wounding of the *Nerves* that proceed from the *Recurrents*: Add to these, that by Wounds of this part, the Chyle may be evacuated so soon as made.

CHAP. XVII.

Of the Perinæum.

Obs. 16. **D**URING the Campaign of the 'fore-mention'd Year 1688, a Soldier in the Regiment of the Duke of Savoy, and Company of St. George, call'd *la Couleur*, was sent to me, having an *Abscess* which cover'd all the *Perinæum*, and part of the *Scrotum*.

After I had open'd it on the left side, at that place where ordinarily the Operation for extracting the *Stone* is perform'd, there came out a great deal of corrupt *Matter*, with much *Urine*, whereby I understood, that by the long stay of the *Matter* the Membranes of the Bladder were vitiated and corroded.

I used neither *Tent* nor *Dilator* to the Sore, but judg'd it sufficient to drop into it a Medicine for cleansing the Ulcer. The Suppuration lasted for the space of 15 days, which yet hinder'd me not (from the very first) to use little, long, and slender Bolsters, for bringing together the divided parts, which I kept fast by a strong Bandage, fitted to the figure of the Part.

After this, perceiving the *Matter* came away in a moderate quantity, and of a laudable consistence, tho' mix'd with some *Urine*, I used more powerful Incarnatives, Balsamic Water, and the *Balsam of Peru*, and upon these *Crollius's*

lius's Plaister. I straitned the Bandage, obliging the Patient to keep his Thighs close together : Thus by degrees the Urine resum'd its former Course, and in five or six Weeks time the Cure was finish'd.

Reflect. This Cure is inconsistent with the Opinion of *Galen*, who, *Aphor.* 18, says, That Divisions of the Bladder cannot be united, because it is a Part without Blood.

I have had many under my hands that were wounded in the Bladder, who were all happily cur'd by the same method : And indeed, if loss of Substance, occasion'd by the corrupting Matter of an *Abscess*, has been readily enough made up, 'tis easie to believe, simple Divisions thereof by external Causes may with much more Ease and Expedition be united. This is sufficiently demonstrated by the great number that have recover'd after *Cutting* for the Stone. And if sometime *Fistula's* were left after this Operation, they have been occasion'd by keeping *Tents* in the Wound without any necessity. I know *M. Verdue* imputes this to the sharpness of the Urine, but that I can't be perswaded of, having observ'd in many places in my Travels that the Country People have us'd nothing but their Urine to cure their Wounds.

But if we reflect a little on the Effects produc'd by *Tents*, which many People use in the divisions of this Part, we may soon be convinc'd

vinc'd that they are the cause of this *Accident*, by keeping open a Way for the passage of the Urine, which tho' it cannot run in a full stream so long as 'tis hindred by the *Tent*, yet this being penetrated by the Urine, dulls the Sense of the place, and turns the Flesh callous.

When a Wound abounds in moisture, be the Humor what it will, 'tis of difficult cure: This is sufficiently confirm'd by the *Fistula's* which happen in the Breast or Joints, tho' the Urine have no hand in the matter. Moreover, to convince us that the Humors wherewith Wounds and Ulcers are water'd are a hindrance to their joining and filling up, we need only to consider these Openings in the Thighs and Legs of *Hydropick Persons*, that are made by *Nature*, or which we are necessitated to make by *Art*: Every-body knows, the Cure of these is extreamly difficult to be effected, because of the Humidity wherewith they are continually soak'd; which is sufficient to support what we have advanc'd on this Subject, and confute such as are of a contrary opinion.

Moreover, the breaking or fretting of the *Lymphatic Vessels*, which occasion the perpetual running of watry Humors in Sores, hinders their Re-union, in regard that this Serosity dilutes and carries away the *Nutritious Juice*, and brings 'em to a *Fistula*. Great Suppurations also have the same mischievous Effects, but these being not so obstinate, are more easily con-

conquer'd than a running of the *Lympha*.

Finally, if we would effect a speedy Cure in Wounds of the Bladder, we must carefully shun whatsoever may widen 'em, or hinder their Re-union; we must apply some powerful *Incarnative*, such as *Balsam of Peru*; a substantial *Agglutinative Plaster*, such as that of *Crollius*, with small longish Compresses, and a sufficient Bandage, as hath been said; but above all, we must take care that the *Patient* be altogether at rest, without any disturbance. These are the Means I have found most effectual, and most successful, in bringing such kind of *Ulcers* to a perfect Cure.

CHAP. XVIII.

Of the Fundament.

Obs. 17. **M**Onsieur de Monrodon, Captain of a Batallion of the King's Regiment commanded by M. Desbordes, having been four Years ago cured of an *Abscess* in the *Anus*, there remain'd still some *Fistulous Sinus's*, from which there was always discharg'd a great deal of *Matter*. This Inconvenience oblig'd him, in the Year 1695, to demand my Advice. Having observ'd several *Callosities* about the *Anus* with deep and winding Cavitys, I propos'd to him to lay open the *Fistula*, in order to consume these Hardnesses, and cleanse
the

the *Bottom* thereof, without which there was no Hope of a perfect Cure; but he calling to mind the Torments he had endur'd in the first Cure, put it off for some time; till falling into an Indisposition, occasioned by his ill Habit of Body, the *Fistula* open'd of it self, about a Month after I had seen him, with an extraordinary Running, and abundance of *Matter*, accompanied with quick and insupportable Pain.

I was at that time in a place at some distance from our Hospital, wherefore he caused himself to be dress'd by a *Mate* of the Regiment, who having nothing but the *common Remedies*, and understanding only the *ordinary Method*, fill'd up that large *Cavity* with a great quantity of *Lint*, arm'd with suppurative and putrifying Medicines, which made terrible *Corruption*, and great *Havock* in the Part, increasing the *Suppuration*, and the *Pain*. He then sent me an Account of the deplorable Condition to which he was reduc'd; praying me to come and see him. When I came, I advis'd him to cause himself to be remov'd unto a Place where I might take care of him my self; which also was done that same Day. The *Matter* that was retain'd, and the continual *Exasperation* of the Parts, had made a Hole big enough to admit one's *Fist*, which pass'd with a winding course even to the *Os sacrum*; there was also another *Sinus* that reach'd to the Neck of the *Bladder*: So that
the

the Sick Person could no ways go to Stool, or enjoy one Minute of Repose.

Having taken him under my Care, I dress'd him only with the *Red Balsam* melted with an equal quantity of the *Samaritan Balsam*, which I pour'd warm into the *Sinuses*; and after having fill'd them therewith, I cover'd the Orifices with a large Pledget dipt in the same, over which I put a Plaister, and upon this a Compress, making all fast with a convenient Bandage. I caus'd him to use some absorbing Medicines to dull the Points of the *Acids*, and *Ptisans* to purifie the *Blood*, and also some gentle *Purgatives*. This Method succeeded so well, that the Matter, which was thin, putrid, and corrosive, became laudable; the Flesh, which was loose and wasted, by degrees recover'd its firmness; the Patient went to Stool every Day without any Pain; at Night also he enjoy'd the Repose which was so necessary for him: And finally, in one Month's time he was compleatly cur'd, the Sores being brought to a firm and laudable *Scar*, to the Amazement not only of the Patient himself, but of all those also who knew to what a deplorable Condition he was formerly reduc'd, being without all Hope of being cur'd.

Reflect. Those kind of Distempers are extremely troublesome that affect parts on which, by reason of their necessary Use, it is very
diffi-

difficult to keep the *Dressings*: Such a part is the *Anus*, that is often afflicted with great Suppurations, and dismal Putrefactions, which delay and protract a Cure to a formidable length. The Person we have been just now speaking of, is a clear demonstration of this. In the first Cure, *six Months* time were spent; he endur'd much Pain and Trouble, and after all, it was not brought to *Perfection*: From whence I infer that it is evident, that the *Gentleness* and *Easiness* of our Method, was the genuine Cause of the perfect and speedy Cure that ensued; for that *Organ*, which serves for the Common-Store of the Body, being left at Liberty, and not straitned by an *Extraneous Body*, the Excrements were neither press'd nor retain'd, but were discharg'd with *Ease*, and without *Pain*; whereas on the contrary, when Wounds in this Part are cram'd up with Lint, it is impossible that Evacuations can be made by the *Anus*, but the Excrements must press and squeeze the crouded Lint against the Sides of the Sore; which must needs occasion insufferable *Pains*, and oftentimes also a Flux of *Blood*: And indeed *Monf. de Monrodon* affirm'd to me, that he never went to Stool all the time of his first Cure, but he was still troubled with these two Symptoms.

Finally, we may see, that when *Putrifying* and *Suppurating Medicines* are laid aside, the Parts are by the means of unctuous Balsamicks gra-

gradually restor'd to their former Tempera-
ture ; and that when the Points of the *Acids*
are broken, and the *Mass* of *Blood* purify'd by
proper Remedies, the *natural Balsam* of the
Parts doth cleanse, fill up with Flesh, and
cicatrise, whenever the Occasion requires.

CHAP. XIX.

Of the upper Part of the Shoulder.

Obs. 18. **I**N the Year 1678, as I travell'd
from *Turin* towards *Rome* and *Venice*,
there was brought to me, the Son of an Inha-
bitant of a certain place call'd *La Rose*, having
an Abscess that cover'd all the *Acromion*, and
the upper part of the Shoulder-bone of the
right Side, with a great Defluxion of Humour
upon the Joint. I shew'd his Father the urgent
necessity there was of opening it, and the Ac-
cidents that otherwise might ensue, but the
fond Love he had for his Son, made him with-
stand the Proposal. Sometime after this it o-
pen'd of its self, and the thinnest Part of the
Matter made its way thro' several Holes, into
which so many *Tents* were put by a Surgeon
of the Place, who dress'd him at his Father's
Desire. This Method was follow'd for 2 or 3
Months without any Prospect of a Cure.

At my Return, he was committed to my Care,
in a very bad Condition : He was altogether de-

depriv'd of the *Motion* of his Arm; several *Cavities* were form'd about the Joynt; there was a perpetual *Flux* of *Matter*; and the *Ligament* were relax'd; which made me fear the falling out of the Head of the *Humerus*. I was perswaded that the Distemper was past Cure, considering the Weakness of the Patient, and of the part affected, and the ill Disposition of his Body, which yet was but a Symptom of the Disease, occasion'd by the *Irritations*, and continual *Discharge* of *Humours*, as I knew by the Sequel. I made however a pretty large Opening in that which I judg'd the most depending part, and straitway took away the *Tents*, tho' at that time I was not altogether convinc'd of their pernicious Effects.

From that time forth the Flux of Matter begun to diminish, which made me endeavour, with all possible speed, thoroughly to cleanse the bottom of the Ulcer, and the *Sinuses*, with a Lotion of *Birchwort*, *Myrrh*, *Sugar-candy*, and *Vitriol*, in *White-wine*, which had very good Success: I did my best also to strengthen the Joynt. Finally, the Cavities were fill'd up by degrees; the higher *Orifices* were first clos'd up, and the others afterwards. He was cur'd in 2 Months time; but his Arm was something more than other two, before it recover'd its Strength.

Reflect. This sudden good Success falling out so unexpectedly, and at a time when I
had

had casually, tho' very seasonably, laid aside the use of *Tents*, began to open my Eyes and to make me entertain an ill Opinion of them: For I could blame nothing on this Occasion, save the *Tents*, which had been so long kept in the Sore, for having caus'd all these Accidents, by the Irritation and compression of the Parts; and moreover by hindring the *Discharge* of the *Matter* from one dressing to another, whereby it had time to gather, and to ferment, to encrease the Cavities, and waste off the Substance, to moisten the Tendons, slacken the Ligaments, and to weaken and entirely ruin the *Part*. Finally, the most part of the Symptom ceasing with the leaving out of the *Tents*, does sufficiently evince, that they proceeded from them: And had the first *Method* been continu'd for a Month or two, a compleat dislocation of the Head of the Shoulder-bone, the corruption of the Ligaments, and incurable *Fistula's*, had certainly ensu'd; and the Patient would have thereby been made lame during his Life.

CHAP. XX.

Of the Shoulder.

Obs. 19. **I**N the Year 1692, a Soldier of the Regiment of *Sourche*, whose Name I have forgotten, was brought to the *Hospital*
at

at *Brianſon*. He was wounded with a Bullet, which enter'd at the foremoſt and middle part of the *Acromion*, and came out on the upper part of the Shoulder-blade, breaking the *Acromion*, with a part of the *Scapula*, as it went along.

The Orifices were ſtraitway dilated, and dreſt only with Pledgets and the Digestive: *Diverſions* were ſpeedily made, and his Diet order'd. In the firſt Dreſſings, ſeveral pieces of Bone, that could not be re-united, having been almoſt wholly ſeparated, came away; ſeveral others that were yet ty'd by a ſmall piece of the *Perioſtium*, tho' in appearance ſhaking and ready to fall off, were yet joyn'd again.

Finally, all the adhering Splinters being again united, the Wound began to fill up, and in two Months time, or thereabout, was brought to a firm and laudable *Cicatrix*; to the great Surprise of all who had been preſent at the Dreſſings, no Accident having happen'd all the time of the Cure.

Reſlect. It will certainly be thought ſtrange, that I permitted the Orifices to be clos'd up, without expecting the Diſcharge of the Bones: And it will poſſibly be ſaid that I dreſs'd not according to Art.

But to me it appears much more reaſonable and advantageous, to have preserv'd them, than occaſion'd their Loſs; ſeeing a *Callus* has never

never the becoming Convenience of a Natural Part: And the Excellency of Art consists in curing speedily, if possible, and without Pain, and in preserving the Figure, Substance and Disposition of the wounded Parts. 'Tis certain, that *Health* being the End of the Surgeon's Art, the principle Design is attain'd when the Cure is perform'd.

If that Intention which ought to be the Scope of the Artist, can, by this Method, be *Gently, Easily, Speedily* accomplish'd, there is no Controversie, but that it ought to be prefer'd to all others that are contrary to it.

CHAP. XXI.

Of the Arm.

Obs. 20. **T**HE following Year, a Grenadier of the Regiment of *Navarre*, call'd *Belle Humeur*, was brought to the same *Hospital*, wounded with a Shot on the upper part of the left Shoulder-bone, about an Inch, or two Fingers breadth below the Joynt: The Bullet entred on the fore-part, and went out behind, making a terrible Havock. Three or four Days pass'd, wherein he was not dress'd, but only slightly at first, and without making any Diversion. The whole Arm was distended like a Foot-ball, the Orifices were choak'd up, inflam'd, and dispos'd to Gangrene.

I made

I made Incisions in the Orifices, to give breath unto the Wound, and Scarifications over all the Arm; and having dress'd with a Digestive only, without *Tents* or *Dilaters*, I let a good quantity of Blood run from the Part, by the Incisions, to empty it somewhat; and afterwards fomented it with Spirit of *Wine* and a little *Sal-Armoniac*: I apply'd over all the Arm *Diapalma* dissolv'd in Oyl of *Roses* and *Vinegar*, which in a little time abated the Inflammation of the part, and lessen'd the Swelling.

Diversions were not omitted, but in spite of all could be done, three *Abscesses* were form'd, one at the bending of the Elbow inwardly, another on the outward and middle part of the Arm, and a third on the hinder and almost lowest part of the *Humerus*: They were all opened, and by their plentiful Suppuration the afflicted Member was eas'd. After 3 or 4 Splinters of the Bone, which stuck by their upper part only to the *Periostium*, were again join'd, I bent all my Endeavours to bring together and unite the Lips of the Wound; and when the Escar was entirely fallen, and the Symptoms vanish'd, I used only a simple *Incarnative*, dressing but once in two days. The *Suppuration* was but small, and the Orifices began apparently to fill up, and in 30 days were quite skin'd over; so that from thenceforth I used the Bandage and Plaisters, in order to fortifie the

the *Callus* : And now his Diet is encreas'd, and he is able to rise from his Bed ; at last he left the Hospital to return to his Regiment, 44 days after he had receiv'd the Wound.

Reflect. The delay of the *Diversions*, as it evidently appears, was one of the chief Causes of the Accidents that follow'd on this Wound ; and 'tis plain, if *Tents*, *Dilaters*, or other exasperating things had been used in dressing, they had infallibly proved an Impediment to the discharging the Part and ripening the *Abscesses*, for Reasons adduced in the first Part, where we discours'd of their fatal Effects.

Nature is, in such cases, sufficiently perplext without the additional Oppression of the most grievous of all her Enemies ; she is as it were fetter'd, and can't act : And when by a healthful and critical Motion she endeavours to deliver her self, as in the *Abscesses* of the former Cure, she is unable to produce any desirable Effect, so long as the Wound is cram'd full of Lint. The most frequent Consequence of this is a stifling the *Natural Heat*, after which follows a *Gangrene*. There has but few bad Accidents follow'd upon Wounds treated after our Method, and I dare affirm, scarce any have miscarried under our Care, tho' more dangerously wounded than this Soldier whom we have been speaking of, all which is owing to the gentleness of this Way and use of *Diversions*.

CHAP. XXII.

Of another Wound in the Arm.

Cbs. 21. **I**N the Year 1690, soon after the War was declar'd in Savoy, a Soldier of the Regiment of *Pondeux*, nam'd *la Montague*, was sent to the Hospital at *Briançon*, who had got a violent Blow with the handle of an Halbert, on the middle and outward part of the left *Humerus*, whereby the Bone was broken to pieces, with a Wound and great Contusion.

Several portions of the Bone stuck out at the Wound, which did still adhere to the *Periosteum*. I plac'd them one by another, as gently and nimbly as possibly I could, endeavouring to give them their natural Position. I rub'd the part with a strong dissolving Balsam very warm, which I had caus'd to be prepar'd for Contusions. I joyn'd the Lips of the Wound, and apply'd an Incarnative. I gently roll'd the part with a Band about three Fingers breadth above the Wound, and with another as much below it, applying a Plaister made of *Diapalma* dissolv'd in Oil of Roses and Vinegar between the Bands, the middle part whereof being opposite to the Wound, the ends met upon it, and cover'd it: Upon this I put a Compress, of the same figure and bigness, folded into three or four doubles, and dipt in warm

Wine, and then a piece of Pastboard, which resting with its ends upon the two Rollers, and embracing and keeping fast all the Wound-apparel, came together, and was ty'd on the hinder-part of the Arm.

In this Pastboard there was a Hole cut out, where it covered the Wound, to which a piece of the same was fitted, to be taken off at each Dressing, and afterward put on: This was made fast with a little Band, which I roll'd about all the Pastboard after I had apply'd my Dressings, in such fashion, that without disturbing either the Arm or the Pastboard, I had nothing to do but, when there was Occasion, to untie the Band, take off the piece, and lift up the two ends of the Compress and Plaister, and so to embrocate the Wound, and then to dress it with a *Pledget* only, and do it up again.

In this manner it was dress'd once a Day, for 5 or 6 Days, after which I gently took off all the Dressings, except the Rollers, and changing the Plaister and Compress, I dress'd but once in two days. No Accident happen'd, for the Contusion was quickly dissolv'd; no Bones were discharg'd, and the Suppuration was but little, *Diversions* having been made from the very first. The Wound was fill'd up, and compleatly skin'd, about the 22d Day of the Wound, wherefore I thenceforth dress'd it only with Rollers, the Plaister *pro Fracturis*, and the necessary Splents. Since that time I have

have not seen him, because then we left *Lucerne*; but 'tis certain he was past all Danger.

Reflect. If this Way of Dressing be compar'd with that of many Surgeons, who not only fill up the Sores with Lint, but also at each Dressing move to and fro the broken pieces of Bone, in order to promote their Separation, it may be seen how different the Success will prove. Had I treated this Wound in a rigorous manner, such Accidents had undoubtedly happen'd as would have baffled my Care. The Suppuration would have been great, and thus the pieces of the Bone, thereby quite separated and carried into some Cavity, had caus'd many *Abscesses* and *Sinuses*; which Disorders oftentimes cause a necessity of Amputation, and when the Strength is decay'd, they bring on Death. After this I make use of a piece of white Iron, form'd in the same fashion as the Past-board, with a Window opening upon the Wound, which being lift up, I dress'd it without moving the Body of the Machine. But seeing in those Places where Hospitals are we have not every thing requisite at hand, the Surgeon must supply that Defect by his own Ingenuity.

CHAP. XXIII.

Of the Fore-Arm, or Cubit.

Obs. 22. **I**N the same place, a Soldier in the 'foresaid Regiment receiv'd a Shot in the *Fore-Arm*, on the middle and hinder-part, which broke the *Radius*, and carried away a part of the *Cubitus*.

He was dress'd after our *Method*, but the Cavity of the Wound was filled with a Pledgit of very fine Lint dipt in a mixture of our *Balsam*, and a little *Linimentum Arcæi*, which easeth Pain, promotes the fall of the *Escar*, and resists a Fluxion of Humours. Diversions were made, and his Diet ordered.

We dress'd him after two Days, and found two or three pieces of Bone sticking to the Lint. In the second Dressing, I set the *Radius*, keeping it firm with little Compresses stiffned with Pastboard: One of these I put on the fore-part of the Arm upon the broken Bone, another on the inward, and a third on the outward-part, making them all fast with two Rollers, one above, and the other below the Fracture: This *Apparatus* kept the Arm streight, and serv'd instead of a Defensive. Over all we apply'd the Pastboard, and supported the Arm with a Sling. The Suppuration was very moderate, and another piece of Bone came afterwards away: We dress'd bu

once in two Days, and on the twelfth or fifteenth day of the Wound the Flesh began to cover the Bone, for which Cause we dress'd him only once in three Days, and that very gently and speedily. Towards the twentieth Day, the Wound began to be fill'd up. The defect of the *Cubitus* was made up with a *Callus*, and the *Radius* recover'd without Exfoliation, and all in four Weeks time; after which I only us'd a Roller on the fractur'd place. About this time we broke up from *Lucerne*, and I have not seen him since.

Reflect. The good Success, the Expedition, and the Gentleness of these *Cures*, ought in my Opinion to give some Reputation to this way of Dressing. I have not seen, since I first enter'd upon Practice, any Method follow'd that has been either so short, so easy for the Patient, or so certain in the Consequence. Hereby those Pains are prevented which ordinarily bring *Fevers*, that are attended with many other *Accidents*: *Abscesses*, *Fluxions*, and *Inflammations* are avoided: The *Matter* is but little, and that laudable: The wounded Person can take solid *Nourishment*, and necessary *Rest*, whereby all the Faculties become more vigorous, and *Nature* more active, *Flesh* is more easily generated, and a *Callus* more speedily formed, and, in fine, every thing with more facility re-establish'd, and reduc'd to its former State.

CHAP. XXIV.

Of another Wound in the Cubit.

Obs. 23. **A**Bout the end of the Year 1695, I being in the same Post in the Hospital of the Abby of *Oulx*, as I was in that of *Briançon*, there was brought to us one call'd *Beaulieu*, belonging to the King's Battalion, commanded by *M. Des-Bordes*, and of the Company of *M. du Mont*. He was run with a Sword into the middle and inward part of the left *Arm*, whereby the *Artery* between the *Radius* and *Cubitus* was laid open.

He had remain'd 8 or 9 Days in his Quarters, being dress'd by one of the Mates ; who, without making any *Diversion*, only shut up the Wound with a strong Stopple, which restrain'd the great Flux of Blood between Dressings : But at the time of Dressing he bled excessively. The Blood which was extravasated in the Member, did there corrupt, and caus'd Abscesses in several Places. But at last, his Surgeon seeing that his Strength was daily diminished, and fearing some fatal Accident, caus'd him to be sent to *Oulx*.

His Weakness was advantageous to him : For whereas *Amputation* was chiefly indicated, his loss of Strength was a contrary Indication that prevail'd over the former. I dilated the Wound, that I might discover the Artery, and
empty

empty the Part of the Matter and clotted Blood wherewith it was fill'd. But being then unfurnish'd with such things as were necessary for my Design, I apply'd a Button of *Vitriol* to the Aperture of the Artery; and having fill'd the Wound with Lint, and apply'd the other Dressings necessary on such Occasions, I let him Blood twice, but in small quantities, and gave him certain Emulsions, wherein were mix'd some Anodine Medicines, to retard the Motion of the *Blood*. I let 2 days pass without Dressing, but on the third, I found all I had done was to no purpose. At the place where the *Artery* was opened, there was a considerable and painful *Swelling*; the *Lint* that fill'd the Wound was heav'd up with the Pulsation, and a bloody Water came out, which presag'd the sudden return of the Bleeding. I caus'd to be prepar'd my Troches of *Rose-water*, *Gun-Dragon* and *Vitriol*, with some good *Styptick-water*, and two days after I took out all that fill'd the Wound: I also took away the Escar made by the *Vitriol*, and the *Fungus* that was grown in the Wound; which I further dilated to give vent to the Blood that had diffus'd it self thro' the Flesh, beyond the extent of the Wound. All this time I repress'd the Bleeding by the *Turnkey*, which I caus'd to be slackned, to discover again the opening of the Artery, to which I apply'd two little Troches, supported by a small Compress dipt in

the *Styptick-water* : I fill'd the Cavity of the Wound with Dossils pretty hard, and moisten'd in the same Liquor ; then I took a large Compress three Fingers breadth thick, and a Foot in length, cover'd only with *Bole* dissolv'd in Vinegar ; this I apply'd along the *Artery* quite to the Armpit, and lastly an astringent Plaister, which I made fast with Compresses and strong Bandage. I caus'd the Arm to be laid on a Pillow, with the Hand higher than the Elbow. Two days after, I unry'd the Rollers, and took off the Compresses and the Plaister ; and seeing things in a good Condition, I apply'd new *Astringents*, without touching the Wound. This Method I continu'd 2 or 3 days, afterwards I began to remove the Dossils that were outmost, sustaining always the others with new ones, and hindering also those which were next to the *Artery* to fall off until the Suppuration were begun, that time might be given to the *Flesh* to cover the *Artery*, the Bleeding being very well stop'd. In effect about 10 or 11 days after the Application of these Dressings, all came off of its own accord, not one drop of Blood following ; for the *Artery* was pretty well cover'd. All this was done in presence of M. *Davejan*, one of the Physicians of the *Hospital*, a Man of Integrity, Merit, and great Skill. In fine, the Wound was in a little time completely cured.

Reflect.

Reflect. This kind of Wounds, where *Arteries* are opened, are of all others the most ticklish; they give a great deal of *Trouble*, and but little *Reputation* is gain'd by their Cure. Every one knows, that there was no place for the Operation of the *Aneurisma*, where this *Artery* was open'd; and that it was necessary either to cut off the Member, or to let the wounded Person perish, or to stop the Bleeding by such means as I us'd. By this we may see, that it is not good to be too hasty in cutting off a Member, where Arteries are opened that admit not the *Aneurisma*; that we ought not to despond, tho' our first Attempts to stop the flux of Blood prove unsuccessful; and that the *Troches* which I use, are upon many accounts better than *Vitriol*. This is not the only time that I have experienc'd the success of this Method on the like Occasion: I made some Trials of the same at *Lucerne*, in the Year 1686, and in particular upon a certain Soldier who had the *Artery* that is between the *Tibia* and *Fibula* laid open, and after much trouble, before I would condescend to the cutting off of the Member, I was willing to try this Method, which had also a very happy Success. That we may preserve a *Member*, we are to leave nothing undone; neither ought we to consent to its *Amputation*, till first all other Means have been in vain essay'd.

CHAP. XXV.

Of the Hands.

Obs. 24. **S**INCE the beginning of the War, I have had under Cure very many whose *Hands* were pierc'd, torn, or half carry'd away by such Fire-Arms as burst, which is a thing very ordinary in Armies. Many others have I likewise dress'd, that had their *Hands* shot thro' with Bullets, and cut with sharp Instruments, of which I shall not speak in particular. But I may justly say, that all those I have dress'd in these later times, though by the Wounds the part has been very much shatter'd and torn, have been always cur'd, without losing what remain'd of the Member, and with little or no discharge of Splinters of the Bones, or loss of Fingers, or their Joynts.

In this kind of Wounds, as well as in others, I have avoided frequent Dressing, and the Use of *putrifying* Medicines: And I own that I have ever found the *Spirit of Wine* a very successful Remedy in Wounds of the *Extremities*, and in those of *Nervous* Parts. I have us'd it chiefly in *Hospitals*, where it brought always a speedy Relief.

Many of the Ancients have ordered to keep open for some considerable time the Wounds of the *Nerves* and *Tendons*; to give vent to
such

such Matter as by its stay might corrupt the Substance of the Parts.

But Experience has taught me, that 'tis much more beneficial to the Patient in such Cases, to hinder, than to promote the Suppuration; by doing betimes what is necessary to prevent Fluxions upon the Part; sometimes applying good Defensives to the superior Parts, to repress the activity of the Blood; and sometimes using resolving Anodines to the place afflicted, if there is need, to prevent or take off the *Pain*, from which most commonly the Accidents proceed that attend such Wounds, and to guard off at the same time the Attempts of the *Air*, which is the greatest Enemy of the nervous Parts.

I can aver, that by using this Method I have cur'd such Wounds much more suddenly than I could any other way: And since all are agreed that the *Air* is pernicious to Wounds in general, I believe none will question but those of the *Nerves* receive thereby a more notable prejudice, than those of any other Parts of the Body, considering their Tenderness, the Nature of their Substance, and their Temperament. I leave it then to Consideration, whether Wounds of this kind could be defended from the Injuries of the *Air*, if they were kept open, according to the Opinion of the *Ancients*.

But

But it will be said, that 'tis extremely difficult, after all possible Precaution, to avoid the use of *putrifying* and *irritating* Medicines, and of Dilaters, in Cures that are tedious: For if such things as breed Flesh, and are balsamick, be us'd when the Wound at the same time must be kept open, there will be a necessity of consuming incessantly the Flesh with Catharticks, which are very apt, by the Pain they cause, to produce ill Accidents, especially in Parts so sensible as these.

Now to this I answer, That if Suppurating and Putrifying Medicines are us'd, there almost ever infallibly follows a great Suppuration, and sometimes a total Dissolution of the nervous and tendonous Parts, especially if *Tents* or *Dilaters* be also imploy'd, which, if but for a small time they touch such Parts, do oftentimes draw on Incurable, and sometimes Mortal Symptoms.

Wherefore I have ever judg'd it best to close up the Wound as soon as possible on such Occasions, especially when there is no extraneous Body that of necessity must be drawn forth; or if all requisite Diligence, has been already us'd at first Dressing to that intent. In fine, tho' I have always not only avoided with all possible Care the using of putrifying Things, but also endeavoured to dress as seldom as might be, I dare affirm, that in this way of Practice there never happened.

pened even the least Accident, to all that great number of wounded Persons that was drest according to it, in our Hospital at *Briançon*.

Pareus, Book 10. Ch. 9. shews, That by this Method he successfully cur'd the Pricking of a *Tendon*, which King *Charles* the ninth had receiv'd in Blood-letting: Though in another Place he finds fault mightily with those who use the Stitch to wounded *Tendons*: He would undoubtedly have been of another Mind, had he liv'd, and seen, as I, and many others have done, how often the deceas'd M. *Bien-aïse*, an expert Surgeon, has perform'd the same with Success in his House at *Paris*. But after all, we may maintain, that he is not the first who has practis'd the stitching of a *Tendon*, for in former times it was usual, and many of the Ancients have done it.

CHAP. XXVI.

Of the Thigh.

Obs. 25. | N the Year 1686, when the *Vaudois* were driven from the Vallies of *Lucerne*, one *le Grand*, a French-man by Birth, Sergeant in the Regiment of Guards, and at present an Officer in a Regiment of Fusiliers belonging to *His Royal Highness*, being wounded by a Bullet in the upper and outward part of the right Thigh, and the Ball not to be found,

was

was brought to the Hospital at *Lucerne*. He had lain a Day and a Night helpless upon the Ground; which occasion'd a considerable *Fluxion*, and an *Inflammation* of the Part. I made large Incisions, and spar'd no Pains to find the Bullet, but all in vain.

He was forthwith let Blood, and had a Glyster given him, an exact Course of Diet being order'd. The Bleedings were repeated, with the other Remedies for withdrawing the Humors from the Part. The Swelling and Inflammation were lessen'd; and I began to think, that things were in a pretty good Condition: I kept in the Wound only a little *Tent*, about the length of two Fingers-breadth, very soft, and of pretty fine Lint.

Thus the first Accidents were vanquish'd, but others more troublesome and more obstinate yet remain'd; for the Suppuration and Flux of Humours was so prodigiously great, that I verily believ'd his whole Body would thereby have been dissolv'd. At every time we open'd the Wound to dress it, which was twice a Day, more than a Pint of *Matter* came away, besides what was discharg'd between Dressings, which might be judg'd as much: In the mean time the Strength of the wounded Person was more and more impaired, and his Body insensibly wasted away.

I could ascribe all these Accidents to nothing else but the Bullet, which remain'd in
the

the Member: And this I the rather inclin'd to think, in regard that almost all the Bullets that were drawn from Wounds during this Campaign, were full of *Sublimæ* or *Glass*, and many others of other *Metals*, and *Tin*.

I advis'd with M. *Conte*, then at *Lucerne*, Surgeon in Ordinary to his Royal Highness, who being acquainted with the Order of Cure and the Symptoms, was of Opinion, that by Purging the Moisture might be dry'd up; this was accordingly put in Practice.

I was as eagerly desirous to effect this Cure, as if all my Reputation had depended upon the Success: And indeed it appear'd as if *Providence* had thereby design'd to open my *Eyes*, and to make use of me for the Relief of many others, I being qualified for that end by the Experience I attain'd in this instance.

The wounded Person was greatly disorder'd by the *Purging*, yea, in such a sort, that I fear'd a *Gangrene*: The *Fever* was encreas'd, and the Patient had quitted all his Hopes, notwithstanding the Assurance he had conceiv'd of being cur'd under my Hands.

As for my self, I began to despair; tho' it is my Humor never to give over my wounded Patient so long as Life continues; for his Thigh was all over *livid*, and the spaces between the Muscles, yea, all the Member, was fill'd and soak'd with Matter, which every Day encreas'd, the Wound being as it were

an inexhaustible Fountain. I consider'd with my self a thousand times, if there was any thing more I could do, or any thing further to be us'd. I had perform'd all that Art prescribes, to dry up that Matter wherewith the Part was ever fill'd, having us'd not only a hard Bandage with expulsive Compresses, to hinder its gathering together and stay in the part, but also sudorifick Decoctions, tho' all in vain. I was also thinking to make a Counter-Opening under the Thigh, to give a more free course to the Matter, and to hinder its Stay; but on second Thoughts, I believ'd it would be to no purpose.

M. Conte, and generally all who saw the Man, despair'd of his being cured; and told me, that I vex'd my self in vain, as if all my Reputation had depended upon the Cure.

Tho' I had hitherto tried all sorts of means in vain, yet I was obstinately bent to find out some other way, by my own Consideration, since the wounded Person himself was also desperate.

As I have formerly said, I have hitherto kept in the Wound a little *Tent*, about 2 Fingers breadth long, and very soft: This I resolv'd altogether to lay aside, and to dress the Wound with a *Pledgit* and *Plaister* only, and such a Bandage as might be sufficient to keep 'em on.

This frightened the poor dying Man; and it was with great difficulty that now I could ob-

obtain his Consent to have that power over him which of right belong'd to me, and what formerly he had so freely granted.

In the Evening, to my great surprize, I found him in a much better Condition: The *Matter* came not away in so great a quantity: That Night he slept much better than he had ever done since he receiv'd his Wound; and in the Morning he was yet better: This Evening the *Matter* began to be of a good Consistence, and to be discharg'd in moderate quantity. Henceforth I dress'd but once a Day.

His *Fever*, which had continued from the beginning, left him altogether, and the second Day after the leaving out of the *Tent*; and from the fourth, he was dress'd only once every other Day; he also began to eat, and to recover his Strength: From the eighth Day nothing further came from the Wound, and on the twelfth after the disuse of the *Tent*, he was entirely cured; the Truth of which I call G O D to witness.

Reflect. This is the Cure, as I sincerely protest, to which I have been most oblig'd. It was this which made me embrace that *Method* which now I expose to publick View, and which from this time forth succeeded so happily with me: And it is certain, that I had infallibly cur'd my Patient at once of all his Distempers, if I had continued but only for 7
or

or 8 Days to use a *Tent*, tho' never so small and soft.

From this time forward, I resolved to abandon the use of *Tents*, and to give my Advice in this Affair to the Publick, when once an Opportunity should present it self, I communicated my Design to M. *Thevenot*, Physician in Ordinary and chief Surgeon to their *Royal Highnesses*, a Man of great Learning and Experience, to be esteem'd, as well for his profound Knowledge, as his eminent Virtue: And having related to him a description of the Cure, he confirm'd me in my Opinion.

It was here therefore, in the King's *Hospital* settled at *Briançon*, that I drew out several *Observations* which I had made, and some Accounts I had kept of many Cures done in different Times and Places, in order to make up a *Collection* of them, together with some others done in this *Hospital*.

But to return to the preceding Cure; it is convenient to observe, that tho' the Bullet was lodg'd in the Member, yet no Disadvantage did thereupon ensue to the Patient: Which made me think for a time, that the Bullet hitting upon the Belly of some large Muscle, might have rebounded the same way by which it enter'd; but I found my self out in my Calculation: For being at *Turin* about a Year and an half after this Cure, I was sent for from the *Citadel* where I stay'd, and when I came,

I found this same Person whom I had cured of his Wound, who shew'd me a Scar. I opened it without Difficulty, and perceiving something white and hard, with my Instrument I drew out the *Bullet*, which was flat, with a piece of the Thigh-bone sticking to it: The Ulcer was quickly cured without any Inconvenience, and never returned again.

Had I at first Dressing found out the Bullet, to the Misfortune of the wounded Person, I should have been obliged by Custom and the Rules of our Art, to draw it forth, though it had been, as indeed it was, sticking in such a part of the Bone as was encompass'd with the greatest depth of Flesh. But for certain, it could not have been got out with such Ease, or without Pain and grievous Irritations: Besides, I question if the Patient, who was of a bilious Constitution, could have born up under so tedious, and painful an *Operation*, seeing an infinite number of Accidents had been occasion'd only by the touches of a little and very soft *Tent*. Wherefore I am persuaded, and am bold to affirm, that it is not always necessary to draw forth the *Bullet*, when it is lodg'd in a Bone that lies deep under the Flesh; *Nature*, that is much wiser than we, has more gentle and easy ways, and best knows the time to free her self of what is hurtful to her.

Hippocrates, in the fifth of his *Epidemics*,
re-

relates, that he drew forth the Head of an Arrow, from the *Grein* of a Man, after it remain'd six Years in his Body, without any Accident happening during all that time.

Alexander Benedictus reports, that a certain Man was wounded in the Back with an *Arrow*, the Head whereof could not be got out, being bearded, and two Fingers-breadth in length, which yet, two months after the Wound was cured, the Patient voided by Stool.

Hildanus, in his 6th Observation, tells us, That he took out the Point of a Knife which had remain'd two Years among the acute Processes of the *Vertebrae* of the Loins, without producing any Accident there.

Let us now therefore acknowledge *Nature* wonderful in her Operations! These Examples, together with my own Experience and Reason, have made me very cautious in the drawing forth *Bullets*, when they are not lodged in places where they may marr or quite destroy the Action of any Part, nor in danger of falling into some Cavity. This Cure is of itself enough to convince any one of the Advantage, and to establish the Credit of my Practice, it having been publickly perform'd, yea, authoriz'd and approv'd, by many learn'd Physicians and Surgeons of the Court of *Savoy*.

Since that time, I have in several places, and in divers Hospitals, cur'd many who have had their Thighs pierc'd quite thro', without either

ther *Tents* or *Dilaters*, save only on the first dressing, to support and contain the *Astringents* necessary to stop the Bleeding. This is contrary to *Pareus's* Method, who, in the 37th Chap. of his Tenth Book of *Wounds*, affirms, That Wounds of the Thighs and Legs ought to be kept long open, that the corrupted Membranes may have time to suppurate and come away: As if indeed *Nature*, that has brought solid Bodies, such as *Iron*, *Bullets*, *Bones*, &c. to the Orifices of Wounds, even after they have been a considerable time cicatriz'd, as hath been formerly observ'd, were not sufficient to expel some Shreds of corrupted Membranes.

But, to avoid corrupting of the Part, the Wounds must be speedily clos'd up, *Tents* and *Dilaters* laid aside, the *Air* must be carefully excluded from the wounded Parts, great *Suppuratives* must be cashier'd, and we must dress as quickly and as seldom as possible.

CHAP. XXVII.

Of the Knees.

Obs. 26. **I**N the Year 1691, when I was at *Pignerol*, a Captain of a Batallion of the King's Regiment, commanded by *M. de Launoy*, was wounded in the right *Knee* with a Bullet, which went in at the outward and middle, and came out at the inward and upper

per part thereof. He was drest for four whole Months by a Surgeon of the Army, very well skill'd in his Employ, but follow'd the common Method: He had also advis'd with the Surgeon-Major of *Pignerol*, who had given over hopes of the Cure. The Surgeon that had him under cure, not thinking to make any long stay in this City, propos'd to me, after so long a time, to undertake the Care of dressing him, which I accordingly did.

I found five or six Holes in his Knee, all of 'em fill'd with hard Tents, and long enough to reach to the bottom; his Leg and Foot was swell'd, his Body very thin, and he had a slight *Fever*, which had never left him from the first time he receiv'd his Wound, with perpetual Watchings, and a loathing all kind of Food.

I began to leave out all the *Tents*, and with a small Incision at the lowest part thereof I dilated the Wound. I laid aside the *Aromatick Wine*, which had been so long us'd to no purpose, and left off the use of an Injection, which being apply'd twice a day, by the intolerable Pains it occasion'd, had mangled all the Joint, and caus'd a communication amongst all the Holes, which were exactly stop't with the Fingers every time that Medicine was employ'd, that it might make some stay in the Part.

I drest'd him indeed with the Remedies formerly us'd, but I took care to apply 'em more conveniently, and to accommodate 'em better

to the nature of the Part, and of the Wound.

When I came to see him the day following, so soon as he saw me he embrac'd me, and swore in the presence of many Officers, that he was inexpressibly oblig'd to me; and, which was no less surprizing than true, he told me, that he had slept all Night, tho' he had not done so since the first day of his Wound; that he felt no Pain in his Knee, and believ'd his *Fever* was gone.

He was so encourag'd with this good Success, that from thenceforth he thought himself cur'd. For 5 or 6 days he was dress'd after the same manner once a day, and afterwards once every other day, without changing the Ointments and Plaisters, which had been so long us'd before without any advantage. The Cure was compleated in less than a month; after which I advis'd him to go into his own Country, and use the *Waters*, in order to strengthen the Part weakned by the frequent dressing, and (if possible) to enable him freely to extend it.

Reflect. It appears by this Cure, that a good *Method* is the most effectual Remedy, and the principal Instrument in healing Wounds. If any Man will but be at the Pains to weigh this Case, I doubt not but he will be convinc'd, that the *Tents*, the *Injection*, and the other humid things wherewith the Part was perpetually moisten'd, were the Cause of the deplorable

ble condition of the Wound. Now, if such a thing, as it often falls out, had hapned to a common Soldier, under the necessity of being sent to an Hospital, and treated in the common way, he must have endur'd twenty Deaths by the tedious and painful Dressings ; nay, it is certain he could never have held up under 'em, being at the same time depriv'd of all necessary Conveniencies, breathing in an unhealthful Air, and having Food neither so nourishing, nor given him at such seasonable times as a Captain might, who was willing to spare nothing that might conduce to the preservation of his Life.

The Account I have given of this Cure has nothing in it that is not exactly conformable to the Truth. The Patient himself made the same Relation to M. *Goiffons*, a very learned and experienc'd Physician of *Lyons*, and Chief Physician of the King's Armies in *Italy*.

'Tis true, the Wounds of the Joints require very great Care, there being few that are not noxious to more troublesome Accidents ; and when the Part is much shatter'd, they are judg'd mortal. However, I'm very certain great Abuse is committed in the *manner* of Dressing, and this I judg'd my self oblig'd not to conceal.

The Joints moreover are Nervous or Tendonous Parts, and known to be of a cold and moist temperament, wherefore they must be guarded from the Attacks of the Air ; they
must

must not be exasperated by the Touches of *Tents* and *Dilaters*; *putrifying Medicines* must be suppress'd, because they weaken the Parts to which they are applied, and ruin such as are Nervous and Tendonous.

All those liquid things that are commonly us'd are hurtful to the Joints, such as *Aromatick Wine*, *Fomentations*, *Injections*, &c. Such things as are heating and drying are profitable. We must endeavour to hinder the Waste of the Spirits, and seasonably to perform the necessary *Diversions*, observing a drying and slender Diet, and using to the Wound *Sarcotick Medicines*, such as *Balsams*, or *Spirit of Wine*, avoiding also long and frequent Dressings. If this Method is follow'd, all the Accidents, which ordinarily accompany Wounds of this nature, will be prevented.

Fabricius ab Aquapendente, in his first Part, *Book I, Chap. 49*, treating of *Wounds in the Joints*, says, That they are not only extream hard to be cur'd, but also dangerous and mortal: And he adds, That the Cure is dangerous and difficult, both in regard of their own Essence, and also of that of the Joints; for *Nature* being the Cause that produces Flesh, and fills up Wounds, is less vigorous in the Joints, which are cold in temper, and destitute of Blood and Flesh, than elsewhere, especially when weaken'd yet further by a Wound.

Afterwards, in the same Chapter, being sup-
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ported by the Authority of *Galen*, in his third Book of *Fractures*, he affirms, That whatever lies under the Skin is advantag'd by being cover'd therewith: And considering that the Joints are cold, without Blood, and without Flesh, he says, that their natural Heat is soon extinguish'd, especially when expos'd to the cold Air. These were the Thoughts of this Author, who was accusom'd to use the *Stitch* on such occasions, to protect this kind of Wounds from the Injuries of the Air.

He further adds in the same Chapter, That Wounds in the Joints ought not to be left open, or expos'd to the cold Air, because thereby we run the hazard of quenching the Natural Heat, and of a *Gangrene*; or if this should not fall out, there is seldom any Digestion in the Wound when so treated.

These Parts then, as hath been said, are naturally very weak, destitute of Heat, and plentifully water'd with moisture, which, by reason of the abounding Salts, is apt to contract an Acrimony and Malignity, especially when it is retain'd in the Part with *Tents*: Now this same Moisture, insinuating it self into the Pores of the nervous Fibres, fails not to harden them, and render them callous; from whence it comes, that these Wounds often end in *Fistula's*. 'Tis observable also, that if there happen any Change or Disorder in the Blood, this Humour becomes so corrosive, that

that it rots the Bones, and destroys the Parts where it comes. Long and frequent Dressing likewise occasion the like Accidents, because of the Admission of the *Air* that encreases the force of the Acids, and easily destroys that small Portion of Spirits and Heat with which these Parts are furnish'd.

All these things are of the greatest Importance, and well deserve our serious Consideration: And if *Reason* in any thing ought to prevail over *Custom*, 'tis chiefly here, where the Life of Mankind is concern'd, which is a thing so precious, that it very well merits our most particular Care.

And indeed I am of the Mind, that the Authority of so famous a Person as *Fabricius ab Aquapendente* ought to give some Reputation to my Opinion. But before I conclude this Chapter, I will moreover affirm, that if Wounds in the Joynts are hard to be cur'd, and often degenerate into *Fistula's*, this is not so much owing to the weakness of these Parts, as to the Manner used by most part of Surgeons in dressing them.

CHAP. XXVIII.

Of the Leg.

Obs. 27. **O**NE *la Grandeur*, who was in the Guards of the Marshal *de Catinat*, General of the King's Forces in *Italy*, being

at the Siege of *Luxemburg* in the Year 1684, had received a Wound with the *Shiver* of a *Granade*, in the left Leg, which left behind it an Ulcer near the inward Ankle, that had baffled the Care of the Surgeons.

This Man being at *Pignerol*, about the beginning of the Year 1692, took a Resolution to have this Ulcer cur'd, tho' it had been of a pretty long standing, and was to him instead of an Issue. Here he finds a Surgeon pliant enough, who, without foreseeing what Accidents might follow, or considering the Evil Disposition of Body, and the bad Constitution of the Patient, takes him in hand, dresses him, and heals up his Ulcer.

But in a little time after, he had ample Occasion to repent the rashness of his undertaking: For the impure Humours of that unwholsom Body, which had taken their Course that way, not finding any Outgate, were by degrees gathered together in the Member, and by their Stay, arriv'd at a pitch of Malignity sufficient to cause a *Gangrene*.

On the middle and inward Part of the Leg there arose a *Tumor*, or Swelling, which was forthwith taken by his Surgeon, who had very little understanding in such Cases, for a *Phlegmon*; whereupon without further Deliberation he begins with Bleeding, which he repeated five or six times.

The Humour retain'd in the Part not being able to come to a perfect Concoction, be-
cause

cause of the defect of Heat and Spirits, made its malignity appear, and corrupted a great part of the Leg. The *Gangrene* appeared, and the Surgeon made an opening in the highest part of the *Tumor*, from whence came forth a little foetid *Lympha*. But the Disease encreasing every moment, both the Patient and the Surgeon were alarm'd, and sought out for somebody to advise with about cutting off the Member.

I was order'd by the Marquis of *Champlais* who was then at *Pignerol*, to go see him, and to employ my utmost Care to retrieve him if possible, from that miserable Condition. I made incisions in his Leg, from the Knee to the Ankle on the inside, and touch'd it with a very piercing Spirit so far as the *Gangrene* reach'd: I ordered inwardly the strongest Cordials, not forgetting *Oriental Bezoar*, and *generous Wine*, which I caus'd to be given him from time to time.

Three Days pass'd over, in spite of all I could do, before a Stop was put to the progress of the *Gangrene*: The unseasonable Bleedings, his Diet, his Fever, and the other Evils with which he was oppress'd, had so impair'd his Strength, that nothing could be hop'd from it. Nevertheless, I judg'd no way would be more compendious and effectual than that of *Sweat*, to reach the origin of the Evil, and to ease *Nature* overwhelmed with

a World of Impurities : Wherefore I did my Endeavour to procure it ; and for that purpose made him take one Evening a gentle *Sudorifick*.

This Remedy had all the success I could expect ; the Patient sweated a little that Night, which forthwith put a stop to the Course of the *Gangrene*. The *Escar* came away, but very slowly, because of the weakness of the Patient. But when this was entirely separated, another Accident superven'd, which threw us into a new perplexity : For a large *Tendon* that had been altered by the *Gangrene*, and was wasted by the Suppuration, being join'd to its Original by a small Portion only, drew after it the Matter, and notwithstanding all our Care, form'd a very considerable *Abscess* under the Joynt of the Knee, which encreasing by little and little, overspread all the hinder part of the Thigh.

I dilated the Wound, making a fresh Incision, wherein I put a very small Dilater, to hinder its closing up : I us'd this Dilater for seven or eight Days, in which time the Matter encreas'd, the *Sinus* was enlarg'd, and the Thigh swell'd and became painful.

I resolv'd then to find the lowermost or most depending Part, that I might there make a Counter-Opening, whereby to give a passage to the Humours, and to hinder their Abode in the part : So I made a mark without,
upon

upon the Place I pitch'd on for that Operation.

Nevertheless, I was willing first to try all other means I could think on: And accordingly I began to leave out the *Dilater*, which I had only kept between the Lips of the Wound, not suffering it to pass into the Cavity of the Ulcer: And thus I dress'd the Wound only with a Pledgit, and a Plaister, and such a Bandage as might keep them on.

The next Day, very little Matter came away; and the Day after that, yet less: The swelling, and Pain of the Thigh were diminished; the large and deep *Sinus* was fill'd up in 4 or 5 Days. Thus the Operation I design'd was prevented, and the Patient cur'd in 10 or 12 Days after.

Reflect. 'Tis no wonder, that very many able Surgeons have been deceiv'd, without perceiving it, in the too frequent use of these fatal Instruments, *Tents* and *Dilaters*; for I who had bid them open defiance, could not keep my self from being mistaken in using 'em, and have experienced their pernicious consequences. Who can imagin that a thing so small as this *Tent* was, could occasion such considerable Accidents?

I was much amaz'd at this Event, and thereby confirmed in my Aversion for *Tents* and *Dilaters*, resolving then to use more Cau-

tion than ever, if I should at any time be necessitated to use them.

I willingly own, that the Collection of Matter under the Thigh was not occasion'd by the *Tents*; They are not always the cause of Impostumations, nor of the Accidents that follow. But, after all, their Use contributes much to delay the Cure, and to render the Symptoms more obstinate, as may be seen by the preceeding Cure; for after the widening of the Sore, a free passage being given, the Matter would have been discharg'd infallibly, and without Intermission, if it had not been hindered by the *Dilater*; which, how little soever, was yet sufficient to obstruct its passage.

I hope then I shall not be thought to have acted without Ground, in doing my endeavour to put down the use of *Tents*, since it is attended with such pernicious Consequences. 'Tis easy to judge, that if a little *Dilater*, about the bigness of a middle-siz'd Bean, was able to occasion such troublesome Symptoms, a long and thick one must have caus'd much more Irritation and Disorder. If I had continued to use that extraneous Body yet eight Days longer, it would have brought on a new Mortification, which at that time might have laid the Patient in his Grave, considering the deplorable Estate he was reduc'd to by his former Disorders.

CHAP.

CHAP. XXIX.

Of another Hurt in the Leg.

Obs. 28. **I**N that same Year, when I was in the Hospital of *Brianfon*, there was brought thither a Soldier of the Colonel's Company in *Catinat's* Regiment of Foot, who had both the *Bones* of his *left Leg* broken, together with a *Wound* two Fingers breadth below the Garter: This Accident befel him upon the Works of the 'foresaid City.

The lower part of the *Tibia* came out at the Wound, and pass'd over its upper part two Fingers breadth; wherefore we were necessitated to make a vigorous Extension, before we could put all things in their right place: We joyn'd the Lips of the Wound, and dress'd with Pledgits only, having made an Embrocation, to dissolve a very considerable Bruise, to which we apply'd our *Diapalma* dissolv'd: Two or three Fingers breadth above the Fracture, we encompass'd the Member with a little Roller, using another in like manner below it; the space between we fill'd up with double Compresses dipt in Wine or Brandy: Under the Leg we us'd a Pastboard, to hinder its bending at the Fracture, and over this the Bandage with eighteen Tails: In fine, having made all fast with the Juncks,

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and their furniture, Diversions were made in due time, and a Course of Diet ordered.

By reason of the Contusion, we were forc'd to dress once a Day, which we did without undoing the Rollers, or giving any trouble to the Member; and when I saw the Bruise, from which I had fear'd some Accidents, begin to be dissipated, he was dress'd but once in 2 days: On the twelfth day we took off the Rollers, that we might streighten them a little; which we did in such a manner, that the Bones remain'd streight and unmov'd. The Wound then had begun to fill up, and there was not the least Exfoliation, nor Separation of any Bone.

The Wound was compleatly cur'd in 19 or 20 days; after which we us'd the Rollers, with Splints and the Juncks upon the place of the Fracture.

The Patient was pretty fortunate in this, that during the Cure he had not felt the least inward disorder, notwithstanding the Unwholsomness of the Beds in the Hospitals of the Army. After 40 days the Juncks were laid aside, and he began to walk with Crutches, and in a Month after he return'd to the Regiment.

Reflect. By this Cure, which was publickly perform'd, it appears, that it is not absolutely necessary to widen the Wound in *complicated Fractures*, as some are of Opinion; for so soon

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as it is dilated, the Cavity is fill'd with Matter that slides in between the broken Bones, and being once there, it is impossible to bring it away, or hinder its stay; and thus it alters and rots the Bone which it touches: It dilutes and depraves its nutritious Juice, mixing with it, and rendring it unfit for breeding a *Callus*. In fine, it causes Exfoliations and Separations of Bones from the Extremities of the Fracture, and oftentimes sliding along the Bone upon the *Periosteum*, produces *Abcesses* and *Sinus's*, very hard to be cur'd.

The Patient is all this time in very great danger, especially in an Hospital, where he is every day tormented once, and often twice, with long and painful Dressing. The part is weakened, and the whole Body wasted away. Besides, 'tis observable that but few Fractures that are accompany'd with a Wound are ever cur'd in *Hospitals*, especially when dress'd according to the ordinary Method; and above all, those of the *Thighs* and *Legs*, which confine the Patient to his Bed, are most seldom cur'd.

Among all the *Ancients* that I have read, I find none that favours my Method of treating of *complicated Fractures* more than *Fabricius ab Aquapendente*; for in his first Part, Book 4, Chap. 9. and in many other Places of his Works, he is not for dilating such kind of Wounds, but leaves the Separating of Bones to *Nature's* Conduct: And tho' he expects
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that some Splinters of Bones are to come away, yet he fails not to stitch up the Wound : For, says he, *Nature* will never cure a Wound in that place where a Bone is to be excluded ; wherefore we ought to endeavour to heal up such Wounds ; which we shall not be able to effect, unless *Nature* judge it convenient, and find that their remaining open would be unprofitable.

CHAP. XXX.

Of a third Wound in the Leg.

Obs. 29. **O**N the 15th of *June* 1698, a Mason call'd *la Pierre*, was sent from *Mont Dauphin* to the Hospital at *Briançon*, who labouring on the Fortifications of that Place, had the inner Bone of his right Leg broken about the middle, with a Wound six Fingers breadth long, and two in width. This was one of the most considerable Fractures that had come under our Care in this *Hospital*, and yet one of those that were soonest cur'd.

After we had reduc'd the Fracture, we joyn'd the Wound, and dress'd it with a good Incarnative : We fomented where it was necessary, and put on the Dressings in the manner above-describ'd ; we perform'd the usual Diversions, and left all untouch'd for three Days.

Days. We dress'd it a second time after the same manner, letting it alone again other three Days: In fine, at the fourth Dressing, that is, upon the twelfth Day from the first Dressing, the Wound was quite fill'd up, and more than half skin'd over; wherefore straightway, as gently as was possible, we took off the Bandage with eighteen Tails, using instead thereof Rollers with light and easy Splints, upon the Fracture; and no Accident happen'd during all the time. In forty Days space he was able to walk with Crutches, and these he laid aside soon after.

Reflect. This wounded Man was shown as a Prodigy to all who came to the *Hospital*. Supposing this Cure had been the only one I had ever perform'd this way, the Success I had therein had been sufficient to convince me of the Excellency of this *Method*, and to engage me to follow it during my Life. But seeing it is moreover supported and approv'd by *Authors*, and confirm'd by many other Cures of the like nature, all the pretended Reasons that may be brought against it will prove too weak to overthrow it, and will be slighted by all Men of good Sense, and lovers of Truth: And whatsoever may be said in order to censure it, will be so far from lessening its Merit, that it will rather heighten the Esteem thereof.

In

In the last Part of this Work, where I treat of Fractures that are attended with a Wound, I give some Reasons further to justify this way of Practice.

CHAP. XXXI.

Another Case whereby this Way of Dressing complicated Fractures of Legs is confirm'd.

Obs. 30. **A** Soldier call'd *la Violette*, of the Regiment of *Nevernois*, and Company of *Bonal*, was brought to the King's Hospital settled at the Abby of *Oulx*, on the first of May 1696. He had two Wounds upon the *Os Sincipitis* of the right side, with the Bone uncover'd; all his Face was bruis'd; three of the true or upper Ribs on the same side were forc'd inwards; he had many Bruises on his Body; his right Arm was out of Joynt, and the Hand all torn; both his Legs were broken and shatter'd, the Right one without a Wound, and the Left with one: All which havock was caus'd by a Fall from a very high Rock, near the Barrier of *Fort d'Exille*.

All his Wounds were dress'd but those of his Head, which were not observ'd till the next Day. His Arm was reduced; his right Leg, which was broken about three Fingers breadth above the Ankle, was dress'd with the circular Ban-

Bandage ; the left with that of eighteen Tails ; the *Tibia* was broken to pieces in the middle ; many of the Splinters were out of their places, being unloos'd from the Bone at one end, and so could not be brought together, and altogether set right in the first Dressing : The Orifice of the Wound was not large, and we did not dilate it : It bled indifferent much for the three or four first Days, for I let the bleeding stay of it self, without using Astringents. I let him Blood many times, both in regard of the Contusions and Fractures, and also because of the forcing in of the Ribs, which occasion'd a great difficulty of Breathing. I caus'd a hole to be made in the Straw Bed and Cloathes, which was sowed round, to afford him the conveniency of going to Stool without being remov'd, it being impossible to touch him without putting him to grievous Torment. The Wounds in the Head were soon heal'd without any apparent Exfoliation ; the Bruises in his Face were remov'd ; his Ribs were restor'd by means of sticking Plaisters ; and the difficulty of Breathing continu'd but for 6 or 7 Days : The Dislocation of his Arm, and the Wounds of his Hand gave us no trouble : The simple Fracture, tho' the Bone was shatter'd, was not follow'd with any Accident : The Wound of the compound one was complearly heal'd in 8 or 9 Days ; after which we put little Bolsters upon the protuberant pieces of
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the shatter'd Bone, tying them on with Rollers, which had so good Success, that at the next Dressing no inequality was to be seen. About the fortieth Day after receiving his Fall he was able to stand up with Crutches; and his left Leg, that had the complicated Fracture, was stronger and more clever than the right, that had the simple one only; which was much admir'd by many.

Reflect. This Cure might be of excellent Use to establish the Credit of the former, if there were any need thereof. That which makes it remarkable is, the two Fractures of a different kind in the same Person, one of them being complicated, which yet was soonest cur'd, and the Patient was able to use the Leg wherein it was, before the other. *M. Davian*, and *M. Michellet* the King's Physicians in this Hospital, knowing Men, and Persons beyond all Exception, were Witnesses of what I have here related, and know that I have added nothing but the Truth, and believ'd that this was the first time that a complicated Fracture was dress'd after this manner in this Hospital, tho' it be of a pretty long standing. These same Gentlemen have oftentimes seen Wounds no less considerable than these, brought by the same Method to a speedy and happy Cure.

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I believe indeed, that the strong Constitution of the Patient, conduced much to the good Success of the Cure; but it is no less true, that the requisite Diversions were not delay'd, whatever might have occasion'd troublesome Accidents was remov'd by this means; besides, he was gently treated in dressing, and the Sores were not exasperated, so that in the first Days he felt but a very slight Pain: He rested well, and was able to take, with much ease, such Food as was proper for him.

You will very seldom see a wounded Person in so deplorable a Condition as this Man was. All the Parts of his Body were either wounded or bruis'd; had but any Accident followed, Death had been unavoidable, and our Care in vain: And if the *Dissolvents* and *Diaphoreticks* had not unloaded the Parts in promoting the Circulation of the Blood, and the Course of the Humors, by a gentle and insensible Transpiration, I doubt the Event had neither been so sudden, nor so desirable.

'Tis well known, that in Practice there is a great difference made between Fractures not accompanied with a Wound, and those that are: In many Places the later are judg'd incurable; especially those of the lower Extremities, that indispenibly oblige the Patient to keep his Bed.

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I don't question but very many, especially the *Admirers of Antiquity*, will find fault with this *Method*, and reject my *Rules*; but may they charitably oblige the Publick with more easy and more sure *Ways*, and confirm them with *unquestionable Experience*, and I promise them to be among the first that shall embrace their Party.

CHAP. XXXII.

Of the Feet.

Obs. 31. **O**N the 25th of *June* in the same Year 1696, an Irish Gentleman, call'd *John Donoughal*, Nephew to Lieutenant-Colonel *Athlone*, was brought to the Hospital of *Brianston*, having been wounded at an Action in the Valley of *Barcelonetta*. He was shot into the right Foot, and the Bullet entering on the upper and foremost part of the *Metatarsus* towards the side, was lodg'd between two Bones of the same Part.

A Surgeon upon the Spot did whatever he could to draw out the Bullet by the same way it entred, but his Endeavours prov'd fruitless.

The first Day that I dress'd it, after I had consider'd the Wound, and observ'd the Way of the Bullet, I found it could not be got out, unless a *Counter-Opening* were made; which

accordingly was done, at the middle and hinder part of the *Metatarsus*, and the Bullet was drawn out with very little Pain.

The Wounds were dress'd according to our Method, with Embrocations over all the Part: Diversions were not omitted, and he was dress'd but once a Day with our simple Remedies and the Plaister of dissolv'd *Diapalma*.

The *Escar* being separated, no great *Suppuration* ensu'd; no Bones came away, at least that we could observe: Henceforth he was dress'd but every other Day, and was cur'd in thirty Days, or thereabouts, after which time he return'd on foot to his Regiment.

Reflect. 'Tis almost universally known, that Wounds of the *Extremities*, accompany'd with a *Fracture*, are tedious and troublesome to be cur'd: The *Tendons* and *Nerves* that here abound make these Parts of a quick Sense, and render the Wounds therein obnoxious to grievous Accidents; and therefore it is that they require to be dress'd with much *Gentleness*, and Remedies particularly suited to 'em. I have elsewhere remark'd, that *Tents* and *putrifying Medicines* are extreamly hurtful to *Nervous* and *Tendonous* Parts, wherefore I shall speak no more of them. I shall only here take notice, that some prepossest Persons have had the confidence to say, that this *Way* of Dressing, so gentle and so easy, has something of Rashness in

in it; that it is very dangerous to omit the Circumstances observ'd by the Ancients; that their Rules were not laid down without good Reason; and that their Method, in fine, ought to be put in Practice among the Soldiers. Though *Reason* and *Experience* are both on my side, yet I am ready further to maintain, that this Method has nothing of *Temerity* in it, in regard it follows the Footsteps of *Nature*, which ought ever to be our Guide in the curing of Wounds. We can never go astray if we follow her Conduct; and if we swerve from her Paths, we can't but fall headlong into Dangers.

Besides, it is no less necessary to be an able Surgeon, and expert in Practice, in order to manage a Cure according to this Method, that appears so easie, rather than use the common way of Practice, which is full of so many Circumstances that are ever unprofitable, and oftentimes pernicious. And we may reasonably presume, if our *Method* has been so successful, when practis'd on Soldiers dieted and dress'd in an Hospital where the *Air* is oftentimes *infected*, that it will be much more so when used towards Patients that have all the Conveniences of *Life*, and who breath in a pure *Air*.

CHAP. XXXIII.

Of the Feet.

Obs. 32. **W**hen I was at *Lucerne*, in the Year 1688, a Soldier of the Trained-Bands, was brought to the Hospital there, who had receiv'd a shot in his right Foot that was pretty remarkable for the way of the Bullet, which was of a very small Size. It enter'd at the inward and middle part of the great Toe, and came out at the end of the little Toe, no Excoriation appearing either above or below.

The first and second Bones of the great Toe were broken, the second of the three next were entirely crush'd to pieces, and the last of the little Toe in like manner.

When we parted the Toes one from another, a great many little pieces of Bones were to be seen, which seem'd only to hang by a Thread. I first set to rights every Bone by it self, and afterward set them in order one with another: Between every Toe and its fellow I gently slipt in a little piece of Linnen dipt in *Spirit of Wine*; and I made small Compresses pretty large and longish, which I put above and under the Toes, in form of Splints, being wet also with *Spirit of Wine*: I wrapt all up in Linnen, without Oyntments
or

or Plaisters, and supported the Foot with a Sole, sustaining all with an easie Bandage.

I took off the Dressings after 2 Days, and without removing the little pieces of Linnen between the Toes, I fomented all the part with Spirit of Wine, and dress'd it as before: the Suppuration was but very small; and indeed it was with design to prevent it, that I us'd nothing but the Spirit of Wine, which was the only Remedy I employ'd to compleat the Cure: This was effected in about three Weeks time, without the coming away of the least bit of the Bones, tho' they had been entirely shatter'd to pieces.

Reflect. All Experience assures us, that 'tis Nature and a good Method that effects the Cure, and not at all either the great Labour, or vast Charges bestow'd upon it. If I had used in this Case the ordinary Oyntments and putrefying Medicines, they would have occasion'd a plentiful Suppuration, whereby the Splinters of the Bones had been losen'd and brought away, the Cure had been delay'd, and possibly the Toes lost; which had been enough to render the Patient lame for his Life.

Tho' this Cure is not of great Consequence, yet the Conduct therein us'd may suffice to shew, that the Bones do easily enough re-unite, when they enjoy the necessary Repose, when the Air has no time to alter them, or to exert
its

its Efficacy in the Wound, and when the use of Suppurative Remedies is laid aside, which are ever hurtful, as has been above observ'd : And I will here add, as to the last-mention'd Medicines, I know no kind of Wound, in what part of the Body soever, that does absolutely stand in need of them.

But lest I should weary my Reader with unprofitable Repetitions, I shall content myself with having describ'd the two preceding Cures of *Wounds* in the *Feet* ; tho' in this *Hospital* we have had a great number of this nature pass thro' our Hands, that have had a most *happy* and *comfortable Event*.

CHAP. XXXIV.

The Conclusion of the Second Part.

IF my weak *Reasonings*, and the *Authorities* I have adduc'd, together with the *Experiences*, which I have faithfully related, should not prove sufficient to convince some Persons of the Excellency of my *Method*, I have only one *Request* to make, to such as shall withhold their *Approbation*, which is, that they would make a *Tryal thereof* themselves.

I could have recited a very great number of Cures, like unto these contain'd in this 2d Part : I could have describ'd the Cures I have performed on wounded Persons in my *Travels*, or
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in the *Army*, where Occasions of this nature daily present themselves, because of the Actions that ordinarily fall out; such are those of the Valley of *Barcelonetta*, and the Battle of *Marseils*, fought Oct. 4. 1693. But this would have been, for the most part, to say the same things over and over again, all these Cures being manag'd almost after the same way.

I suppose, it will be easily enough believ'd, that I could have enlarg'd the bulk of this Volume with many other *Observations*, considering it is Truth, that in 4 Years time, that I have been in this Place, more than 3 *Thousand Persons* have gone from it compleatly cur'd.

Some there are, who, not able to discover the genuin Cause of the desirable Success, that has attended the Cures, done in this Ho'spital; and willing to blast the Reputation of a *Method*, to which only they were owing; have attributed all to *Chance*, and have given out that we have been accompanied with an extraordinary *Good Fortune*: as if forsooth, the curing of Wounds were like a Game at *Cards*, or throwing of *Dice*; or as if blind Chance had any thing to do where Experience and good Conduct are so indispensibly necessary.

I have hitherto only treated of such Wounds as were very considerable, and were almost all somewhat complicated: From whence I hope it will be believ'd, that simple Wounds, where-with I was unwilling to fill up this Part, were
cur'd

cur'd after this Method, with much more Speed and Ease than those here related.

It may possibly be thought strange, that (in Cures of single Centinels, describ'd in this 2d Part) I have declar'd I us'd, on different Occasions, the *Balsam of Peru*; which is scarcely probable, considering the Place, and Condition of the Persons. This I own, and do nevertheless aver, that I have said nothing but Truth: But when it is consider'd, that the Duke of Savoy sent his Apothecary to *Lucerne*, with Orders to supply himself from thence with whatever was most precious, and to furnish a compleat Shop of Medicines, for the Hospital of that Place, what I have said will easily be believ'd, since not only that Remedy, but also *Pearls*, *Bezoar*, and the most costly Cordials, were bought up, and us'd freely without distinction.

The Hospital-Surgeon.

PART III.

Exhibiting a general View of the Author's new Way of Practice, not only with respect to Wounds, but in other Cases belonging to Surgery; and a Description of the simple Remedies he uses: With some Observations.

CHAP. I.

The Design of this Part, and what it contains.

ALtho' in the preceeding *Parts* of this Book, where I declare the *Advantages* and *Excellency* of this *Way*, confirming the same by *Reason*, *Authority*, and manifold *Experiences*, I have sufficiently made known my *Practice*, with Relation to *Wounds*; yet considering it is there deliver'd without any Method, and with frequent Interruptions, as being interwoven with my Reasonings and Observations, I shall, for the Ease and Advantage of my *Reader*, but especially of the *young Surgeon*, in this 3d *Part*, give a general *Prospect*, as it were at once, of all the *Parts* of my *Practice*; and that not only in what concerns *Wounds*, to which I principally confin'd my self in the two former *Parts*, but also in other Cases, that fall under the *Surgeon's* Care.

I will likewise here, ingenuously, and without

out Reserve, give a Description of the *simple* and *easy Remedies* which I have us'd as well in the Cure of *Wounds* as in that of other *Distempers* that come within the Jurisdiction of *Surgery*; the happy and comfortable Effects that I have so frequently seen produc'd by them is enough, in my Opinion, to recommend them to the Esteem and Use of the wise and unprejudic'd Artist, who candidly designs the Good of such of his fellow Creatures as fly to him for a Refuge in their Distress.

In fine, I will as I go along deliver some *Observations* very instructive and useful, to illustrate and confirm the Subjects, for the sake of which they are inserted: To which, when necessary *Reflections* shall be subjoyn'd, I shall begin with *Tumors* and *Abscesses*.

CHAP. II.

Of Tumors and Abscesses.

Monsieur *Bertrand*, a Physician of *Marseils*, in his *New Reflections* upon *Acid* and *Alkali*, gives, in few Words, a very clear and exact Notion of the Nature of *Tumors*. But I being confin'd, by my proposed Design, only to declare my Practice with respect to them, those who desire to search into their Causes, and examine their Differences, must consult such Authors as have written upon'em.

The *Moderns* are not well agreed with the

Ancients in this Matter ; for since the *Circulation* of the *Blood* has been found out, the true Causes of many Accidents, that fall out in the Cure of *Tumors*, have been discover'd, which the *Ancients* explain'd in a manner altogether different.

Now in regard a Disease, after its Nature is understood, is easy to be cur'd, if one uses but a little Application of Mind, the young Surgeon will do well to search into the Causes of *Tumors*, in the Works of the *Moderns*, where he will likewise find suitable Remedies. *Etmullerus*, in his *Medicinal Surgery*, describes a great number of very proper Medicines ; as also *M. Verduc* in his Book call'd *Pathalogie de Chirurgie*.

This only I will say by the by ; that the *Tumors* that are accompanied with Inflammation, such as a *Phlegmon*, and an *Erysipelas*, have more need of *Dissolving* than *Repercussive Medicines* : I was confirm'd by Experience in this Opinion, and the Truth thereof at this Day is not doubted ; tho' at the same time it is contrary to the Rules of the *Ancients* : For a *Phlegmon* proceeding from an internal Cause, according to the *Moderns*, is nothing else but an Obstruction of the Vessels ; and that from an external Cause may be accounted of the same Nature. This Accident does very commonly happen in *Gunshot-Wounds*, under which Head we shall take notice of it.

According to these Principles, *Resolvents* are absolutely necessary, in order to answer the first Intention, which is to dissolve or cause to transpire the accumulated Humor.

An *Erysipelas*, or St. *Anthony's* Fire, according to these same Moderns, is caus'd by a subtil and volatil *Acid*, diffus'd over the *Skin*, or the *Muscles*: *Dissolving Medicines* are also proper in this Disease: So that *Spirit of Wine* prepar'd with *Campfire*, the *Sugar of Lead*, or *Elder-Vinegar*, may be us'd.

The Accidents that follow upon a great *Erysipelas*, are frightful and violent. I remember, that when I was at *Lucerne*, a certain Person who had a *Fever*, was seiz'd with a like *Distemper*; it reach'd from the middle of the *Thigh* to the *Heel*; he was not so wise, as to give us notice of it in time, but kept the whole part out of the Bed for a whole Night, in a pretty cold Season; which caus'd such a *Repercussion*, that on the Morrow all the *Part* was *gangren'd*, and all our Care and Diligence could not prevent its entire Mortification; for in a very little time the *Gangrene* turn'd to a *Sphacelus*. Before he dy'd, one half of his Body was entirely corrupted and putrify'd: I never saw so dreadful a Sight, or smelt so intolerable a Smell: For not only the Hospital, but even the whole City was in danger of being infected thereby, when he was yet alive.

When an *Erysipelas* will not yield to dissolving Remedies, we ought without delay to

have recourse to *Scarification* of the whole part, to give a passage to the Blood; and moreover, we should foment the whole Part with *Spirit of Wine* prepar'd with *Camphire*, or some other Spirituous and piercing Liquor: *Vinegar* wherein *Sal-Armoniac* is dissolv'd, or *common Salt* when that is wanting, may also be us'd. But after all, it is not to be thought that *Repelling Medicines* are altogether to be laid aside; only 'tis fit we know how to use them on suitable Occasions.

In the Year 1693, M. *Dechamp*, then Commander of the 3d Batalion of *Sault*, but now Lieutenant-Colonel of the same Regiment, having an *Erysipelas* in his Leg, had been treated with the *Dissolving Remedies* prescrib'd by the Moderns, for 3 Weeks time, without perceiving any Advantage thereby: Whereupon he caus'd himself to be brought to this Town, that he might be under my Care; and being inform'd by him of what Remedies had been us'd, I thought fit to apply *Repercussives*; and in 8 Days after, he departed entirely cur'd. In order to a prudent Use of Remedies, the Age, and the Constitution of the Patient, the Season of the Year, and the Nature of the Part affected are duly to be consider'd. But I shall not insist further upon generals.

Now as for *Abscesses* of all sorts, which have come under our Hands in this Hospital, and have been cur'd with an *Expedition* that may appear incredible, I will only say this; that
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judging it sufficient to make a large opening in them, I left the rest to the sage conduct of *Nature*; not forgetting however general Remedies, and the ordering of *Diet*. But as for the dressing of the *Ulcer*, I only us'd a simple *Pledgit*, cover'd with the most common Medicines; and sometimes in case of a Cavity, small Compresses for expelling the Humor, with a Plaister, and a Bandage sufficient to keep it on.

The great number of those who have been treated, in this Hospital, according to this Method, and cur'd in a very small time, is beyond Belief.

When the *Orifice* is not stop't up with an *Extraneous Body*, 'tis evident that the *Matter* can make no Stay in the Parts, but will come away without Intermission; and the Parts, that were thereby kept at some distance from one another, come together, and at the same time do expel whatever may there be contain'd, and leave no empty Space for the Collection or Abode of what is useless and inconvenient: Hence the Parts are united, *Nature* acts at her Freedom, whose Balsam generates Flesh better than all the Remedies in *Pharmacy*.

I hope I may presume, that none will think I would have continued in the Use of this *Method*, for so long time, had I not experienc'd its desirable Effects, on a thousand Occasions: And I could safely take my *Oath*, that never any the least Accident happen'd to any of

those who were dress'd after this manner. Every one may believe as he thinks good of what I say; but I dare aver, that I am much more careful that what I say should be True, than that it should be Perswasive.

As for *Scrophulous Tumors*, or a *Bronchocelle*, I have not found any Remedy so successful as *Mercury*; and I believe, in the Opinion I have of it, I am not singular; the many Experiences I have had thereof, make me to value it much. He that well understands the *Cause* and *Nature* of these Evils, and withal the *Vertues* and *Uses* of the Remedy whereof I speak, will agree with me, that this only can effect a *complete Cure*: But all consists in the discreet using of it. The best of Remedies, and the most exquisite Instruments, are ever dangerous, when manag'd by Surgeons that are void of Knowledge and Experience. I may possibly, one Day, make known to the Publick, the way which I have successfully us'd, to bring to a perfect Cure a great number of such *Maladies* as I now speak of, and those the most obstinate and inveterate of their kind.

CHAP. III.

Of a Gangrene.

A *Gangrene* is an Accident that occasions very much Trouble in the *Hospitals* of the Army. I shall say nothing of its Causes,

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M. *Thevenot* has fully treated of this Matter; and M. *Causape*, in his Book of *Fevers*, has given a brief Discourse of it upon different Principles. Young Surgeons may betake themselves to the reading of them, for their Instructions herein.

So omitting this, I say, that here we have no time to lose, but must immediately apply our selves to stop its *Progreß*, and to avoid the fatal *Consequences*. When the great Vessels are thereby entirely intercepted, in a Member that may be cut off, the best way is to come speedily to *Operation*, without attending a *Sphacelus*; for the *Gangrene* goes on so swiftly in a small time, that the sound Parts are assaulted before ever we can well know what we are a doing.

A *Gangrene* often happens in *Gunshot-Wounds*, if it is not prevented; as also in Bruises; in Wounds made by cutting, or bruising Instruments; and also after a great *Pblegmon*, or an *Erysipelas*; and sometimes by an Extremity of Cold: This last kind is very frequent about the end of Campaigns: The Remedy we us'd was *Spirit of Nitre*, or *Aqua fortis*, wherein *Crude Mercury* to half the quantity is dissolv'd: With this we have easily enough stopt Mortifications in the Feet or Hands, applying over all the Extent of the *Gangrene* a little piece of Linnen wet in this Liqueur: And when this can't be had, other *Spirits* may be us'd that are much of the same Quality.

This Remedy I have found to be so gentle, and so quick in its Operation, that I never use any other, in any sort of *Gangrene*. It admirably well separates what is dead from what is alive, without scarifying or cutting; unless when the Mischief lies very deep, where these violent Remedies are absolutely necessary.

Cordials and *Wine* ought never to be omitted in such Cases, to fortify and defend the natural Heat from an Enemy that oftentimes assaults it in its very Principle. When the Body is plethorick, *Bleedings* and *Clysters* are no small Help. In the beginning of a *Gangrene*, to *Topical Remedies Diversions* may be added, without forgetting to order the course of *Diet*, which also demands our particular Care. So soon as I have discover'd a Disposition to *Mortification*, I have sometimes us'd *Cataplasms*, and *Emplasticks* when the Inflammation would allow, to recall the *Spirits*, and to give *Nature* Time and Strength to resist and to overcome, by the force of the Heat concentrated, the Matter already endow'd with a malignant Quality, or just ready to become such; and I have often seen such kind of *Maladies* end happily in an *Abscess*, with a laudable Concoction.

When a *Phlegmon* that ensues upon a Wound is violent and obstinate, and will not yield to *Diversions* and *dissolving Medicines*, we must without delay scarify the Part, so far as the *Tumor* reaches, to give an Outlet to the *Blood* that

that is extravasated, and oftentimes corrupted, and to discharge and relieve the Part, that otherwise might be suffocated by the Fullness and Obstruction, bathing it afterwards with *Spirit of Wine* and *Sal-Armoniac*: For if we be remiss in our Care, the Enemy that is conceal'd within is privately at work; and when the outward Signs of the *Gangrene* appear, all that is under the Teguments is often found corrupted, and an irremedible disorder.

An *Erysipelas* is yet more formidable; for it is more sudden, and more nimble in its Operation: It is the part of a prudent Surgeon to take heed of it in time. A Fomentation with *Spirit of Wine*, *Unguentum Egyptiacum* and *Sal-Armoniac*, may be us'd.

Many Authors have describ'd a great number of Remedies very proper in the Cure of *Gangrenes*, but in the Hospitals of the Army there is not always the conveniency of making a Choice; wherefore it is good to know how to use such as are simple, and easie to be found: Besides, 'tis not always the most pompous *Compositions* that are of the greatest Efficacy.

In this sort of Distempers, it is very necessary to make use of *inward* Remedies, as well as *Topical* ones; such as strong *Cordials*, *Venice Treacle*, *Confection of Hyacinth* and *Alkermes*, and *Alexipharmicks*, to which a little *Camphire* may be added. *Wine* ought to be number'd amongst the *Cordials*; it is one of these

these which I very frequently use in *Hospitals*, *Scordium* taken inwardly, and apply'd outwardly upon the *Gangrene*, is a Remedy not to be despis'd.

A great many Remedies, very proper for a *Gangrene*, may be seen in *Etmullerus*: He has also given an account of the way us'd by the *Germans*, to separate the mortify'd from the sound Parts, which is done with the *Butter of Antimony*: This is the Remedy they use in the Amputation of Members, to avoid the use of the dismembring Knife, and of *Astringents* that burn and cauterize.

This Remedy might be us'd with the same Success as the *Spirit of Nitre*, which I have spoken of before; there is no Difference but what is gradual: But whether the one or t'other be us'd to stop a *Gangrene*, a simple Digestive will afterward be sufficient to hasten the falling of the Escar, and finish the Cure.

CHAP. IV.

Of Ruptures.

RUPTURES are very frequent among the Soldiers. The *Toil* they undergo, and their *Manner of Life* do equally contribute to bring them to that miserable Condition, by reason of which there is often a necessity to send them to Hospitals.

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My design in this place, is only to give an account of the way I use to help this sort of *Distemper*; for I am convinc'd, and no body doubts of it, that a *Truss* is the most sure and most infallible Remedy to hinder the Falling down of the *Guts*: But, as there is no Convenience for the making of them in Hospitals, so Accidents must be quickly provided for, that comes oftentimes all of a sudden; such as the Descent of the *Intestines* into the *Scrotum*; for the Pains are then extreamly violent, and so grievous that they resemble those of the *Passione Iliaca*.

Wherefore on such an Occasion I apply a Cataplasim of *Ox-Dung*; or else when I may have it so, I use it fry'd in Oil of *Hempseed*, or in that of *Violets*. This Remedy eases the Pain, by dispelling the Wind, and so gives Liberty to restore the *Gut* into its place, provided the *Intestine* is without Excrementitious Matter in it. *Astringents* of the first Rank may also be us'd, as common *Bole*, &c. mix'd with the Glair or White of an Egg, or Vinegar. Some use *Emollients*, but this Operation is too slow in a case requiring such haste.

I have often found much advantage from a *Fomentation* made up of *Pomgranate Flowers*, *Nut-Galls*, *Cypress Nuts*, *Pomgranate-Rind*, *Allom*, *Camomil* and *Melilot Flowers*, with common *Salt*, all bruised and beaten, and boil'd in *Fog-water*, or in rough harsh *Wine*; I use it very warm altogether, without straining the

the Liquor : With this Remedy I have restored Patients who seem'd to be upon the very brink of Death. Moreover, the *Emplastrum pro Hernia* ought to be apply'd upon the Dilation of the *Peritonæum* ; but without a *Truss* the best of all Remedies will do no great Feats.

CHAP. V.

Of Wounds.

I Have sufficiently explained my *Method* as to what concerns *Wounds*, in the Account of Cures contain'd in my second Part. My Design is here (for Reasons mentioned at the beginning of this Part) to entertain my Reader with a General and Comprehensive *Idea* of my *Way* of Practice, that may quadrate to all the different sorts of Wounds that occur.

Perhaps this *Method* may seem to swerve a little from that of the *Ancients*, or may not agree so much with that in use amongst the most part of the *Moderns*, as some could desire : But I would entreat those who shall read this *Treatise*, not to condemn it before they have thoroughly examin'd the Truth of the Matters of Fact, and the Reasonableness of the *Rules* therein laid down ; for our usual Rashness in judging of what we don't altogether understand, is often the Cause of our *Error* : However, I am in good Hopes, that e're it be long
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this *Way* will be acknowledg'd to be the Product of Experience; and its *Evidence* to be an infallible Mark of its *Truth*.

Besides, I dare confidently affirm, that this *Method*, howsoever new it may appear to many, ought not to be number'd among those things that are more *curious* than *profitable*. *Reason* speaks for it; putting it beyond all doubt: and about three thousand wounded Persons happily cur'd by it may warrant any one in the Use of it. In the first and second Part of this Work, I explain at length the *Reasons* that justify my Practice, and support them with several *Authorities* both of the Ancients and Moderns.

If I condemn *Tents* as Instruments unprofitable and destructive, 'twas *Experience* that convinc'd me of their Mischief; and I hope, henceforward very many Surgeons will range themselves on my side.

If I recommend, in a special manner, a *Gentle* and *Speedy Way* of Dressing, I must herein be justify'd by all Men of sound Understanding: And indeed I don't question, but every reasonable Person, after he has been rightly inform'd, will sufficiently approve what I have advanc'd in this Matter.

To conclude, in asserting that the *Air* is *hurtful* to Wounds, I have said nothing but what *Hippocrates*, *Galen*, and many others were sufficiently convinc'd of. 'Tis known to all, that the *cold piercing Air* is very pernicious

ous to our *Nature* : On this I have enlarg'd a little, in the seventh Chapter of the first Part, according to that little Measure of *Understanding* wherewith I am endow'd.

. I suppress *frequent Dressing*, that *Nature* may be allowed time to act, and to restore the wounded Parts to their first Condition ; which she can't do when she is so often interrupted in her *Work*.

I have ever observ'd this as a general *Rule*, to dilate by *Incision* Gun-shot Wounds at the first Dressing ; as also all other *penetrating Wounds*, and such as have a *narrow Orifice* : This is the true Way to keep off, and to avoid the most part of Accidents that happen in Practice ; and to prevent being reproach'd, when any troublesome Symptom falls out, I sometimes use *Dilaters* in the first Dressing, to hinder the Union of the new Incisions, to keep their Brims asunder, and to leave an open Passage for Matter, or any thing else to come away, when *Nature* shall be dispos'd to expel 'em ; otherwise I use them not, lest I should hinder the closing up of the Wound.

When the *Bleeding* is obstinate, I use calcin'd *Vitriol*, *astringent Powders*, *Powder of dry'd Vine*, *Styptick-waters*, &c. 'Tis only in desperate Cases that I have recourse to *Roman Vitroil*, *Aqua fortis*, and the *actual Cautey*.

I have ever, in the first Dressings, found much Advantage from *Defensives*, which I apply'd above, and sometimes below the *Wound*,

to allay the *Heat* of the *Blood*, to moderate its *Activity*, and resist *Fluxions*; observing always to make them somewhat *Emplastick*.

I make the *Diversions* without loss of time, with intent to correct the universal Fulness, facilitate *Circulation*, and lessen the abundance of *Blood* that might fall in upon the *Parts* affected; and one or two *Bleedings* at first are of more use than four after the *Accidents* or disorderly *Symptoms* appear.

I am always careful to empty the lower *Belly* by *Clysters*, having found that the retaining of the *Excrements* is always a mighty hindrance to the good *Disposition* of the *Body*.

When the *Bleeding* is great, I don't take off the first *Dressings* till the second or third day after they are apply'd, that the wounded *Vessels* may have time to unite; and provided the *Season*, and the *Pain*, or other *Accidents* don't hinder, I every day take off the *Rollers* during that time; and leaving only that which supports and keeps on the *Astringents*, I make *Embrocations* when needful, and renew the *Defensives*. By this means I often avoid the *Suffocation* that may happen, if the *Astringent* and *Emplastick* Medicines are too long kept on the *Parts*, which by stopping up the *Pores* of the *Skin*, and retaining the *Vapours* that ought perpetually to pass thro' 'em, are the Occasion of many very grievous *Accidents* that happen to *Wounds*. Too great a quantity of *Bands* and *Compresses* has often the same Effect.

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I use only *Pledgits* after the first, and sometimes after the second Dressing; and continue the *Embrocations* till the *Contusion* is dissolv'd, which may be in five or six Days more or less, according to the Bigness and Condition of it, or to the Nature of the *affected Part*.

When a *Phlegmon*, or an *Erysipelas*, &c. happens to a Wound, I avoid the Use of *Unctuous Things*, which are hurtful here; employing only such Cataplasms as are proper for easing Pain, and sometimes also dissolving Medicines, which together with *Diversions*, and a proper *Course of Diet*, resist and overcome these Accidents.

I find it very profitable, when I dress the Wound, to cover it with a *Linnen Cloth* wet with warm *Wine* or *Brandy*, immediately after I have taken off the Dressings: This defends, strengthens, quickens, and unites the *Spirits*, and hinders the Particles of the *Air*, and the *Effluvia* therein, to stick to the Wounds, or pass to their Bottom.

After the first Dressing is over, I never search the Wound either with my *Finger* or *Probe*, unless there is an absolute Necessity for it. I also disallow the use of *dry Tents*, so commonly employ'd for drying up the Matter from the very Bottom of Wounds; and generally every Thing that may *irritate*, or occasion *Pain*, or may oppose the design of *Nature*, which is the healing up of the Wound.

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I don't, as some do, take up a deal of time in striving exactly to empty the *Wound* of all the *Matter* that is in it ; but as quickly as can be, I apply the *Dressings*, to hinder, as hath been said, the Action of the acid Parts of the *Air*, and the *Dissipation* of the *Spirits*, that the Strength of the afflicted Parts may be preserv'd as much as possible ; which is very requisite, in order to enable them to bear up against the many Evils wherewith they are assaulted on all Hands.

When I say in the fifth Chapter of the first Part, that the *Matter* ought not to be retain'd in Wounds ; and that *Nature* would not be at such Pains to drive it out, if she could have any Advantage by its stay ; this is to be understood of such Matter as is kept in by means of *Tents*, which becomes hot, and ferments, and by its abode acquires an evil Quality, and might be suck'd up by the Veins ; for that which is laudable is hurtful only by Accident, being of its own Nature Balsamick, because it is ever mixed with good store of the *Natural Balsam*, or *Nutritious Juice*, which without Intermision flows into the wounded Parts. What I say is confirm'd by that which is done in some places in *Holland*, whereof the *laudable Matter* that runs from Wounds, they make a *Balsam* that is of great Use in their Cure.

It is not at all improbable that the *Sound Matter* that comes from Wounds may promote their Cure, when by the *Hand* and *Diligence*

ligence of a skilful *Artist* it is purify'd and separated from its Excrementitious Parts; for what remains is only the *Balsam* of the *Blood*. This will be more easily conceiv'd by those that consider, that there are some learned and ingenious *Italians*, who cure the *Bloody-Flux* with a *Salt* drawn from the Excrements of the Patient; and also such as have a *Dropſy*, with the *Salt* of the Waters that are drawn from their Belly. *Etmullerus* also very much commends the *Excrement* of the *Ears* for curing Wounds.

All these things contain less balsamick Juice than the *Matter* that runs from Wounds, when it is not altered by the Heat of an Essential or Symptomack *Fever*, when it has not remain'd long in the Wound, as being detain'd there by *Tents*, &c. or in fine, when it is not deprav'd by the use of *putrifying Medicines*, or others of a like sort, that destroy its natural Temperament.

M. Verduc, *Tom. 1. Page 440*, speaks very patly to this Purpose, when he says, that *Matter* is the *Chylous Part* of the *Blood*: Wherefore it is against all manner of Reason that some Moderns require that the Wound be accurately wip'd dry, seeing thereby it is depriv'd of that which only can effect the Cure.

When I know, or am in doubt, that there is some *Extraneous Body* in a Wound, which *Nature* would exclude by the *Orifice*, or that any *Splinter* is separated from a Bone, without having

ving to do with *Tents*, I sufficiently dilate the Wound with *Prepared Sponge*, or the *Pith* of *Elder*, or *Gentian Root* fitted for that purpose, that a free Passage may be given to any thing that must come away: This way is understood by every Surgeon, and there is no Difficulty therein, provided one be careful to use it *seasonably*.

I can't restrain my self from highly blaming those who very patiently marshal up in order a great number of *Dossils* or *Dilaters*, of which they make three or four *Lays* for Wounds that are any thing large, observing a certain Symmetry and Proportion, which exposes to the View of Assistants a Method no less pernicious than contrary to *Common Sense* and *Reason*. As for the *Decency* and *Seemliness* which adorn and set off that Way, it will be no less conspicuous in making large Pledgits of long and pretty fine Lint, that may at once reach over all the Extent of the Wound.

I my self have experienc'd what a fond Opinion is commonly entertain'd of that *Cruel Method*; for the greatest part of wounded Persons believe themselves *neglected*, if an *Hour* is not spent in *searching* their Wounds, and as much in *applying* the Dressings; but *Charity* obliges us to free them from their Error.

When a *Wound* is deep with much loss of *Substance*, I fill it only with *Pledgits* of fine Lint; lest leaving an empty Space, it should be fill'd up with *Air*: I apply them very slightly

slightly cover'd, or moistned with some Medicine agreeable to the Nature and Quality of the Wound : These are not so hard as *Dossils*, and consequently occasion less Pain, and don't so much oppose the closing up of the Wound, being not so compact as to hinder the breeding of Flesh ; neither are they so apt as *Tents* to be lost in the Wound, or fix'd in some corner of its Cavity.

I am no less careful to suppress *Injections* as well as *Tents*, having observ'd their Effects to be no less pernicious ; for they *liquify* and *dissolve* the *Blood*, *enlarge* the *Wound*, cause *Pain*, and make *proud Flesh* to grow.

I disallow the Use of *Aromatick Wines* in Dressing, as also of Fomentations, which are frequently us'd by some, and contribute very much to the protracting of the Cure.

'Tis very sure that these Parts drink up the *Moisture* which softens, relaxates, and puffs up the *Skin*, and passing through it, fills them like Sponges ; the *Natural Heat* of the afflicted Parts is thereby suffocated and extinguish'd, no perfect *Concoction* can be perform'd, but all is turn'd to *Matter* and *Corruption* : And if this *Method* is long continu'd, as it too often falls out, the *Ligaments* are relax'd, and the Patient is in Danger of being lame for all the rest of his Life.

This way of Practice is in a particular manner pernicious in *Hospitals* of the *Army*, where that which is necessary to give Remedies to
all

all the required Qualities is not always to be had: For Instance, how can they be kept warm, without a sufficient number of Cloathes to preserve the Patient from the Cold? Hence it is that in a moment after Application all the Dressing becomes cold and frozen, which occasions *Oedema's* very hard to be cur'd, and oftentimes Symptoms that are yet more troublesome.

A right Course of *Diet* is so necessary in the curing of Wounds, that without it an infinite number of *Accidents* cannot be prevented: But it is necessary to have respect to the *Age* and *Constitution* of the Patient, to his *Habit* of *Body*, to the *Season* of the *Year*, and the *Nature* of the *Wound*.

'Tis to be observ'd, that a very strict Diet is a mighty hindrance to the Cure of Wounds in Soldiers, who ordinarily feel more of the Inconveniencies of a too scanty, than those of a too plentiful Table. Wherefore, I don't altogether deprive 'em of the use of substantial solid Food, unless when Necessity requires otherwise, for this keeps up their *Strength*: For Broths, tho' good, are not so nourishing in *Hospitals*, as to be sufficient of themselves for Food; and at the same time this is no prejudice to the necessary *Diversions*. *Wine* also a little allay'd ought not to be kept from them, unless in some very important Cases: It resists the ill Quality and Malignity of the *Air*, which is always impure in *Hospitals*; and, in a Word,

Word, *Wine* is their *Cordial* and *Counterpoyson*.

It is likewise very necessary, especially in *Hospitals* of the *Army*, to have regard to the *Situation* of the wounded *Part*, which ought to be such, as to give *Liberty* to the *Circulation* of the *Blood*, a *Descent* to the *Matter*, and *Ease* to the *Patient*; I have known the neglect of this *Point* occasion very troublesome *Symptoms*.

If a *Surgeon* is not so charitable as to give *Instructions* to those that attend the wounded, how to make their *Beds* suitable to the *Quality* and *Nature* of their *Wounds*, the miserable *Patients* are ever in *Pain* by the inconvenient *Position*; which is enough of it self to deprive them of the *Rest* that is so necessary for 'em, and to render their *Sufferings* numerous, and our *Cares* to no purpose.

The *Head* ought to be plac'd indifferent high, and laid upon something that's soft, without *Feathers*, if it may be had, with a *Descent* to promote the *Discharge* of the *Matter*: When the *Neck* is wounded, it must be in a manner slightly supported by the *Pillow*: Or by *Linnen* folded into several *Doubles*, we must fill up the empty *Space* between the *Head* and *Shoulders*.

Wounds of the *Breast* require an easie and unstrain'd *Posture*, rather high than low. But in this we must have most regard to the *Convenience* of the wounded *Person*.

Those of the *lower Belly* and *Loins* demand almost the same *Situation*: To those of the *Bladder*

Bladder and Genital Parts, an undisturb'd *Repose*, a convenient Bandage, which is a *Suspensory*, and a Position somewhat raised, are very needful.

Every body knows that the *Arm*, when wounded, must be supported by a *Sling* that passes over the Neck; and that in Wounds and Fractures of the *Shoulder-Bone*, a Pillow is necessary to keep it almost as high as the Breast, in which posture it is most at ease: In Wounds or Fractures of the *Wrist, Metacarpus* and *Fingers*, we must keep the Hand extended with a piece of Board.

Wounds of the *Thighs* require that the Member be plac'd streight, neither too high nor too low. Those of the *Legs* and *Feet* do necessarily demand that the Part be something high, that so the courser Blood may freely circulate; for otherwise, the Blood by its weight might be stopt in the Veins, and corrupted there; and thus the Circulation being suppress'd, many grievous *Accidents* would ensue. This hanging, or low Position of the Legs, not being minded by many Surgeons, tends exceedingly to render Wounds of these and the Feet very hard to be cur'd, and makes 'em degenerate into *Ulcers*.

It is also very necessary to stretch out the Legs, and keep them streight during the Cure; otherwise it will be difficult to restore them to their natural Figure, after it is over, especially if it has been of some Continuance; as,

supposing the Leg had been kept bent, when under Cure of a *complicated* or *simple* Fracture. This is what I have often observ'd, and to which young Surgeons would do well to take heed. Fractures of the *Tibia* and *Fibula*, and simple Wounds in the Legs, if any thing considerable stand in need of a *Sole* to sustain the Foot, as well as those of the *Tarsus*, *Metatarsus*, and *Toes*.

Too streight Bandage, especially in *Gunshot-Wounds*, occasions troublesom Accidents; it hinders the Circulation, and frequently causes Mortifications: Wherefore I use only such as may keep on the Dressings, especially the first day. Many have been brought wounded to this *Hospital*, with the Parts half gangren'd, by too tight tying; for in *Gunshot-Wounds* the wounded Members swell always, some more some less, whereby the Bandage, tho' but moderately streight, becomes intolerable before the next Dressing. Rest also is of no less consequence to the Patient. Now where all these things meet together, and are rightly order'd, they are commonly of very great advantage to the wounded.

I use *Purgatives* with great Caution, and that only after the time of the most *dangerous Symptoms* is over, beginning always with the slightest that only loosen, such as *Cassia* and *Manna*, &c. during this Interval, *Clysters*, together with the use of *Prunes*, give no small Relief: *Oats* and *cleansed Barley* being easily digested,

digested, qualify the *preternatural Heat* of the *Blood*, and keep open the Belly.

As for the *Topical Remedies*, which I commonly employ in Dressing of Wounds, they have nothing singular in them that is not pretty well known to the most part of Surgeons.

I avoid as much as possible the use of *putrifying Medicines*, and of *powerful Suppuratives*, because they destroy the Temperament of the Parts, disunite the Particles of the *Blood*, and corrupt and deprave the *nutritious Juice*, which ought carefully to be preserv'd in a good condition. 'Tis this which mov'd the Ancients so often to recommend to us, to maintain the wounded Parts in their *Natural Temper*.

Hippocrates affirms, that all *contused Wounds* ought to be brought to *Suppuration*, in order to a speedy Cure, whereby he seems to patronize and allow the use of *putrifying Medicines*, which commonly are employ'd to bring a Wound to *Suppuration*. But methinks this ought not to take place in the Hospitals of the Army, where the *Air* is ordinarily infected by the Breath and abode of the Sick; and which are almost ever encompassed with the *Graves* of the Dead, whose number is but too great.

'Tis very certain, that this nearness of the *Place of Burying*, especially in hot Seasons, imparts to the *Air*, by the Steams that rise from thence, a Complication of Corruption and ill Qualities, that occasions *Rottenness* in Wounds, *Alteration* and great *Suppuration*, and

often causes great *Mortality* in the Hospitals, and Places adjacent. Now according to this Maxim of that Author, *Gunshot-Wounds* must be dress'd with these same Medicines, as being of the number of contused ones.

I don't absolutely deny, but there may be some Occasions wherein such may be us'd: However, I may be allowed to say, with all the Respect I owe to so celebrated an Author, that in *Hospitals* we ought to shun as much as possible *Putrifying* and *Suppurative* Remedies, and others of the like Nature, even where the Escar may require a considerable time before its falling: For by the seasonable ordering of *Diversions*, and the Course of *Diet*, all those Accidents are often prevented, which the delay of the Suppuration might cause; and one may without scruple use, as I have done, such Remedies as have a Vertue to resist Corruption; as the Spirit of Wine, which *Etmullerus* prescribes even in *Gunshot-Wounds*, and which I us'd at the first Dressing, on the Day of the Battle of *Marseils*, without having observ'd any evil consequence of my so doing: For besides, a *Good Method*, which may be call'd the Strength and chief Instrument of a Workman, it is of high concern to understand, and to know how to choose Remedies that agree with the Temper of the Parts to which they are apply'd, and to maintain them: But it proves often a very difficult Task to satisfy *this Intention*.

As there is an admirable variety of *Constitutions*, so it would seem, that it were necessary to use different Remedies to Wounds of the same Nature, and of the same Parts, in different Subjects: The *Sex*, *Age*, and *Season* must also be consider'd. I have likewise observ'd in my Travels, by People of different Nations that have been under my Hands, that divers *Climates* require *particular Applications*, in certain Circumstances, necessary to the Cure of Wounds: For the Constitutions of Men depend chiefly on the Countries they inhabit; on their *Situation*, high or low, dry or moist, the *Winds* that rule, the *Food* and *Water* that they take: So that they differ among themselves according as the *Heavens* look upon them with different *Aspects*.

But not to search any further into these things, which can't be contain'd within the Limits prescrib'd to this little Work, and don't properly belong to my *Subject*; I will only say, that it is easy enough to distinguish a proper Remedy from one that is not so: That which corrupts and depraves the *Natural Balsam*, is known by looking into the Wound; from which, if there proceeds a strong and *Stinking Vapour*, 'tis a sign that the Matter is not concocted, for that it is thin, blackish, too plentiful, watery, and of an offensive Smell.

The *Flesh* likewise has its peculiar Signs; it is dull of feeling, and sometimes is cover'd

with another *proud* Flesh : Oftentimes there is to be seen over all the Wound, a certain black or white *Filth*, which some, as I have often known, scrape or cut off at every Dressing, whereby the Wound is enlarg'd, and the Cure delay'd : Others imputing it to the vicious Temperament and ill Disposition of the Patient's Body, have recourse to Purgatives, which occasion still more new Accidents, such as *Fevers*, &c.

But be this as it will, 'tis certain that we ought not always to delay till the last, before we change the Remedy ; our Smell and our Sight alone are sufficient to direct us on this Occasion : *Hippocrates* orders a Medicine to be chang'd, when it does not what it ought, or was design'd for.

But we must not, on the other hand, fall into the contrary Extremity of changing the *Ointments*, sometimes once, and often twice every Day ; not giving time to a Remedy to act, and exert its Vertue on the Part to which 'tis apply'd : 'Tis necessary that the wounded Part draw as it were Nourishment from the Medicine, and therefore it must have a requisite time allowed it for that Purpose : It must, if I may be allow'd so to speak, amalgamate with the *Nutricious Juice* of the Part ; or at least, if it don't encrease its Quantity, it ought to preserve it in the natural State, and when fallen therefrom, restore it again. To be capable of these Effects, it must be endow'd with

with a volatil and oily Spirit, viscous and temperate, as *Balsams* and *Vulneratio's* are, which I have us'd with very good Success.

I have often experienc'd on many Occasions, in several Hospitals, and chiefly in this, and that in very considerable Cases, that after I had in vain us'd many Remedies authoriz'd by *Custom*, the *Balsam* describ'd in the *Sacred Writings*, has had surprizing Effects ; and that Members at the Point of being cut off, have been thereby cur'd with much Ease. This Hospital of *Brianston* might afford many Instances of the Truth hereof, but I shall content my self with the two following.

CHAP. VI.

An Observation of a very considerable Case.

A Surgeon of this Hospital, being one of those who was most employ'd in dressing the wounded, by Accident had a *Thorn* run into the middle Finger of his right Hand, which pierc'd the Tendon of the Muscle that bends it : His whole Hand and Arm were attack'd with very troublesome Symptoms, accompany'd with a continual Fever, extreamly violent, and an unsufferable Pain.

Five or six Days past before I had notice of this Accident ; and all the Symptoms were at the very worst : I found all things in a de-

plorable Condition, the Arm swell'd as big as one Leg, the Hand of a monstrous Size, and the Finger as great as ones Arm; many Cavities were in the inward Part thereof, and some in the outward, from which issued a serous Matter; there was another large *Sinus* under the *Musculus palmaris*, with an Orifice near the Roots of the Fingers.

I immediately laid open the Finger on the inward Part, from one end to the other, and found the *Tendon* swell'd and corrupted: I did not enlarge the Orifices on the outward Part, nor that of the Palm, hoping that all these would be well, if I could but overcome the Accidents.

He was let Blood, and had a *Clyster* given him, tho' somewhat too late; he observ'd an exact Course of *Diet*, and was dress'd with the Balsam of *Arcæus*: Next Morning when I took off the Dressings, I was surpriz'd, as I had been the Day preceeding, with a Vapor of an intolerable Smell; the Lips of the Wound were turned outward, which made me despair of a Cure, and judge it would be necessary to cut off the Hand: The Matter remain'd undigested, the *Fever*, the *Pain*, and the *Swelling* continu'd as before; so I dress'd him in the same manner as the Day before, with addition only of a little Spirit of Wine. The *Bleeding* was repeated, and also the *Clyster*.

The day following the Wound was in the same Condition, only the Corruption appeard

to encrease : And we were of Opinion that nothing but *Amputation* could save his Life : But for as much as Art and Reason dictates, that the preservation of the Members ought to be endeavour'd as much as possible ; and as we are oblig'd in Conscience to try all Remedies before we come to that Extremity, I resolv'd forthwith to change the Medicines, judging rightly, that what had been us'd might have occasion'd this depravation of the *Salts* ; whence it was to be fear'd a total Corruption of the *Nutritious Juice* might follow.

With this view I us'd the *Balsam* of the *Scriptures*, mixt with a third Part of that of *Arcæus* ; in this I wetted the Pledgits, which I apply'd very warm over all the Wound, and upon the *Sinns*'s : I pour'd some of it also into the *Sinus* of the *Musculus palmaris*, and upon it I put a Plaister of *Diapalma* dissolv'd in *Oil of Roses* and good *Vinegar*.

On the next Day after this we found all things much chang'd to the better : The *Fever* and *Pain* were lessen'd, and there was nothing of so ill a Smell as before.

I question not but the *Fever* is a Symptom troublesom enough, and able to cause all these Effects ; and that by the Motion it excites in the Blood, it separates saline and sulphureous Juices, that by irritating the Fibres may occasion that turning out of the Lips of the Wound, their Swelling, and that insupportable Smell : But it can't on the other side be deny'd, that

outward Remedies contribute much to procure that Fermentation and Corruption in the wounded Part, when they are such as putrify, because they dissolve the Blood and other Liquors, causing *Irritations, Corruptions*, and great *Suppurations*, and destroys the Temperament of the Parts to which they are apply'd. Whereas when Balsamick and Spirituous Medicines are us'd, they produce quite contrary Effects: For by allaying the Sharpness of the Humours, and making the Blood fluid, they resist Corruption, dry up the Moisture, and in the Place where they are apply'd by the *Fever*.

In fine, whether it was by this, or any other Way, 'tis certain that the *Change* of the Medicine here produc'd a notable Alteration on our Patient; for tho' the *Fever* appear'd but very little abated by all that I had formerly done, the very next Day after this, the Lips begun to come nearer together, the Pain and Defluxion ceas'd, and which is most of all, the ill Smell was quite vanish'd; so that in 5 or 6 Days he was past all Danger, and the Cure was compleated in a little time after.

M. le Clerc, Physician to the King, in his *Compleat Surgery*, commends much the Samaritan Balsam, to which we have given the Title of, *The Balsam of the Holy Scriptures*; and the Approbation of such a Man is sufficient to justify its Use. So I reckon 'twill not be improper to subjoyn here the Description of another compound *Samaritan Balsam* of an admirable

mirable Vertue. It is made up of equal Parts of Spanish Wine and Oil of Roses to each Pound, of which mixture two Ounces of Suggarcandy, and as much Honey of Violets must be added, and all boil'd on a gentle Fire, and skim'd till the Wine is consum'd. This may be call'd the *Balsam of Balsams*, or the *Compound Samaritan Balsam*.

CHAP. VII.

An Observation of another Case.

MR. *Vert* the Younger, an Ensign of the Company of M. *de Beauvet*, Lieutenant of the King at *Briançon*, and Commander of the Second Batallion of *Sault*, had no less Reason to applaud my *Method*, and the good Effects of my *Remedy*, than the Person we discours'd of in the preceeding Chapter.

He was wounded with a Sword at *Pragellas*, in the outward Part of the left *Arm*, near the bending of the *Elbow*. The Wound was at first neglected, being not well dress'd; for without dilating it in any manner, a *Tent* was thrust into it as long as it could possibly receive; which occasion'd such dismal Accidents, that the Patient thought of nothing but losing both his *Arm* and his *Life*. In the inward part of the *Arm*, opposite to the Wound, Matter was collected, and *Abcesses* form'd, which

which oblig'd him to consult the principal Surgeons of the Regiments, who thought it convenient to make an *Opening* in that Part ; which accordingly was done. By the large and deep *Incisions* that were made, the *Artery* was opened ; so that they were oblig'd to use the *actual Cautery* to stop the Bleeding : By this means the Wound was enlarg'd, and the Pain and the Accidents encreas'd.

The first Wound was still dress'd as before, with *Tents* ; but the wounded Person having kept his Bed for fifty Days, and his Wounds being still in a very wretched Condition, he was advis'd by the abovemention'd Gentleman *M. de Beauvet*, to cause himself to be transported to *Briançon*, to try if there he might find any Help. Accordingly he was committed to my Care, and I found the inward or lower Wound the length of a large Span, and four or five Fingers-breadth wide : The *Artery* and *Tendons* were uncover'd : The ancient or outward Wound, whose Orifice was very streight, had in it a pretty long *Tent*, which shut up the passage of three or four *Sinus's* that took up all the Joynt.

The Arm and Hand were Oedematous, being much swell'd, and painful. I began by making an Incision in the Wound on the outward Part, whereby I discovered the Orifices of the *Sinus's*, into which I dropt a little of our *Balsam*, mixt as I formerly said, with some of that of *Arcæus*.

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The large and lower Wound was drest with the same Remedy: We us'd expulsive Compresses, to press together the Sides of the Cavities, which we keep on with a proper Bandage: And withal we laid aside the *Aromatick Wines* that had been us'd before upon all the Part, to his great Detriment.

Three Days after it had been drest in this Fashion, the most part of the Accidents disappear'd: He begun to rise up from his Bed, to eat his Victuals, and to gather Strength; all the deep *Cavities* were fill'd up; the *Artery*, the *Nerve*, and the *Tendons* were cover'd over; the *Pain*, the *Fluxion* and the *Oedematous Swelling* were quite gone; and by this powerful Incarnative the Cure was compleated in a Fortnight, with the Assistance of a little *Unguentum Apostolorum*, wherewith we sometimes use to consume the Flesh: After this he mounted his Horse, and went for the *Air* into his own Country.

This I may confidently affirm, as a certain Truth, that when the Balsam we speak of is genuin and unsophisticated, it may serve at the same time both for *Food* and *Medicine*, being made up only of *sweet Oyl* and *Wine*: And that it may be us'd not only for curing Wounds of the *Mouth*, of the *Tongue*, of the *Gullet* and *Wind-pipe*, and generally of all the *Breast*, but likewise in obstinate *Dysenteries*, and *Relaxations* of the *Fibres* of the *Ventricle*, in *Ulcers* thereof, and in those of the *Guts*,
and

and of all the *lower Belly*. For if we consider its Nature, we shall find it of a friendly Quality, and extreamly agreeable to our Constitution, as being compounded of such things as serve us daily for Food. *Sweet Oyl* softens, loosens, sweetens and penetrates; and when it is boil'd with *Wine*, which it devours as it were and consumes, retaining with its self all the Vertue thereof, it is enabled to perform all those Operations with much more Ease: It cuts, dissolves, strengthens, restores the Spirits, breeds Flesh, and is Astringent; all which our *Balsam* performs, being endow'd with the most useful Vertues of these Remedies, and containing a *Volatil, Oily, and Temperate Salt*, that is Astringent and Sarcotick: And if a little *Sugar* is boil'd with it, it becomes yet more excellent, is more Vulnerary and Balsamick, has no Acrimony, and is without either Smell or Taste.

Had this *Remedy*, how simple soever it may appear, produc'd such Effects in the hands of any other but my self, they wou'd without question have made a great Secret of its Composition, and tho' this had been known to many, yet they wou'd never have publish'd its *Vertues*.

It were mightily to be wish'd, that there were only *one Remedy*, which might be able to answer all Intentions, that we shou'd not be always oblig'd to have in the Patient's Chamber a whole *Apothecary's Shop*; which is often no less prejudicial to the *Purse*, than offensive to the *Smell*. Be-

Being about 6 Years ago at *Turin*, I cur'd a Gentleman of an inveterate Ulcer, that encompass'd all the Bottom of the *Uvula*: Many Surgeons had to no purpose us'd a great many Remedies: And I in like manner, after the use of some more with no better Success, bethought my self at length of my *Anodin Balsam*: In this I dipt a Linnen Rag ty'd to the end of a Probe, and therewith touch'd the Ulcer twice a Day: By this means, as I solemnly protest, in 12 or 15 Days the Ulcer was cur'd.

This *Remedy*, how Ancient soever it is, will appear New to many. However, 'tis certain, that *Hippocrates*, in complicated Fractures, us'd little Linnen Rags dipt in Oyl and Wine mixt together, to allay the Pain, and prevent Convulsions, which is a *Precedent* sufficient to invite our Imitation.

It hath been the Policy of almost all who ever wrote of Medicine, still to reserve something undiscover'd to themselves. I could name a great number of Authors, who have publish'd the Vertues of certain Remedies, whereof they have never given the *Composition*; or if they have, it has been in such *Ambiguous* and *Ænigmatical Terms*, that it is hard to understand any thing of it. And indeed I must acknowledge, that a Remedy, when it becomes common, how good soever it may be, loses much of its Esteem.

I have formerly said, that the Variety of *Constitutions*, and Diversity of wounded *Parts*,
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require sometimes a Difference of *Remedies*; to this we must have all due Regard: For it often falls out, that even the most excellent Medicines, are not capable to answer all our Expectations; especially when the Patient is of an ill Constitution, and the Distemper obstinate and troublesome.

However, it is not good to put too much Confidence in this *single Composition*, as if it were an Universal Remedy, if it any time the Success prove not answerable to our Desires: I own, that I have been oblig'd my self in such Cases, to boil in our *Balsam*, the greater Compound, Bugle, Sanicle, some Lavender, Clary, St. John's-Wort, and the lesser Moon-wort, which is a powerful Vulnerary, and very common in these Parts; and afterwards to give it some Consistence, with a third part of the *Balsam of Arcæus*: This *Composition* has done surprising things; it hath consum'd and remov'd *Fungus's* from Feet that had been entirely Frozen, and also from *Amputations*, which had withstood all other Remedies: It procures a good and moderate *Suppuration*, eases the Pain of *Wounds* in the *Nerves*, allays and resolves powerfully, fills up with Flesh in a small time; and in fine, an Embrocation therewith cures speedily *Bruises* of all sorts.

Tho' I have a great Esteem for these *Remedies*, and am confirm'd in my Opinion of their Excellency by a multitude of *Experiences* that I have had, yet I don't pretend to lay aside
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the Oyntments, Cerats, and Plaisters of Pharmacy; which may be of very great use, and are every Day employ'd with Success, by very skillful Persons in curing Wounds.

This only I will affirm, by the way; that the most part of Oyntments have a strong smell, that is not only disagreeable to the Wounded, but is also no less hurtful to the Wounds than offensive to the Smell, and tends very much to render them *putrid, sanious, and Virulent.*

There are also several Places, where they very unadvisedly use *Corrosive Sublimat, Arsenic,* and other things of a like Nature in the Cure of Wounds, not foreseeing their fatal Effects. But in this point we can't be too cautious: All the Parts of our Body are made up of *Veins, Arteries, Nerves, Lymphatick Vessels* and *Glands*, that are easily affected by whatever touches, and by means of the *Circulation*, convey to the *large Vessels* and the *Original* of the *Nerves*, the good or ill Qualities that are imparted to 'em. The *Contagion*, that is communicated to the Sheets of a Bed, wherein one that has the *Pox* or *Itch* has lain for a Night only, will imprint its Characters on a sound Person, that afterwards lyes in 'em; tho' the impure Matter touch only the *Scarf-skin*, and is to Appearance much less active than *Arsenic* or *Sublimat.*

The Unfaithfulness us'd in making up certain *Compositions*, which I have experienc'd on
some

some Occasions, hath oblig'd me to resolve to make up my self some that are more simple, and much more effectual.

Etmullerus, in his *Medicinal Surgery*, and many others before him, have complain'd of the prodigious number of Medicines used in Practice, and of the many *Plaisters*, *Ointments*, *Cerats*, and a thousand other useless things good for nothing, but to perplex the Mind of young Surgeons. That great Magazine of *Pharmacy* might be reduc'd to much narrower Bounds: Experience has convinc'd me of the truth of this; and there are at this time many Persons very expert in Chirurgical Practice, that are herein of my Opinion, some of whom think that one Remedy only may answer all; 'twere well if such a Method might be establish'd, for the good of the Wounded, and the convenience of Surgery.

But I am inclin'd to think, that no Man has yet gain'd that Point, which is extreamly hard to be attain'd, because of the diversity of Parts whereof we are compos'd, and the variety of Constitutions in different Persons: 'Tis this Consideration hinders me from crediting that Universal Remedy which a certain modern (otherwise a very able) Surgeon, at some distance from these Parts, hath endeavour'd to establish. But if I am not altogether of this last Opinion, I am yet much further from that of the Ancients, who have left us such a numerous List of Remedies, as can't be either com-
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mitted to the *Memory*, or retain'd therein. A great deal of Study and diligent Application is necessarily requir'd, in order to know their *Vertues* and *Properties*; for, to make the right use of a Medicine, we must know its *Nature* and *Effects*, not leaving the Success to Chance and the Fidelity of another, as is often done.

Moreover, 'tis very hard to believe that all these mighty Compositions are answerable in their Effects to the Expectations had of 'em; the numerous and differing Ingredients do oppose, alter, and destroy one-another. The simplest Things are most agreeable, and sympathize most with our Nature.

I could never yet learn, that *Solomon*, who had an universal Knowledge of all things, left behind him for the cure of Wounds, *Compositions* so perplexing, and stuff'd with such a number of Ingredients, as those which some use at this day: In his time 2 or 3 *Simples* suffic'd to make a Balsam, nothing inferiour to others now cry'd up as *Infallible Remedies*.

Balsams are recommended in the curing of Wounds by the *Ancients*, and almost all the *Moderns*, contrary to the Opinion of some that practise Surgery, who being Enemies to Antiquity, act (as the *Quacks* do) contrary to all manner of *Reason*; but an indiscrete Passion ought never to prevail over that which is justified and supported by *Experience*.

Tho' I don't approve of Medicines made up of numerous Ingredients, yet I have often
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us'd the *Styptick Plaister of Crollius*; which, though it may be accounted of this number, ought not at all to be laid aside: For when it is faithfully made up, it hath *Virtues* too effectual to be neglected, and not sought after. When I have a Mind to give it a softer Consistence, and reduce it to the form of an *Oyntment*, that I may make use of it in dressing of Wounds, I melt it with the *Balsam* which I have describ'd; and sometimes with the *Oyl of St. John's-Wort*, prepar'd with *Gum-Elemy*.

It will answer all the Expectations that may be had of it, in curing Wounds and Ulcers: It allays Pain, cleanses, and breeds Flesh: Those who will give themselves the trouble to examine its *Composition* and *Ingredients*, will agree with me, that 'tis not impossible, but it may have all these *Vertues*.

I have sometimes us'd, and also in this *Hospital*, a *Red Balsam* made with an Ounce of *Red Saunders*, and *White Wax*; two Ounces of *Venice Turpentine*, *Oyl of Roses*, and *Rose-water*, and a Dram of *Sal-Armoniac*; all mixt together, and hastily boil'd, and kept for use: It resists *Putrefaction*, and lessens *Suppuration*.

The *Simple digestive* is a Remedy that I commonly use to bring away the Escar in Gunshot-Wounds, mixing always therewith a little of the Yolk of an Egg, and some Spirit of *Wine*: I renew it every Day, because it soon corrupts, by Reason of the Yolk of the Egg.

Turpentine is a simple Balsam, which is excellent

cellent for the curing of Wounds: The Country People about *Brianſon*, who gather a great quantity thereof from the Wood of the *Larch-Tree*, uſe nothing elſe but this *ſingle Remedy*, without any mixture, for the Cure of their Wounds: Certain it is, that they who are accuſtom'd to mix with it a great number of *Ingredients*, and *Catagmatick Powders*, ſpoil its Vertue, and can expect nothing from it but bad Succeſs.

Arcaus his Baſam us'd in ſo many Places, is not to be deſpis'd when rightly compos'd: But 'tis convenient to remark, that it agrees not to all *Diſtempers*, nor all *Parts* of the *Body*, as was obſerv'd in the firſt Remark of this third Part: Which I have alſo experienc'd ſince, on many other Occaſions.

Baſilicon is one of the moſt common Oyntments, and moſt us'd: I ſometimes employ it to receive the Powders that I think neceſſary, either to Irritate, or procure Suppuration when I judge it convenient: Otherwiſe I don't much deal with it.

It ſometimes falls out, by the uſe of *Sarcotick Baſams*, that the Fleſh grows ſo faſt, as to oblige us to conſume it; and alſo Orifices of the *Lymphatick Veſſels* oftentimes raiſe up certain *Protuberances*, that together with the ſuperfluous Fleſh, forms as it were a reſemblance of *Muſkrooms*, which ſome endeavour to remove with *Catharticks*, but to no purpoſe.

I have

I have observ'd, that to touch the *Excre-scence* all over with a Dissolution of the *Caustic Stone*, is much better than any other means that can be us'd for this Intention, provided the Application is renewed so oft as is needful. I have in eight or ten Days consumed *Mushrooms* as big as my Fist, which the ordinary Powders cou'd not have done in two Months. It may be seen in several Places of the second Part of this Book, that I have us'd it with a quick and happy Success, when there was Occasion to take off the *Callosity* happening to Wounds, in order to procure a Reunion: And when these kind of *Protuberances* have but a dull Sense, I don't scruple to sprinkle upon them the 'foresaid *Caustic* pulveriz'd, or to apply *Pledgits* dipt in a Dissolution thereof, till I have procur'd such Smoothness as is requisite in order to a laudable *Cicatrix*, and have restor'd the Feeling of the Part.

When I only intended to bring to an Equality the luxuriant Flesh, and procure a firm and handsom Scar, I have us'd with good Success *Unguentum Apostolorum*, mix'd with a little *Unguentum Egyptiacum*: This destroys proud Flesh, and is an excellent Medicine for *Ulcers*, to be apply'd before the use of powerful *Sarcoticks*; for it quickens the Flesh, consumes superfluous Moisture, and resists Putrefaction.

I have always mightily approv'd the use of the *Spirit of Wine*, and have often caus'd to dress Wounds of the Extremities with this
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Remedy only : 'Tis true, it delays *Suppuration*, and protracts the coming away of the *Slough* in *Gunshot-Wounds* ; but it powerfully resists *Putrefaction*, corroborates and quickens, hinders *Excessive Suppuration*, and the *Dissolution* of the *Nerves*, in which *putrifying Medicines* are very hurtful.

The *Emplastrum Tripharmacum Fuberti*, made of *Litharge*, *Oil* and *Vinegar*, to which I add a little scrap'd *Lint*, is admirably good to digest a *Wound*, and bring it to *Suppuration*, without occasioning great *Putrefaction*. It mightily dissolves *Contusions*, and its use is of great benefit.

It is certainly very convenient that a Surgeon have some *peculiar Remedy*, the Vertues whereof he is well acquainted with, to which he may have recourse in obstinate and troublesome Accidents that sometimes follow upon Wounds, and will not yield to the *Common Remedies*. It is likewise oftentimes expedient to change the Medicines, as I have formerly said, and not always to be confin'd to one thing : For the Fondness one may have for a *Balsam* or an *Oyntment*, that possibly may have done very good Service on many Occasions, ought not to prevail so as to make us employ it in all Times and Places : The *best* and most *approv'd Remedies* have not always the same Effects, or the same Success : For certain it is that not meeting with the same *Constitution* in all Persons, 'tis impossible they can have the same *Operations*.

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Reflect. I have often observ'd, and it daily falls out, that *Quacks*, who have neither *Skill* nor *Experience*, have succeeded in the Curing several Distempers, after they were given over by *Profess'd Surgeons*, who had bestow'd much time, and us'd many Remedies to no purpose: But I don't at all think it strange, for those to leave *Nature* to her self on such occasions; and 'tis she only that works these Miracles, that are unjustly attributed to them, and give such Repute to their *Remedies*.

Not, but that acting without any Rule, they commit very *gross Blunders*; being unable with all their *Balsams* to correct, overcome, yea, or foresee the Accidents that oftentimes follow upon Wounds; for all their Skill extends no further than to the making up of their Remedies; and that which can't be cur'd by these, passes with them for incurable. It is not so with regular Surgeons; they know the *Causes* of *Accidents*, and apply thereto the necessary *Remedies*, without abandoning the *wretched Patient* to this ill *Fate*.

It is indeed a notorious Shame, that a wounded Person should go from under their Hands, to be cur'd by a *Quack*, a *Clown*, or a *simple Woman*. I have known in several Places such, who by the Sale of their Remedies have acquir'd great Reputation; whether by the Confidence that wounded People had of the Vertue of their *Balsams*; or for a Reason that appear'd very convincing, to wit, that though they

they neither us'd *Tents* or *Dilaters*; yea, in very exprefs terms discharg'd them, yet they often succeeded in their Cures, to the Disgrace of *Surgery*. However, it must needs be, that the Inventers of these *Balsams* did discover some Inconveniencies in the use of *Tents*, since they have altogether forbidden to employ 'em: Now, I suppose it will easily be believ'd, that those Men or Women who are employed in felling them, are not the first Authors; and that those who first us'd 'em, were not altogether destitute of Knowledge.

Diapalma is one of the Plaisters most commonly us'd in the Hospitals of the Army: When it is rightly made up and dissolved, as was said before, it is not to be despis'd: And I add to it, when the Case requires, a little of *Emplastrum de Betonica*.

Emplastrum Divinum, *Manus del Gratia dei*, &c. are Plaisters of a singular Vertue; but very seldom to be found made up with all the requisite Fidelity.

I have nothing in particular to say concerning *Cataplasms*, according to the ordinary Method: It belongs to the prudent Surgeon to give them what Form and Qualities he thinks fittest for the present Occasion.

I have often found much more Advantage from the Use of *Emplastrum Tripharmacum* spoken of before, and *Diapalma dissolv'd*, which don't so much clog the Parts to which they are apply'd, nor hinder Transpiration. *Anodine*

Cataplasms, such as that of the *Crum of Bread*, and others of that nature, are very useful in great *Inflammations* of Wounds, after the necessary *Diversions* have been perform'd; they allay the Heat of the *Blood*, extinguish the Acrimony of *Salts*, and relaxate the *Skin*. *Unguentum Santalinum* may likewise be us'd to good Purpose: And when the Pain is partly remov'd, I then use *Dissolving Medicines*, which at first might have encreas'd the *Inflammation* and *Fermentation*.

Before I put an end to this Discourse, I must remark, that it is very requisite for a Surgeon of a Field-Hospital, or of an Army, who may sometimes be shut up in a besieg'd Place, ill furnish'd with Medicines for the use of the Wounded, to understand how to make up simple and easy Remedies with few Things, such as those beforemention'd for *Wounds*, and these of which I shall afterwards speak for *Ulcers*, which in time of need may serve for all: *Brandy*, which is the ordinary Refuge in want of other Remedies, may also be lacking. 'Tis the part of a prudent Surgeon wisely to provide for this necessity, and to accommodate himself to the time, by dressing the wounded seldom, and according to our *Method*: Thus fewer Medicines will be us'd, a little will go a great way, and every one will have reason to be satisfy'd.

A great number of *Abscesses*, *Wounds*, *Ulcers* and *Fractures* of all sorts, that have been under our Hands in this Hospital, were cured

according to this *Method*; wherein there is nothing but what is *Gentle* and *Easy*. All the *Amputations* that we have perform'd were dress'd only once in two or three Days, during the whole time of the Cure, with our simple Remedies, and that with very good Success. Those who have been so happy as to avoid the malignant Influence of the Contagious Steams that have so long prevail'd in the *Air*, have experienc'd the Comfortableness of this *Method*, by the suddenness of their Cure, compleated without any *Exfoliation* of the Extremities of the Bones; which infallibly had followed on frequent Dressings.

I commonly use a *Button of Vitroil* to cauterize the Vessels, and stop the *Bleeding*, which I ever found successful; neither did the flux of Blood ever return. The two Stitches with a Needle, made cross-wise upon the *Vein* and *Artery* are very sure; this is a common Way, which I have sometimes, and still do follow: But the Falling of that *Suture* is sometimes so tedious, that it exhausts the Patience, both of the wounded Person and the Surgeon; tho' after all, its use is very safe: For the *Bleeding* is less to be fear'd this Way, which is quick and gentle, than any other. The *actual Cautey* is now out of use, unless it be in *Amputations* perform'd on the *Dead*.

Tho' in the Cures of the *Penetrating Wounds* of the *Thorax*, spoken of in my second Part, I was not oblig'd to perform the *Operation* of

the *Empyema*, yet I have had Occasion to use it on many other wounded Persons, since I embrac'd this *Method*: For take what Way, or what Care you will, it is oftentimes absolutely necessary. When the Cavity of the Breast is full of Blood, and the Orifice of the Wound high, it is not then safe to attempt to empty it by the way of *Urine*, which might be too slow, and is too uncertain; but we must without delay fall about that *Operation*.

I will not here describe the Manner of performing this, or other *Operations*. M. *Verduc*, and M. *Charriere*, have lately afforded sufficient Means of Instruction in this Affair. This I will only say on the Subject in hand, that this *Operation* ought always to be perform'd on that Side where the Effusion of the Blood is; and if it is found to have been on both Sides, and one *Opening* does not give the Ease that is expected, tho' the *extravasated Blood* is discharg'd, we must make an *Opening* also on the other Side, after the first is carefully clos'd up, and the Patient has had some time allow'd to recover his Strength. Sometimes I am oblig'd to use *Tents* for the first Day, lest the Division of the *Pleura*, that was but newly made, should unite again; and so there would be necessity of a new *Operation* the next Day, to let out that *Blood*, which being coagulated, could not at first be brought away, and can hardly be evacuated by any other means. As for those *Openings* made in the Body by *Bullets*
in

Gunshot Wounds, there is no need of *Tents* to keep 'em open, for they cannot be clos'd up till the *Escar* is separated.

I have already said, that in the *Openings* or *Incisions* which I make to evacuate the *Collections* of *Matter*, or *Abscesses* in the *Thorax*, occasion'd by a *Pleurisie* or *Peripneumonia*, I use *Tents* without a *Point*, or blunt *Tents*, in the first *Days*, to keep the *Matter* from coming out all at once, otherwise the *Place* that was possess'd by the *Matter* wou'd soon be fill'd with *Air*; which being ever colder than the inward *Parts* of the *Body*, might occasion *Coagulations*, *Suffocations*, and *Swoonings*. Moreover, when a great deal of *Blood* is extravasated, it must be let out by degrees. Now on such occasions *Tents* are necessary: But that being once over, I lay them aside for good and all, that a free *Passage* may be given to the *Matter*, that the *Generation* of a *Callosity*, about the *Sides* of the *Opening* may be prevented, and that nothing may be left to hinder the *Reunion*.

By this *Method* the wretched *Patient* is delivered from a great deal of *Trouble*, *Pain* and *Vexation*; being enabled hereby to enjoy a *Repose*, which otherwise he could never have expected: And by freeing him thus from *Pain*, what innumerable *Accidents* are avoided?

Had not *Charity* and *Patience* prevail'd in this *Place*, and restrain'd us from cutting off, without further delay, *Members* that were only gangren'd by an *Extremity* of *Cold*, as other

Surgeons of *Hospitals* have done, this of *Brianſon*, won'd have been full of Invalids. For about the end of the Campaign, in the Years 1692, and 1693, a great number of ſick Perſons were brought thither from *Pignerol* and *Oulx*, who in paſſing the Mountain *Genevre*, were in ſuch manner ſeiz'd and penetrated with the Cold, in the Extremities of the Body, that a total *Loſs* of Senſe, and alſo a *Gangrene* did enſue; the moſt part of whom were nevertheless cur'd without *Amputation*, thoſe only excepted that had been before worn out with long Sickneſs.

CHAP. VIII.

Of Gunſhot Wounds.

SINCE *Wounds* are the principal Subject of this little Treatiſe, 'tis not proper that thoſe inflicted by *Fire-Arms* ſhould here be forgotten. Wherefore I ſhall ſay ſomething of them in this Chapter.

Gunſhot Wounds are acknowledged by all to be very troubleſome, becauſe of the *Tearing*, and of the *Diſordering* the *Fleſh*, occaſion'd by the *Bullet*, the ſtop put to the *Circulation* ſo far as they reach, the *Havock* that attends them, and the *Obſtructions* they occaſion; all which are but too too able to produce very grievous *Accidents*. *Fluxions*, *Mortifications* and *Gangrenes* are here very much to be feared;

to prevent which, I at first give breathing to the Wound with pretty large and deep Incisions, according as the Nature of the Part, and bigness of the Wound do require. I do my utmost to draw out the *Extraneous Bodies*, if there are any, putting the wounded Person in the same posture wherein he received the Wound: Afterwards I dress it according to my Method, and seasonably perform the requisite Diversions. A *Flux of Blood* is almost never to be fear'd till the Escar be fallen, unless some great Vessel be wounded.

Nevertheless I can truly affirm, that there never happened to me any Flux of Blood in *Gunshot-Wounds*, since I laid aside the use of *Tents*; for according as the Escar is dissolv'd and comes away, a new *Flesh* is bred without any hindrance, and covers the wounded Vessels, which can't be when it is press'd by *Tents*. This is a Truth so evident, that I hope no Man will call it in question.

Diet ought always to be rightly order'd; and if notwithstanding all our Care and Precaution, dangerous Symptoms do follow, we must endeavour to ease and relieve the Part, by making many *Scarrifications* thereon, in order to give a Vent to the *extravasated Blood*, and to hinder its *Stay* and *Fermentation*. But considering that most of the Accidents that happen, are more or less troublesome, according to the different bigness of the *Contusion*, I do what I can to dissolve it as soon as possible,

ble, and to restore the *Humors* to their usual Motion; for according to the Definition we have laid down in our first Part, a Contusion is a Disorder of the Fibres and little Vessels, that changes the Regularity and Situation of the Pores: But this is often accompany'd with an Effusion, or Extravasation of Blood, which pressing upon the Vessels, hinders the Course and Motion of the *Humors* and *Spirits*. The Accidents that follow in this last Case, are much more troublesome; wherefore, without expecting the Effects of dissolving Medicines, I forthwith have recourse to Scarrifications; for Mortifications oftentimes surprize of a sudden. But, after all, as things come not always to this pass, so I sometimes use Dissolving Medicines.

We have known a very warm Embrocation with Oyl of *Roses*, to which was added a little of that of *Turpentine* and some Spirit of *Wine*, produce exceeding good Effects: It begins the Dissolution, relaxates the Skin, and disposes the Part to receive afterwards the Impression of the Plaisters; such as the *Tripharmacum Fuberti*, *Diapalma* dissolv'd as we have ordered, fresh Cow-dung fry'd with volatil Salts, as also that of other Animals: The Roots of *Briony* infus'd in Spirit of *Wine* are in this Case very proper.

Dissolving Cataplasms are sometimes very seasonable, provided they be not too emplastic; and if in spite of all our Care a Gangrene should follow, we must use the Remedies

dies which were describ'd under that Head. But this Accident never yet fell out in any of the Wounds, whereof we had the first Dressing; and I can averr, that tho' *simple Gunshot-Wounds* are dress'd in this Hospital as *Excoriations* only, yet are they always cur'd with a surprizing Quickness; we however still perform all the necessary Diversions. The Remedies we us'd may be seen in the Relation of the Cures.

CHAP. IX.

Of Burnings.

THE *Accidents* occasion'd by *Gun-powder* might afford us Subject of much Discourse upon *Burnings*; but I design only to speak a Word or two of 'em, that I may thence have occasion to point forth the *Remedies* I use in their Cure.

The *Tallow* of which they make Candles, melted with the *Oyl* of *Walnuts* to the Consistence of an Oyntment, will answer all the Intentions propos'd in this Matter. I have not found any thing either so effectual, or so easie: It will terminate the *Empyema*, and cures generally all sorts of *Burns* whatever, in a very short time: In fine, this is the Remedy which we ordinarily use. *Benjamin*, *Unguentum Populeum*, and the *Yolks* of *Eggs*, may be us'd when this can't be had. There are but very

few Surgeons, who have not always some *particular Remedy* for *Burnings*, some more, some less effectual. *Etmullerus* and other Authors have given a great number of very good ones; and *M. Verduc*, in this *Patheology*, explains their *Nature* and their *Differences* in a very clear and intelligible way.

A little time after the Declaration of War, an Accident happen'd in the Valleys of *Lucerne*, which afforded us many frightful Spectacles. The Guard-house of the *Fort of Tour*, call'd *St. Maries*, fell down upon about thirty Soldiers, as they were warming themselves about a great Fire; of whom twenty, or thereabouts, were buried with the Ruines, in the Chimney, by the Fire. A good deal of time was spent before they could clear away the Stones and the Rubbish, and get out these poor wretched Creatures. Some were found dead and roasted; others were brought into the Hospital of *Lucerne*. A Plaister as big as a Bed-sheet, was scarcely sufficient to dress them. Two or three dy'd, and five or six were cur'd by the assistance of *Cordials*, *Diaphoreticks*, and *absorbing Medicines*, taken inwardly to facilitate the opening of Obstructions; while outwardly the most proper *Oyntments* were us'd to allay the Pain, and dissipate the corrupt Matter, to which I caus'd to add a little *Camphire* and some *Yolks of Eggs* mixt together: To conclude, after very frightful Suppurations, the Cure was compleated; but they

they were, for the most part, like so many Serpents, all oblig'd to cast and change their Skin.

CHAP: X.

Of Ulcers.

*E**T* *mullerus* is of Opinion, that the Cause of *Ulcers* proceeds from an *Acid*, whereby the immediate Nourishment distributed to the Part is corrupted, and losing its Oily and Balsamick Nature, becomes sore, and altogether unfriendly to the Part that it ought to nourish, and so considerably encrease the *Acid Ferment*, and augment its Activity.

According to this Definition, a *Topical Remedy* well accommodated to the kind of the Disease, and that destroys *Acids*, and repairs the Balsamick Nature of the *Nutritious Juice*, is sufficient to bring this sort of Distemper to a perfect Cure. I have often in this manner cured many poor afflicted Creatures, without the use of *General Remedies*. But not to make any change in the manner of Dressing: I say in the first Place, that *Ulcers* are but too common in the *Hospitals* of the *Army*: The ill Diet of the Soldiers, their *Irregularities*, their *Fatigues*, and their unavoidable *Nastiness*, are more than enough to torment such as are very obstinate, and difficult to be cur'd. Secondly, we have in this *Hospital* follow'd a *Method*, whereby in a little time a great number of

of *Ulcers* were cur'd: For after *General Remedies* and some slight *Diversions*, I us'd a Decoction of *Walnut-Leaves* with a little *Sugar*; in this I dipt *Pledgits*, which I apply'd moderately hot, letting often 3 Days pass over without taking off that Dressing.

Many Persons in *France*, I know, have kept this *Composition* as a great Secret; but I thought it would have been inconsistent with *Charity*, not to publish its Vertues, and the manner of making it.

I have experienc'd on a *thousand* Occasions, that it mightily cleanses, and breeds *Flesh*; mortifies and devours *Acidities*, resists *Putrefaction*, plentiful *Suppurations*, and consumes the *Moisture* that hinders *Re-union*: In fine, it hath Vertues that surpass Belief, and its Effect is more quick than that of all the *Oyntments*, and *Cerats*, with which *Apothecaries* Shops are stor'd, and which are commonly us'd in curing of *Ulcers*, but often to no purpose. In the mean time, I dare affirm, and that truly, that in the Places where I have us'd it, all such *Ulcers* as were formerly thought *Incurable*, were thereby cur'd in a very short time.

Tho' I do but very seldom make any use of *Injections*, nevertheless, I have been sometimes oblig'd to have recourse to this Remedy, from which I have reap'd more Advantage than from all those us'd in Practice; and especially in hollow and deep *Ulcers*: As also
in.

in large *Abscesses* of fleshy Parts, where there is great *Putrefaction*, and sometimes a considerable Cavity.

The *Scriptural Balsam*, spoken of before, which is only an equal quantity of *Oyl* and *Wine*, boil'd to the consumption of the latter, is also an excellent Medicine for *Ulcers*: With this Remedy alone I have cur'd great numbers.

Many *Authors* there are, who have left us an Account of a vast number of *Remedies* which are us'd in *Hospitals*; for which Reason I will say nothing of them here, where my Design is only to make known those I use in my own Practice.

By what I have said of the seldom dressing of *Wounds*, it may be easily guess'd, that I am not for frequent Dressing of *Ulcers*: For if they proceed from an *Acid*, as *Etmullerus* thinks, we ought to endeavour not to promote the Coagulation, by admitting the *Acid* of the *Air*, which by insinuating its pointed Articles into *Ulcers*, corroborates the Cause, renders 'em putrid, sanious, and incurable.

'Tis not without ground, that *Galen*, as hath been declar'd already in the first Part, in his 4th Book of the *Composition of Medicines*, Chap. 4, hath order'd to dress *Ulcers* but once in three Days: And I believe it would be yet better, to do it more seldom; unless some urgent Cause require it; such as the Seasons of the Year, the badness of the Humors, or some other evil Disposition of Body.

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We may observe, that Suppurative Medicines, us'd in dressing *Ulcers*, are extreamly pernicious: For the *Matter* is but too plentiful, and requires to be lessen'd, and dry'd up, if we desire a perfect Cure. The Application of *Topical Remedies*, when well chosen, oftentimes performs in this Case what neither *Diversions* nor *Internal Medicines* could do; and of such there are good store: But it depends only on the *Prudence* and *Skill* of him that prescribes 'em, to use them seasonably; for we can expect no *desirable Effects*, either from one kind or another, but according as they are properly apply'd.

Unguentum Apostolorum mix'd with *Unguentum Egyptiacum*, is not to be despis'd: It consumes all the corrupted, and the superfluous Flesh, I have often apply'd this, before I made use of our *Lotion*.

The *Aqua Phagedenica*, or *Lime-water*, mixt with *Salt of Lead*, or *Sal-Armoniac*, and *Aqua Celestis*, have also serv'd us on such Occasions; for if one Remedy fails, as it often falls out, we must have Recourse to another.

CHAP. XI.

Of Simple Fractures.

IN the Cure of *Simple Fractures*, commonly four things are propos'd to be done. First,

to set the Bone, or bring it to its natural Figure. Secondly, to keep it so, with fit Dressings. Thirdly, to take care of the neighbouring Parts. And fourthly, to give the afflicted Member a convenient Posture.

First then, *Extension* is almost ever necessary, to reduce the *Bone* to its natural State, which is to be more or less vigorous, according to the *Quality* of the *Fracture*, the *Nature* of the *Broken Part*, or the *Age* and *Sex* of the Patient: But we must observe not to make *Extension*, when *Inflammation*, or other *Accidents* appear, till they are either remov'd, or considerably abated.

As to the second thing, which is the *necessary Dressings*, I have always observ'd the Direction of *Hippocrates*, in using three *Bands*, as he did, in *Simple Fractures*: *Celsus* employ'd six, but these, in my Opinion, were too many for the Part: Wherefore, I chose rather to follow the Practice of *Hippocrates*, approv'd of by *Galen*, in the *fifth Chapter* of his *Book of Method*.

Most of those who practise *Surgery* differ in the Use of *Topical Remedies*. Some apply all *Dry*: As for my self, who am not confin'd to the Way of the *Ancients* in this Matter, I have found that the *Glair* and *Yolk* of an *Egg*, beat up together with a little *Oyl of Roses*, will answer all Expectations: It is *Astringent*, *Anodyne*, and *Dissolving*: The rest of the *Dressings* I use dry, unless an *Inflammation*, or some
such

such thing, oblige me to the contrary: For as it is my Way to dress my Patient as seldom as possible, I apply the Bandage dry, that it may be the faster, and less apt to slacken.

Plaisters, and *Emplastick Medicines* employ'd in *Fractures*, stop the *Pores* of the *Skin*, keep in the *Vapours* that occasion *Itching*, and so oblige to take off the *Dressings* oftner than is expedient; wherefore I endeavour to avoid whatever may cause that Accident.

Hippocrates us'd to take off the *Dressings* three Days after Application. Many stay till the seventh; and for my self, I delay it as long as ever I can. Experience has taught me, that it is most advantageous for the Patient not to be dress'd till the *Callus* is entirely form'd, unless the Bands are loosen'd, or some unexpected Accident hath fallen out, such as *Itching*, and disordering of the reduc'd Bones. I could make up a great number of Soldiers that have departed from this *Hospital*, cur'd of *Simple Fractures* of all sorts, according to my *Method*; but I shall content my self with the Relation of the following Cure.

A Soldier call'd *La Tulippe*, of the Regiment of *Conde*, was brought to this Place, having his right *Thigh-Bone* broken about the middle and shatter'd: This unlucky Accident befel him as he was sleeping upon *Mount Genevre*, under a Tree, which at the same time was cut down, and fell upon his *Thigh*. So soon as he was committed to my Care, I re-
duc'd

duc'd the Bone by a vigorous Extension, and apply'd a Linnen Cloath dipt in an Egg, beat up with a little Oyl of *Roses*, and a small quantity of good *Vinegar*, upon which I put some *Compresses*, then 3 or 4 pretty long *Rollers*, with some *Splints* of Past-board, encompassing all with a piece of Past-board; and last of all, the *Funks*, with what belongs to 'em. *Diversions* were perform'd, and a moderate *Diet* order'd. I let the *Dressings* stay on for 20 Days, at the end of which I found the Part in its right and natural Disposition. At this Dressing I us'd *Emplastrum pro Fracturis*, and apply'd the *Bandage* as before, with *Splints* of Wood, and the other things necessary. In 20 Days after I took off the *Dressings* a 2d time, and found all things to my Satisfaction, and 20 Days more pass'd before I open'd it again; so that in 60 Days I dress'd him only 3 times, not reckoning the first. He began now to rise and to walk on *Crutches*, and we continu'd still the *Dressings* upon his *Thigh*, omitting the *Funks*. In fine, after he had remain'd some time in the Hospital to recover his Strength, he return'd to his Regiment.

'Tis convenient to observe, that in *Simple Fractures* of the *Thigh* we ought always to use on the hinder part, a *Splint* of the breadth of 2 or 3 Fingers, to sustain the Bone, which without this Precaution would be in danger to bend in Hospitals of the Army, where the loose Straw on which the Soldiers lie, is apt to slip.

slip from under them, and so to make Holes or Furrows capable to disorder the jointing of the broken Parts, unless they be supported by something that is sufficiently stiff.

I have no Credit to give to the inward Remedies, which some use for breeding a *Callus*; such as the Juice of *Cowslip*, of *Agri-mony*, or its *Root*, taken in Drink; and many others to be seen in ancient Authors. *Nature* is the Architect and principal Framer of the *Callus*, when she is allow'd that *Repose* which is necessary to her Acting; however, I don't disapprove the use of incrassating Nourishment on such Occasions.

In the third Place, as to the *Neighbouring Parts*, when the *Fracture* is much shatter'd and very painful, it is exceeding advantageous to apply *Defensives* to the *Superiour Parts*, and the *Eminctories*. The Liniment made of an *Egg* beat up with *Oyl of Roses*, and sometimes with a little of that of *Turpentine*, and some *Vinegar*, when the *Contusion* is great, answers also to this Intention, together with Embrocations with dissolving Oyls. Above all, *Diversions* are of great Efficacy to prevent and remove *Accidents*.

As for the fourth head, it is of great Importance to the fractur'd Member to be plac'd in a *convenient Situation*, upon which very often depends the good or ill Success of the Cure. In *Hospitals* of the *Army*, all the necessary Conveniences are not to be found;
but

but the *Ingenuity* of the *Surgeon* ought to make up that Defect. The greatest Part of the Wounded are only laid upon Straw, which has not Stability enough to keep a Member long in the same Situation; 'tis this Consideration that obliges me, after applying the 3 Bands spoken of above, to use *Splints* in the first Dressing, unless the Pain engage me to defer 'em; and afterward, I make all sure with a 4th Band: I add also the *Funks*, and the *Sole*, with what belongs to 'em, if the *Fracture* is in the *Thighs* or *Legs*; if in the *Arm*, I use the *Sling*; as also, if in the *Fore-Arm*, the *Case of Past-board*; all being well ty'd on, secures the Part in such sort, that there is no hazard of its being disorder'd. This is the Method I use in *Simple Fractures*.

CHAP. XII.

Of Compound Fractures.

Complexed Fractures are very hard to be cur'd. In the second Part of this Treatise may be seen the manner how a good number of such were brought to a perfect Cure: But we must not always flatter our selves with Expectations of the like good Success, chiefly when part of the Substance of the *Bone* is lost. The *Youth* and good *Constitution* of the Patient are great Hopes on such Occasions. The Method of Dressing gently, speedily and seldom,

dom, saves a great deal of *Time*, and prevents very many *Accidents*. *Nature*, when at liberty, and acting without *Restraint*, does things very surprizing, and such as we would have judg'd to be impossible.

The *Generation* of a *Callus* in a *Simple Fracture*, is undoubtedly more speedy than in a complicated One: In the first the *Heat* is kept in and united, and acts with more *Strength* and *Quickness*. The *Bone* being cover'd by the *Teguments*, is shelter'd from the injuries of the *Air*: For according to *Fabricius ab Aquapendente*, Part 1. *Book* 4. *Chap.* 9, the *external Air* alters the *Bones*, and destroys their *Natural Temperament*: Besides, *Nature* is not diverted nor disturb'd in her *Action* by *Dissipations* or *Suppurations*. All consists in the *Reducing* of the *Fracture*, or rightly setting the *Bone*, as we have taught in the former Chapter.

From these *Reasons* a *Consequence* may be drawn, to justify my *Method* in respect of *Compound Fractures*: For by omitting frequent *Dressing*, and taking *Care* to hinder the *Access* of the *Air* to such *Wounds*, I prevent all the *Accidents* it might occasion, as great *Supparations*, *Alterations*, *Rottenness*, *Fluxions*, *Pains*, and generally whatever prolongs the *Cure*, and often makes the *Wounds* incurable.

In *Complicated Fractures*, when there is great *Suppuration*, the *Matter* must undoubtedly be mixt with the *Nutritious Juice* of the *Bones*, which

which from the first moment of the *Fracture* begins to cover the Ends of the Bone, and form a *Callus*. *Tents* and *Dilaters*, with which commonly these sorts of Wounds are fill'd, do by their contract hinder this Work, which ought not to be interrupted. Long and frequent Dressings give time for the Air to penetrate into the Wounds, whereby the Nourishment of the Bone loses what was spirituous in it, coagulates, breeds Obstructions, or is turn'd into Pus. Moreover, this Method not only occasions always Irritations and Pains, but also deprives the Sick of that Rest which is absolutely necessary to 'em.

Fabricius ab Aquapendente, in the eighth Chapter of the same Book, treating of *Complicated Fractures*, where the Bone is not uncovered, orders the Lips of the Wound to be join'd together, and to be dress'd but once in 3 Days. And in the tenth Chapter of the same Book, speaking of *Complicated Fractures*, where the Bone is laid open, directs to join the Lips of the Wound by Stitching or otherwise, and afterwards go on with the Cure, as in a simple Wound.

I am not therefore the only Person that has dress'd complicated Fractures after this manner. It may be observ'd also, that *Rhasis* and *Serapion* us'd this Method in the Cure of Wounds of the Head with a Fracture of the Scull; for they say, that Wounds of the Head must be stich'd up, even where the Scull is broken quite thro'.

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If this may be done on such Occasions, much more in complicated Fractures of other parts of the Body. Now, the Stitching us'd by these Authors in *Fractures* of the Scull, was for no other End, but to exclude the *Air*, which might have prov'd hurtful to the *Brain*, the Membranes and the Scull.

Galen and *Avicenna* advises Stitching in such a Case, but *Hippocrates* forbids it in his *Book of Wounds* of the Head. For my self, I very rarely use it in any part of the Body, tho' I don't disapprove it: But in *Gunshot-Wounds* it can't be practis'd, for many Reasons known to every-body.

Fractures with a *Wound*, are in general very troublesome: But those caus'd by Fire-Arms more than others; and they are also more or less hard to cure, according to the Part wherein they are: For the *Complicated Fractures* of the *Thigh*, which we have had under our Care in this *Hospital*, were not so soon cur'd as those of the *Leg*; nor these, as the Fractures of the *Arm*, and so of others; tho' in all, the same Method was always follow'd.

As to the difficulty of curing those of the *Thighs*, it is often occasion'd by the Inconveniences to be met with in the Hospitals of the Army: For there is difficulty in giving *Clysters* there, where we cannot afford the Accommodations necessary for voiding the Excrements; because wanting ordinarily Servants handy and charitable enough to assist the Patients on
such

such occasions, they lie in their Nastiness, and are indiscreetly and violently mov'd; by which means the Cures become tedious and difficult. For we may be sure that *Nature* acts with no less Diligence and Wisdom upon these, than upon other Parts.

I make no question but many Persons will condemn this Way of dressing *Complicated Fractures*, which possibly will appear to be very new; for I own I never saw it us'd before by any. But we ought not to be too forward to affirm, that what we have not seen, is not. There are without doubt many Secrets both in *Nature* and in *Arts*, which wou'd be of notable Advantage, were they known to us.

Those who will give themselves the trouble exactly to follow this *Method*, may extricate themselves from the Errors with which their Minds were prepossess'd against it.

CHAP. XIII.

Of Dislocations.

IT is in the Cure of *Dislocations* that *Art* has the Advantage over *Nature*, because *that* alone accomplishes the Cure without the Assistance of *this*. The Operation of the *Hand*, *Machines* and *Bands*, are the Means that Surgery employs to reduce them.

Tho' this Subject would afford an ample Field to Theory, yet I shall remit the young
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Surgeons to such *Authors* as have designedly treated thereon. I will only say, that it is necessary to be thoroughly instructed in the Knowledge of the *Bones* and *Bandages*, and that, if possible, we must not lose one minute of time to restore the Parts that are dislocate, before the *Accidents* supervene, that oftentimes hinder the *Operation*. For the Head of the *Bone* that is out of its place commonly presses on nervous and sensible Parts, and sometimes squeezes together the Vessels that carry the Blood for the Nourishment of the Parts, which occasions a kind of *Palsie* and *Atrophy*, and sometimes a *Fluxion*: Besides, the Cavity of the receiving Bone may be fill'd with the *Synovia*, or Humor that moistens the Joints, which if it be coagulated there by some Acid, will hinder the Head of the Bone to go into that Place from whence it came out; in which case we may reckon the Replacing of the Bone to be impossible. Wherefore, we ought at first to employ all our Care to procure its Reduction.

The Instruments necessary to reduce *Old Luxations*, or such new ones as require great Force, are not all to be found always in Hospitals of the Army; but the Hands of Servants, and the Ingenuity of the Operator, ought to make up that Want as much as possible.

Guy de Chauliac, *Fabricius ab Aquapendente*, *Pareus*, and many others, have sufficiently explain'd the manner of *Reducing Dislocations*.

A young Surgeon ought to omit nothing that may conduce to his accomplishment herein ; for 'tis by these simple Operations the Vulgar discern the Skilful from the Ignorant, because these sorts of Performances are altogether Chirurgical, and require only the Dexterity of the Artist to accomplish 'em.

I have found by Experience, that an Egg beaten up with Oyl of Turpentine and a little Vinegar, is very helpful to the laxated Parts to which it is apply'd ; nay, that it is a Remedy sufficient to answer all Intentions. *Aromatick Wine* may be us'd when this can't be had. If your Design is only to strengthen, the Plaster for *Fractures* will do the business.

Bleeding, Clysters, and a convenient Course of Diet, ought not to be neglected in great *Laxations*, attended with *Contusion*. These Remedies often prevent being surpriz'd with Accidents, and remove 'em when they happen.

CHAP. XIV.

Of the Relaxation of the Joints.

Soldiers, who commonly lie on the Ground during the Campaign, in very severe Seasons, are liable to have their Bodies stuff'd with superfluous Humors, wherewith all the Parts in general are soak'd ; but in a special manner they very often fall upon the Joints,

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where softening and relaxating the Ligaments that kept them fast, they do thereby occasion Laxations of the Parts.

This kind of Distemper is very hard to be cur'd, and will scarce yield to Remedies ; we have had of 'em under our hands in this Hospital, which have occasion'd us a great deal of Trouble, and but little Credit. *Hippocrates* in such Cases advises the use of the *Actual Caustery*, and *Galen* after him is also for the same Operation, in order to drain and consume the slimy and watery Humors, strengthen the Skin, and fasten the Joint.

Hippecrates for this purpose uses a Rope of raw Flax, which being set on fire, yields a Coal like that of the Match us'd in Armies. And *Actius*, according to *Archigens*, did it with the Roots of *Fullers-weed* and *Birchwort*, probably to render the Operation more gentle. 'Tis perform'd on the place where the Head of the Bone bunches out.

This Remedy is rude ; we never use it in this Hospital, because it frightens the Patient : Nevertheless these Distempers are sometimes so painful, and withal so obstinate, that those who labour under 'em willingly submit to any thing to be releas'd therefrom.

Fabricius ab Aquapendente relates, That after he had in such a Case, to no purpose, us'd very many things, the Patient was cur'd with a Plaister of a certain Herb, which he believ'd was *Hearts-ease*, that was applied by a Quack.

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As for my self, tho' I don't disapprove the Way us'd by the Ancients in this Case, yet I am of opinion, that it ought not to take place till more gentle Methods are try'd. The course we us'd to take at first, is to try whatever may heat, cut, dry, and strengthen. The Oyl of *Lavender*, the *Fat* of the *Mountain-Rat*, and *Spirit of Wine*, or the *Queen of Hungary's Water*, made up in form of a Liniment, and apply'd very warm, give great assistance in such Cases; to which may be added a little Oyl of *Turpentine*, which attenuates and opens the Passage, and so makes way for dissolving and drying Medicines.

But when I find these Remedies ineffectual, I use such things as irritate, *Vesicatories*, and caustick Herbs, such as *Spurge*, *Celandine*, &c. which, by exasperating the Pain, may cause a Fluxion upon the Part affected, that so the Matter being after digested, and ripen'd by a Fermentation, all may be happily ended by an *Abscess*; as it sometimes falls out.

When we have brought things to this pass, we must not fail, without delay, to restore the *Bones* into their *Cavity*, and to fortifie the Joint with *Aromatick Wines*, quicken'd with *Spirit of Wine*, or else with *Man's Grease*, and a little of the *Queen of Hungary's Water*, mixt and apply'd hot; and generally we may for this purpose use any thing that may strengthen the *Member*, and waste the *Moisture*. In the mean time, the Part must always be suppor-

ted with a good *Bandage*, and furrounded with *Compresses* and *Bolsters*, to command the Bone, and keep it fast in its Place: Moreover, the Patient must be very careful to keep himself quiet, and must observe a *Drying* and *Attenuating* Course of *Diet*.

CHAP. XV.

The Conclusion of the Third Part, with some very useful Remarks.

MY principal Design in this little Treatise, being to introduce, for the relief of *Wounded Persons*, a *gentle, speedy, and easie Way* of curing their *Distempers*, I have endeavoured to confirm the same, as much as lay in my Power, by *Reason* and *Experience*. I am not ignorant, that this Part of *Surgery* which concerns *Wounds*, does not exhaust its Bounds, and that I have only slightly touch'd on other Things, that are of no less Importance.

My Intention was not to transcribe from other *Authors*, and therefore I thought it enough, superficially only to declare my Thoughts of the other Parts of *Surgery*; wherein I have likewise confin'd my self to that which is most common, and most necessary, and was withal most particularly known to me, not being willing to speak of many things about which I had nothing new to advance. I think I have done what I design'd, and am
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ambitious of nothing else, but that my *Intention*, which I have sincerely declar'd, may have all the Success I could wish it.

The Course I take to prevent the Scaling of *Bones*, explain'd in the first Part of this *Book*, I learn'd from *Experience*; I hope also it will be found very useful and necessary, in dressing *Wounds* where the *Bone* is uncover'd.

I drew also from the same Fountain, the manner of Dressing after the *Operation* of the *Trepan*; and yet I doubt not but it will have the Fate to be condemn'd as new: However, I will not spend Time in anticipating the Objections of others, by answering them beforehand: For whatever might be said in commendation of the *Plate*, which was never us'd by any before me, would only prove an Inducement to excite the Criticks to decry it.

Experience and *Reading* have inform'd me, that the *Air* is a mighty *Hindrance* to the Cure of *Wounds*; and I have endeavour'd to find out an easie Way to hinder its *Access*, especially in *Wounds* where the *Skull* is cut: For 'tis evident, that the most part of the *Accidents* that attend such *Wounds*, are occasion'd only thro' the little Care taken to keep off the Assaults of the *Air*, which are promoted by the Custom of long and frequent Dressings.

I have seen Surgeons spend whole Hours in dressing *Wounds* of the *Head*, accompany'd with a Fracture of the *Skull*, to loosen, break, or cut off the Splinters, or some Piece of the

Bone, which ought never to be done, unless we are very well assur'd that they prick the *Dura Mater*.

There are many who think they have sped well, if at each *Dressing* they can but extract some little bit of broken Bone, which they carefully preserve to shew to all that come, thinking thereby to gain Credit, and to raise their *Reputation* by that which ought to be condemn'd, and often costs the Wounded Person his Life.

A very famous Officer, not long ago, experienc'd the fatal Effects of this cruel Method; for having had his Scull broken by a Bullet, whereby he was in a manner trepann'd, without hurting the *Brain*, or its *Membranes*, or occasioning any dangerous Symptom; some Time was unadvisedly spent twice a Day, in loosening and pulling away forcibly little Portions of the Bone (which Nature would easily have separated) as supposing that afterwards, which yet was impossible, they might chance to prick the *Dura Mater*: By this Method the *Dura Mater* and the *Brain* were alter'd, and visibly mortify'd; so that he dy'd on the Eleventh Day of his Wound. I was indeed call'd to give my Advice, after his Condition was desperate, but all I could do in this Case, was to give him notice of his approaching Death.

Many Surgeons, thro' a vain *Ostentation*, spend all their *Life*, and exhaust their *Diligence*, in unravelling all the Secrets of the new Discoveries

veries in Physick, and in qualifying themselves to discourse accurately thereon, contemning all the Opinions of the Ancients; while in the mean time, they remain in an entire Ignorance of the Practice, notwithstanding all their *Science*. If these Men were as desirous to be knowing, as ambitious to appear so, they would take another Course: And not, confining themselves only to *Reasoning*, and to shew their Wit in *Consultations*, neglect to improve a good *Method*.

It is not enough to understand the *Nature* and *Difference* of *Wounds*, and to know the cause of *Accidents* that befall them, nor yet quaintly to explain them, by *Reasons* purely *Speculative* and *Chymical*: We must join to the *Theory*, which is indeed very useful and necessary, a *Method* of *Curing* and *Rooting* out *Distempers*, which is to be look'd on as the most necessary Part of *Surgery*: But it is rare for those who addict themselves wholly to *Reasoning*, to have such regard for Practice, as to acquire it to Perfection, and to abandon their own Maxims to follow others that are contrary to 'em. Wherefore, I have address'd this little Discourse to young Surgeons, who may possibly reap some Advantage from it, as being not uncapable of the good Impressions one desires to make upon them.

I am not desirous that the Newness of this *Method*, should either engage them to follow it, or oblige them to reject it; but only wish

that they may put it to a *Trial*, in order to make a true Judgment: For every reasonable Man ought wisely to inform himself of the Truth of Things, and to examine their Consequences, before he positively gives his Judgment. Nothing is more easie for one, than to pass a *Verdict*; and nothing more difficult than to *Judge aright*.

I am convinc'd by Experience, that it is dangerous to credit the Testimony of others. The wrong Judgment made on a *Wound* that one of our most famous Generals receiv'd, *October* the 4th 1693, being the Day of the Fight of *Marseils*, and my easiness to rely on the Fidelity of another, and on the Report made to me the Day after the first Dressing thereof, had almost cost him his *Life*. The *Wound* was deep, and made by a large *Bullet*, and was dress'd at first as if it had been only a simple one, with a great quantity of Lint, whereof a great part was lost and fix'd in the depth of the Wound: However, it happen'd very fortunately, that it was driven out by the *Matter*; but it left behind it, in the place where it was hid, a considerable Mortification, which gave occasion to make great and deep *Incisions*, whereby a *Fracture* was discover'd. Prudence hinders me to declare more at length the Circumstance that accompany'd this Cure, to which M. *Dalibour*, Master-Surgeon sworn at *Paris*, and Surgeon-Major of the *Horse of the Household*, an able and experienc'd Man, was

was call'd to give his Advice. In a Word, after many Accidents, all was brought to a happy Conclusion.

It is therefore absolutely necessary for a *Surgeon*, who is careful of his Reputation, to search the Wounds himself which were not dress'd by him at first, in order to discover their Nature, and know their Extent. This was not the only Person who, in the Day of that Fight, experienc'd the Inconveniency of being dress'd at first in a Hurry. I have, for good Reasons, not mention'd several other Cases not much differing from the former, that occur'd on the same Occasion, upon which there were many dress'd in that Quarter, that was assign'd to the Body of Reserve, belonging to our Army.

In this Book, and particularly in the 2d Part thereof, may be seen after what manner I have brought to a perfect Cure a great number of *Wounds*, of all *Kinds* and *Qualities*, with much *Ease*, small *Charge*, and with simple *Remedies*, which are no less useful to the *Rich*, than convenient for the *Poor*.

The great Charges ordinarily laid out upon the Cure of Wounds sometimes involve the Patient, after the Cure is perfected, in Evils no less troublesome than the former: The *Wounds* are fill'd and clos'd up, but the *Pockets* are open'd and drain'd. That Person, of whom I spoke in the 25th Chapter of the 2d Part, before he came under my Care,

had a Bill of *Three hundred and seventy six Livres* brought him by the Apothecary, for Medicines furnish'd by him ; when yet, after all that Expence, there was no appearance of a Cure.

The Credit of a *Surgeon* does not consist in emptying the *Shops* to Cure his *Patients* ; On the contrary, we ought rather Christian-like to be saving of the Money of those, who put their very *Person* and *Life* in our Hands : And if they chance to prove so ungrateful, as to deny us what we have deserv'd, after such a good Deed, we may expect our Reward from *Heaven*. We ought not to be bribed by the consideration of a mean Interest, to abandon the Fidelity wherewith we ought to endeavour the speedy Cure of our *Patients*. If a Patient is destroy'd by unexpected Accidents, when the Cure is delay'd on a mercenary account, the Surgeon, under whose Care he was, becomes guilty of his Death.

I have seen many Persons of Note, whom I won't name, who passing through *Brian-son*, eight or nine Months after the Battle of *Marseils*, wherein they had been wounded, were either Fistulous, or very far from being compleatly Cur'd.

Nevertheless, that I may not rashly blame those who had these Persons under their Care, I am willing to believe, that the tenderness of their *Constitution*, their ill *Temperament*, or the unwholsom *Air*, which very
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much conduces to continue the Wounds, occasion'd the tediousness of these Cures, which in other Persons and Circumstances had been perfectly finish'd in two or three Months at most: But I can't restrain myself from saying, that the *Tents*, as well as the frequent and painful Way of Dressing, so much in Use, are sufficient to cause all these *Accidents*, and to hinder the Cure of Wounds: And this is what makes *Surgeons* hated, and *Surgery* chargeable.

In this little Work, I have done what I could to shew, not so much by Reasoning, as by *Examples* and *Authority*, that *Nature* has the greatest hand in curing *Wounds*, or to speak more truly, that she is the principal Worker therein: But I leave it to the performance of more delicate Pens to celebrate her Praises, and to publish her Excellencies, contenting my self to admire her Wonders, which are no less unaccountable than they are surprizing.

The Year 1686, afforded me an Occasion wherein it appear'd, that *Nature* ever acts for the Preservation of the most noble and the most perfect of her Works. A Soldier of the Fort of *Mirabout*, which parts the Valleys of *Lucerne* from *Queras*, having rob'd his Captain, was pursu'd; and finding no other Way to escape, he threw himself down from the top of the Walls upon the Rocks, where falling on his *Feet*, they were not only put out of

of Joynt, but each of them were Fractur'd with a Wound: He was taken, and brought to the Fort, where there was no Surgeon, by reason of the smallness of the *Garison*.

He lay 4 Months on Straw, without any Relief but Bread and Water; during which time his Feet were gangreen'd, and soon afterward entirely mortified.

But, what is extreamly surprizing, round the lower part of both the *Legs*, a little above the *Ankle*, *Nature* her self form'd a certain *Wreath* or *Roll*, which stopt the Progress of the *Mortification*, so that what was beyond this, was abandon'd to the Fury of the *Sphacelus*, while whatever was above these *Rolls* was free from Blemish.

He cut off the *Right Foot* himself by the Joynt, with a little Pocket-knife, without either *Pain* or *Bleeding*; and because the Putrefaction occasion'd an intolerable Smell over all the Fort, by reason of the excessive Heat, he was sent to our Hospital at *Lucerne*.

By the way he lost a good part of the other Foot, which came away of its own accord; and notwithstanding the contagious Smell, which as Carrion he dispers'd in all the Places where he pass'd, and also the extream Heat of the Season, the *Mortification* did not pass over the Bounds that *Nature* had given it; only these *Wreaths* that we mention'd above were considerably encreas'd in Bulk by the way.

After he had recover'd his Strength, by the Assistance of good *Cordials*, some *Wine*, and *Victuals*, I cut off that appear'd to be entirely mortify'd, not sparing the highest places of the *Rolls*, which cast an insupportable Smell: I let him rest till the Morrow, and then cut off one Leg, and the other the Day after: For the Ends of the *Tibia* and *Fibula* were altogether rotten and uncover'd. Finally, no other Accident happen'd during the rest of the Cure, which was compleated not long after.

This wonderful Example is sufficient to evince, that the want of *Art* is oftentimes supply'd by *Nature*. This may further appear also by what follows, it being a very strange thing that happen'd at *Pignerol*. *M. de la Place*, Captain in the Regiment of *Barrois*, was wounded with a *Bullet* at the Battle of *Marseils*, that entred at the middle and hinder-part of the *Fore-arm*, and came out at the lower and fore-part of the same, breaking the *Cubitus* in its passage. He was dress'd by *M. Malinus*, a Surgeon-Major belonging to the Army in *Italy*, and Master-Surgeon of *Lyons*, very skilful in his Employment.

This *Wound* was attended with some troublesome Accidents: For together with a continual *Fever*, an *Abscess* was form'd by a collection of Matter, which was extended over all the *Arm* and *Fore-arm*: But as they were preparing to make an Incision, the wounded
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Person was seiz'd with a great *Loosness*, which restor'd their *Arm* and *Fore-arm* to their natural State. This unexpected *Accident* being follow'd by so surprizing an Effect, oblig'd his Surgeon to take a view of that which the *Patient* had voided, and it was found to be the *Matter* of the *Abscess*, without any thing else, save some little Excrement that remain'd unmix'd therewith : Moreover, as new *Matter* gather'd, it was voided again by *Stool* in a little time after. In fine, the *Wounds* being compleatly cur'd, the *Loosness* ceas'd, because that was remov'd which occasion'd it.

Perhaps the *Matter* was taken up by the *Veins*, and by means of Circulation carry'd to the *Mesaraicks*, and thence empty'd into the *Guts* : This I only propose as an uncertain *Conjecture*, all other ways being to me unknown : I willingly leave it to the *Learn'd*, to be explain'd according to their different *Apprehensions*. But that which induces me to think this *Way* has some Appearance of Truth, is, that this Surgeon solemnly protested to me, that at the beginning of the same Campaign he had under his Care a *Captain* who had a Wound in the *Thorax*, that pierc'd into the Substance of the *Lungs*, and was accompany'd with all the *Accidents* common to such kind of *Wounds* ; all which, nevertheless, were remov'd by opening a *Vein* in the *Arm*, which was done with an intention to let *Blood*, instead of which nothing came out by the *Orifice* made in the *Vein* but

but *real Matter*, sent from the *Breast*. Many Persons of Credit, who were Eye-witnesses, assur'd me of the Truth of this *Prodigy*.

Fabricius Hildanus, Chap. 3. *Obs.* 39, relates, that an *inveterate Ulcer* in the *Leg*, with a *Fistula*, that was rashly cur'd, was follow'd by a *Pleurisie*, in which the *Patient* voided at the Mouth a *Matter* like to that which us'd to come from the *Ulcer* of the *Leg*.

It were an easie matter to adduce an infinite number of Examples almost alike, wherein *Nature* appears to have surpass'd her self, either in preserving Parts afflicted, in easing those over-charg'd with Humours, or, in fine, in uniting such as are divided.

In the Year 1686, one *Lansaveche*, Quarter-Master of the Dragoons of *Verue*, in the War against the *Vaudois*, was wounded by a large *Bullet*, in the upper and side-part of the *Hypogastrium*, and by all the Accidents it appear'd that the *Colon* was torn by the *Bullet*: There came out of the *Wound*, for more than the space of two Months, an *excrementitious Matter*, during which time he suffer'd grievous Pains: At length *Nature*, without any Assistance, clos'd up the *Wound* of the *Gut*, tho' the *Bullet* was lost; and he left *Lucerne* at the breaking up of the Hospital, which was three Months after his receiving the *Wound*.

Hildanus has a like Observation of a certain Man who had one of the great Guts open'd in the Operation of the *Bubonocèle*,
which

which clos'd up of its own accord. In fine, as we are oftentimes surpriz'd by things that could not be help'd, but either from the *Bounty* or *Caprice* of *Nature*, so also extraordinary things fall out in *Wounds* by an Effect of *Chance*, as well by reason of the *Posture* Men are in when they receive their *Wounds*, as because of the *Things* which wounded 'em.

In the same Year 1686, one wounded with a Shot was brought to the Hospital at *Lucerne*: The *Bullet* enter'd on the lower and middle part of the *Os Occipitis*, and grazing upon the *Temple-bone*, came out under the *Right Ear*, carrying away part thereof. Tho' it plainly enough appear'd, that the *Bullet* had touch'd the *Scull*, yet the Wound was dress'd as a simple one, because no Accident appear'd; and it was left to the Care of the Servants. Thus three days past, during which the Patient was troubl'd with a Restlessness, complaining only that he could not put himself in an easie Posture, which was not much minded: Nevertheless, he dy'd on the 4th day of his Wound, with all the Symptoms that usually attend sleepy Distempers.

The unexpected Death of this Man oblig'd me to open his Scull. I found him wounded with a small *Wedge* of *Lead*, which striking against the middle Ridge, on the lower part of the *Os Occipitis*, at the time when his Head was bow'd down, was cut in two by the sharp edge of the Bone; one part had slipt on the *Temple-bone*,

bone, as was said, and the other enter'd the cavity of the *Scull* on the same side, remaining fix'd between it and the *Membranes*, which were cut and press'd thereby. His fellow-Soldier, in the same day's Action, had two Wounds by one Shot; the first a little below the *Yoke-bone* on the left side, and the other in the middle part of the right *Hypochondre*; yet he was compleatly cur'd in 12 days by a moderate Suppuration, and no Accidents.

I have seen many Wounds no less strange than these; but, in order to make a right Judgment in suchlike Cases, the nature and figure of the wounded Part, the Posture of the Person when he receiv'd the Wound, and the figure of that which made it, must all be very carefully examin'd beforehand. Now, the ready apprehending all these Circumstances, with many others necessary to be known, in order to Success, can't be attain'd by *Surgeons* without great Study, Practice, and Diligence.

The Ascent whereby we mount the *Temple of Esculapius* is no less difficult and steep than that by which we rise to *Mount Parnassus*. 'Tis almost impossible to get up without making some false steps. However, 'tis but reasonable to think, that those who were employ'd in *Hospitals* and *Armies* during the late War, by the innumerable different Cases which it afforded, have discover'd things very surprizing, and no less useful in Practice, and have often seen the
strange

strange Ways Nature takes to throw off what offends, by healthful *Evacuations*.

Such as impart to the Publick their Observations and Experiences, which are the Fruits of their Diligence and Care, have deserv'd well of Mankind. Many *Surgeons* there are, who have not the advantage of Occasions to accomplish themselves in this sort; and of those that have, few are so charitable as to publish what they've seen and remark'd *extraordinary*.

When a Man does not communicate his *Attainments* (by Writing) to the Publick, let his *Endowments* and *Knowledge* be never so great, they are for the most part, if not altogether, buried with him. The *Good* a Man can do, lasts but for a time; but the *excellent Advice* he leaves (in Writing) to Posterity is useful for ever. We had still been in Ignorance, had not the Writings of the Ancients come down to our hands.

Wherefore I thought my self bound in *Conscience* (tho' at the hazard of being condemn'd by the *Envious*) to impart to the World my *Experiences*, that (if possible) I might procure to *poor wounded Persons* a more speedy Assistance than can be afforded by the *common Method*. If I shall have the Happiness to succeed in my Design, I shall think my self sufficiently recompens'd for all my Toil, and will praise the *Almighty Father of Lights*, who by *small Means* often brings *mighty Things* to pass.

The End of the Hospital-Surgeon.

The Manner of
Curing all Fractures

A N D

Dislocations

Incident to

Human Bodies,

By the Means of

Bandages.

Compil'd by M. LAWRENCE VERDUC,
sworn Master-Surgeon at *Paris*.

L O N D O N,

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R. Smith in *Cornhill*. 1713.

The AUTHOR's Preface.

THE Work I here undertake is of no small Consequence, as being the Province of that great Physician of Greece, Hippocrates. 'Twas he who first taught us to wind up and roll the Parts of Human Body, and has left it on publick Record, that the Bandage is the most necessary and most certain Remedy that Surgery can boast of. Now this engag'd me to compile and publish a Treatise upon Bandages, to the end that those of our Profession may with Constancy and Diligence pursue the Method of preserving the Union of the Parts in the Division of the Bones; of procuring the Union of the soft parts by Uniting Bandages, and of healing Ulcers by Expulsive Bandages.

This is the whole of my Design: And I can justly say, with all the Sincerity of my Heart, that I have laid aside all manner of Passion; so that I hope I am conducted by the true Light, that flow'd from that great Genius of Greece, in the Explication I have given at the beginning of the general Doctrine of Bandages: After which, I treat of Fractures and Dislocations, and shew both the Signs to distinguish, and the Means to redress them; with a particular Description of the Bandage that's proper for each of these Disorders; of the length and breadth of every Roller, and of the figure of the Plaisters, Compresses, and Pastboards.

This I have pursued with all the Order and Method I could possibly think of; it remains only for me to wish, that all may tend to God's Glory.

The

The Way and Manner of curing all Fractures and Dislocations incident to Human Bodies, by the Means of Bandages.

CHAP. I.

The Definition of a Swath-band or Fillet, and its Differences.

BEing long importuned by my Scholars and Auditors to publish a *Treatise of Bandages*, I now comply with their Request, and shall here endeavour to be as plain and intelligible as possibly I can, that any one may reap benefit from this Performance. We may justly join with *Hippocrates*, in asserting, that Bandages are the most necessary and certain Remedies within the whole Verge of Surgery, this Assertion being back'd by repeated *Experience*; for how many Crown'd Heads have been rescued from the Jaws of Death, both in Peace and War, by the means of Bandages? Who can pretend to undertake any Operation in dividing the Parts, whether solid or fleshy, to stop the *Blood* and

and save the *Spirits*, without having recourse to these grand Remedies, which are always first us'd ?

I could easily enlarge upon the Advantages and Prerogatives of this sort of Remedies, but I chuse to wave 'em, and shall content my self with observing, that *Chirurgical Bandages* fall under a twofold Consideration ; and, that those who would understand and use 'em right, ought to know that there are two sorts of *Bandages*, namely, the *Common* and the *Proper* ; the *Common* are such as may be apply'd conveniently to several Parts of the Body, and for several Disorders ; and that the *Proper* are only applicable to particular Parts, and calculated for particular Disorders.

But before we launch further into the Division of Bandages, 'twill be proper to explain the difference between a *Band* or *Fillet*, and a *Bandage*. All *Bandages* may justly be call'd *Bands*, but all *Bands* are not *Bandages* : For, as *Hippocrates* says, a *Bandage* must be consider'd two ways, *viz.* when 'tis making, and when 'tis actually made. That is to say, a *Band* or *Swath* changes its Name as soon as it is apply'd to the Part, or when they begin to wrap it round, for then it becomes a *Bandage*, which Title it never bears, but when there's Application in the case.

Now to set this in a clear Light, there are four general Things to be explain'd, which a Surgeon ought necessarily to know. First, what

what a Swath-Bandage is ; Secondly, from whence the Species and Differences of Bands are taken. Thirdly, what are the Parts of a Band : And fourthly, what Conditions are requisite in a Band.

A Band is defin'd to be a long and broad Ligature, for surrounding, binding, and containing the Parts of the humane Body, and keeping them in a sound State. The three first Words of the Definition relate to a Band in general, and the remaining Words relate to a Bandage. The 3 first Words give us to know, that a Band has Parts, namely, the Body, and the Extremities or Ends. By the Body we understand the middle and thickness of it ; by the Extremities, we mean both the Ends that run out length-ways, and those which run across in a lateral way.

To set the 2d Part of the Definition in a clear Light, we must know in the first place, that there are two sorts of Bandages, one sort are Remedies of themselves, and the other serves only to keep Medicines upon the Part. If this were duly minded, there would not be so many Errors committed, as we daily meet with, for want of due Reflection upon the proper Use of Bandages. The words *Surrounding* and *Binding*, relate either to that sort of Bandages that are Remedies of themselves, and the Word *Containing* relates properly to the Bandages that have no other use but that of keeping on the Medicines, and call'd *Contentive Bandages*. Ha-

Having thus explain'd the Definition of a *Swath-band*, we proceed to its Differences.

Galen takes the Differences of Bands from five Things, namely, their Matter, Figure, Breadth, Length, and Structure.

The Difference that's most necessary in the way of Practice, is that taken from the Matter or Substance, some being made of Linnen, others of Woollen, or of other sorts of Stuff. For the most part, the Ancients made use of Linnen-Rags or worn Linnen for this Service, especially in the case of Fractures, in which the Part must be ty'd and bound hard; and in our modern Practice, we use it on all Occasions, upon the Consideration that with it we can bind hard, or slacken as we will, that 'tis to be come at more readily than any other thing, that it washes more easily, and that it conveys the vertue of the Liquors to the affected Parts, with greater Facility than any other Matter.

The 2d Difference is taken from the Figure, for some are equally roll'd and gather'd, such as those made use of in Fractures and Dislocations; others are slit and cut into several Heads, such as those for the Head, the Ears, and the Chin; and others again are made of several Rollers of different Figures, gather'd and stitch'd together, such as those which bear up the Breasts and the Testicles.

The 3d Difference arises from the length; for some are long, others short, and others again

again of a midling length. We can't but agree to what *Galen* says, That the length of all Bands can't be ty'd up to one general Rule, in regard they must needs be diversify'd, according to the different Constitutions of Bodies, and the length of the Part affected. Besides, there's a Necessity of having longer Bandages when the Disorder spreads, and deeply affects the Parts, and where the Bandage can't be firm and sure without many Rounds and Convolutions of the Roller ; whereas upon other Occasions shorter Ligatures will do.

As for the Breadth, which gives the 4th Difference, some Swath-Bands are very broad, such as those for the Head, the Breast, and the Belly ; others are very narrow, such as those for the Nose, the Lips, and the Fingers ; and others again are of a midling Breadth, for instance, those of the Arms and the Legs.

Galen says, that we can't confine the Breadth to one general Standard, no more than the Length ; and this Difference or Alteration of Breadth, proceeds only from the Diversity of Age ; for the gradual Growth of a Child from his Infancy to his arrival at a full Stature, compleat in all its Dimensions, of necessity varies the Breadth of Swathes : And to my Mind there can be no general Rule given upon this Head, but what runs upon these three Points, namely, a Child, or a Youth growing up, that requires the gradual enlarging of the Breadth ; a Man of a large Size in all his

Dimensions, both as to Bulk and Height, who requires very broad Bands or Rollers; and those of a midling Breadth, that is, neither too broad nor too narrow.

This is confirm'd by *Hippocrates*, who tells us, That in order to make a right Use of Swath-Bands, we ought to consider the Breadth and Thickness of the Parts. *Guidon* alledges, that Bands or Fillets for the Shoulder, ought to be 6 Fingers broad, those for the Thigh 5, for the Leg 4, for the Arm 3, and for the Finger 1. I hope I shall here lay down just Rules for the length and breadth of Bands calculated for each Part; but you are to understand, that when I fix a Standard for the Shoulders, the Thighs, the Legs, the Arms, and the Fingers, 'tis only calculated for those who are of a mature Age, and an ordinary Size; the length and breadth requir'd by others, being easily adjusted in Proportion.

Galen takes his fifth Difference of Bands or Fillets from the Structure, for some are woven on purpose in the Form of a Ribbon, of Thread, Woorsted, and the like; and others are made of Linnen Rags; and 'tis this last sort that we use now-a-days, because they are of more use than the former.

A Fillet consists of two Parts, *viz.* the Body and the Extremities or Tails, which I explain'd before, shewing, that the first is the middle and thick part of the Fillet, and the Tails or Ends are four, *viz.* two *longitudinal*, and two *lateral*.

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Hippocrates informs us very justly, that a Band or Fillet ought to have 4 Conditions or Qualities. The first consists in the choice of the Matter or Substance of which they are made; the Linnen, for instance, must neither be too new nor too much worn; if it be overworn, it rends and tears upon the least Occasion, and does not bind the part fast enough; if it be too fresh and new, 'tis too stiff to be pliant, and binds too hard, and causes Pain. So that our Bands ought to be made of Linnen as is of a midling Force and Freshness. *Hippocrates* enjoins farther, that the Bands be smooth, plain, soft, and light; by Smoothness and Plainness he excludes unevenness, or the least puckering and rising unequally; by requiring Softness, he insinuates, that they must not press, or wring, or wound the Part; a Fineness is requisite to facilitate the Passage of the Liquors thro' its Substance; and the Inconveniency of over-loading the affected Part, makes Lightness a necessary Quality.

The 2d Quality he insists upon, is their Cleanness, and their being clear of all Nastiness and Filth. *Hippocrates* does not mean that the Fillets should be apply'd dry, for he orders 'em to be dipt in a proper Liquor in order to mitigate the Pain, and prevent other Accidents, which is chiefly to be understood of grievous Disorders, such as dangerous Wounds, Fractures, and Dislocations; and not of a slight and small Indisposition.

The 3d Quality demanded by our Venerable Author, consists in the right cutting of 'em; for, as *Galen* says well, they ought to be cut down along with the Thread, and not a-cross; for the Linnen that's cut cross-ways is too pliant and slack, and presses down only in the middle of its Body, and not in the lateral Extremities. *Guillemau*, in his Surgery, advises to cut the Linnen cross-ways that's design'd for the Elbow, the Ham, or the Shoulder, but that relates only to Compresses, and not to Fillets.

The 4th and last Quality enjoyn'd by *Hippocrates*, is their being free of Lift or Selvage, of Knots, of Hems, and of all manner of unevenness; for whenever such Things take place, they lock up and wring the Part so, as to cause a Pain that draws down a Flux of Humours.

Having thus explain'd the Difference of a Band, with its Divisions, Parts and Qualities, it remains now to account for the Nature of Bandages and their Differences.

CHAP. II.

Of the Nature of Bandages, and their Differences.

A Bandage may justly be call'd the rolling or rounding of Bands round an affected Part, together with the neighbouring and ad-
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jacent Parts. A particular Deduction of the different Sentiments of Authors, relating to the Differences of Bandages, would rather perplex than instruct the Reader ; for which reason, I choose to go a little higher, and subscribe to the Sentiments of *Hippocrates*, who derives the Differences of Bandages from six Things. First, The Time of the Operation : Secondly, The Simplicity or compound Structure of the Bandage : Thirdly, The manner in which the Parts is bound up : Fourthly, The Place where the Bandage ought to commence and terminate : Fifthly, The Order observ'd in applying the Fillets : Sixthly and lastly, The common or proper Nature of the Bandages.

To resume all these Differences, and explain them in order, we must observe with *Hippocrates*, that with regard to the first Difference drawn from the time of the Operation, we must consider a Bandage while 'tis yet a making, by way of Distinction from one that is already made. For the former there are *three Conditions* requir'd, which are couch'd under these *three Words*, *Cito, Tute, Fucunde*, i. e. speedily, safely, and dexterously. The first *Condition* implies, that the Work ought to be done with Expedition, that the Bandage and its Appurtenances ought to be in a readiness, and that a Surgeon ought to make all the necessary *Provisions* before he undertakes an Operation of Consequence,

whether it be to stop the *Blood* in an *Aneurisma*, or in the Case of an Extirpation. In short, the meaning is this, that in the time of the Operation, or after 'tis over, 'tis not a seasonable time to be then looking for Remedies, or preparing the Dressings, the Patient being thereby expos'd to the danger of his Life. The second Word, *safely*, imports, that in all Operations we must take care not to run the risque of any thing that's avoidable; and the third, viz. *dexterously* or *handsomly*, implies, that when a Bandage is well perform'd, the Surgeon gains Glory, and preserves his Reputation with the Patient and the By-standers. This is confirm'd by *Galen*, in his excellent Precept relating to the Ornament and Perfection of a Bandage; in which he says, That a good Surgeon gains the Esteem of the People, and makes the Patient obedient to his Precepts.

The 2d Difference of Bandages, taken from their Simplicity or Composition, is grounded upon the Doctrine of *Hippocrates*, who says, There are two sorts of Bandages, viz. one single, and another compound: The former is call'd *simple*, or *single*, for 3 Reasons: First, because 'tis made only of one Band or Fillet; Secondly, the Fillet with which the Bandage is made, is a single Fillet, without any thing stitch'd or tack'd to it; and Thirdly, its Rounds and Turns are all simple.

A Compound Bandage is the reverse of the
Sim-

Simple ; for oftentimes 'tis made with several Fillets cut and slit into Ends, or has other Fillets tack'd to the principal one, or is perform'd by several Turns and Rounds, different the one from the other.

A simple Bandage is divided into two sorts, *viz.* the equal and unequal. The equal can only be of one Make or Fashion, that is, round and circular, encompassing the Part as a Hoop does a Cask, without turning or shifting to one Side or t'other. As for the simple unequal Bandages, there are several sorts of 'em, the Number of which is not agreed upon by Authors. *Galen* makes but two sorts ; to which *Gourmelain* adds a third, but in common Practice we make four, *viz.* the *Doloire*, the *Mouffe*, the *Renvers'd*, and the *Creeping*. However, to avoid the perplexing and confounding of the young Students of Surgery, I chose to make but three, by throwing out the *Mouffe*, for these ambiguous Words, so often quoted in common Practice, afford no manner of Explication of the thing it self, and serve only to embroil and perplex the Mind, as I have found by long Use and Experience in the Demonstration of Bandages. Besides, the *Doloire* and the *Mouffe* differ only in less and more, and consequently do not merit a Distinction, for the former is only a simple unequal Bandage, carried upwards or downwards, so as to leave the fourth Part of the Fillet uncover'd, and the latter is the same,

only so manag'd as to leave but a third Part uncover'd.

The second simple unequal Bandage, is the *Renvers'd*, which we use for the Extremities or Limbs of the Body. It serves to render the Parts equal; as in the Leg, for instance, by carrying your Bandage from below upwards, and making Reflexions or Plaits under the *Musculi Gemelli*, which make the Calf of the Leg, you make the Leg equal and even. The third simple unequal Bandage, is the *Creeping*, so call'd because it turns round the Part in a Serpentine way, leaving a space between every two Rounds. It serves only to contain and keep on Medicines, without locking up the Part, in Inflammations. For instance; *Galen* takes the difference of *Compound Bandages* from three things, *viz.* the Part affected; secondly, some Accident or other; and thirdly, the Similitude of the Part. Some Bandages derive their Names from the Parts to which they are apply'd, being call'd, the Eye, the Nose, the Groin, the Breast, &c. Others take their Names from the resemblance they bear of some particular Figure; and such are the *Lozenge*, the *Creeping*, the *Ditch*, the *Lid*, the *Crab*, the *Sparhawk*, the *Tortoise*, &c.

The third difference of Bandages rises from the manner in which the Part is bound; for, in regard the Parts of the Body differ very much in their Figure, and are liable to Disorders of different Natures, we can't pretend to
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tie and bind up all the Parts after one manner. To give an Example ; When we apply a Bandage to a compleat Fracture of the Leg, we begin with a Fillet roll'd up to one Head or Ball ; in a Fracture of the *Clavicula* or Chancel-bone, we begin with a Roller of two Heads ; in applying Bandages to the Eyes, or making a Ligature for bleeding in the Forehead, and several other Cases, we begin with the end of the Fillet.

For a Uniting Bandage, we begin with a Fillet roll'd up to two Heads ; and in Extirpations we begin the Bandage with a Roller of one and of two Heads, as well as in Dressings for the Breasts, for which we use the *Pocket*, or *Heliodor's* Band. For the Head we use the Bandage call'd the *Cancer*, which is cut into several Heads, so that the body of the Linen covers the whole Head.

The fourth Difference is taken from the Place where the Bandage begins and ends.

That Difference is the most necessary, and of greatest importance in the way of Practice, that is taken from the place where we begin to lay down the first end of the Band, and that where we terminate and fix the other end.

Now, to adjust this matter, we must know, that a Bandage begins at one of these three places, *viz.* either the Part affected, or else the adjacent Part, or else the Part that's opposite to it. When we make the first Rounds upon the Part affected, we do it upon three Consi-

derations ; first, when we have a mind to prevent a Defluxion upon the Part, by repulsing the Humours to the sound Parts ; and accordingly in Fractures we always begin our Bandage upon the fractur'd Part. This we find recommended to us by *Hippocrates* ; and *Galen* teaches us, That if we mean to stop a Flux of Blood, we ought to make several Turns and Rounds about the affected Part, and finish the Bandage toward the upper parts, that is, towards the Root or Head of the Vessels, which ought to be practis'd (continues *Galen*) upon all the parts of the Body, excepting the Membranes of the Brain. In like manner, in dressing Contusions, we ought to begin the Bandage upon the bruise'd Part, with intent to prevent a stagnation or flux of Blood, an Inflammation, and a Suppuration. This is expressly enjoin'd by *Hippocrates*. “ Let the affected
 “ place be where it will, *says he*, whether it be
 “ Suffusion of Blood, a Contusion, a Rupture,
 “ or a Tumor, provided there is no Inflammation,
 “ we ought always to begin our Bandage upon the Part affected, and that in the
 “ middle of it, rolling the Fillet hard about
 “ it, and so continuing till 'tis pretty tight, after which the Extremity of the Fillet ought
 “ to be carried upward, and there made fast.

The second Intention that moves us to begin the Bandage upon the Part affected, is to disjoin and separate what is apt to unite and glew together, as in Burnings upon the Chin, Fingers, Feet, &c.

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The third Design is to keep the Medicines upon the Part ; in which Case we call the Bandage a *Contentive* Bandage.

When we begin the Bandage upon the neighbouring Part, we do it likewise for 3 Reasons.

The first is, the Reduction of dislocated Bones ; if the *Condylus* of the *Tibia*, for instance, which is articulated with the Thigh-Bone, be dislocated to the outside, we must lay the first Cast of the Filler or Band on the inside, and roll it hard round the outside, where the Dislocation happen'd, and end the Bandage at the Place from which the Bone was dislocated. Such are the Orders of *Hippocrates*. The second Case that requires the Commencement of the Bandage upon the adjacent Part, is that of Ulcers, which demand an expulsive Bandage. If an Ulcer, for instance, is seated in the Leg, a little above the Ankle, we begin to wind the Roller under the Sole of the *Foot*, and so mount upwards by *Dolours*, *i. e.* such Rolls, as leaving the 3d part of the Band uncover'd, making Reflections or Plaits till we come at the Calf of the Leg, and then carrying it up to the Garter-place, where we make a stronger Constriction, and so finish the Bandage. This we call an Expulsive Bandage, which serves to dislodge and expel the Humour that sculks in the *Sinus's* of the Ulcers.

The third way of binding, is that in which we begin the Bandage on the opposite Part, whe-

whether the Wound be on the fore or the hinder part of the Body. If the Wound is in the middle of the Forehead, for instance, running length-ways, we must re-unite the Parts with a Roller of two Heads, perforated in the middle, and begin the Bandage by applying the middle of the Roller to the Nape of the Neck, after which we draw the two Balls or Heads, one in each Hand, from behind, forwards, and pass one of the Balls or roll'd Heads through the Slit in the middle of the Roller, so as to make the middle of the Slit to fall directly upon the Wound, and so continue to make as many Rounds as are needful for re-uniting the divided Parts.

The fifth Difference of Bandages, is taken from the Order observ'd in simple Fractures, which requires a compleat Number of Bands, Compresses and Past-boards. The under Bands, which are call'd *Hypodesmides*, from lying under the rest, are first apply'd; and that in such a manner as to make the first under-Band lie directly upon the Fracture, and make three Turns round it. For Example: If the *Tibia* be fractur'd, and the Bone cast to the outside, we must begin the first Cast of the Band from the inside outwards, making three Rounds upon the Fracture. In like manner, if the *Tibia* be fractur'd so as to throw the dislocated Bone to the inside, we make the first Turn from the outside inwards, and cast three Rounds about the Fracture,

cture, and so rise with *Doloiers* and renvers'd or reflected Rounds, and terminate at the Garter. This Band ought to be three large Fingers broad, or more, in proportion to the thickness of the Leg, and three Ells long. The second Under-band ought to be three Ells and a half long, and as broad as the first. With this we make two Turns round the Fracture, casting them the same way as with the first, and then run it downwards under the Sole of the *Foot*, endeavouring not to cover the Ancles, after which we carry it up again with fewer and slacker Turns than those of the first.

Now this second Band differs from the first in three Particulars. 1. The Length, because it goes a greater Way. 2. Its Turns round the Fracture, there being fewer and slacker. 3. The Distance or Interval left between its Rounds, which is larger than in the first, that it may reach up to the Garter, where the first ended, as *Hippocrates* informs.

Hippocrates and *Galen*, whose Sentiments I follow in this small Treatise, without perplexing my Reader with the Opinions of other Authors, who muster up a great Number of Bands for Fractures. These two great Masters, I say, inform us, That the Bandage call'd the *Epidescmis*, or the upper Bandage, is accomplish'd with two other Bands, besides the two mention'd but now: And here I shall content my self with shewing the difference be-

between the first and the second of these upper Bands ; for when I come to speak of the Fractures of the Limbs, I shall omit nothing relating to the Longitudinal and Transverse Compresses, and the other Dressings applied after the Application of the four Bands.

The Application of the two under-Bands is already accounted for : As for the two upper Bands, or the *Epidesmides*, if we mean to recover the natural Situation of the Muscles, from the inside to the outside, we must begin on the outside to roll the first of 'em upon the fractur'd Part, making only one round, and then turn upwards, and end with the two *Hypodesmides*.

The 2d *Epidesmis*, or upper Band, must be applied above, and brought downwards to the Place where the first commenc'd, casting the Turns from the same side with the former.

These two differ from one another in this, that the Rounds of the first, which run upwards, are closer and more numerous than those of the second.

Hippocrates and *Galen* shew, that this upper Bandage serves for four Uses. First, it keeps the fractur'd Bones tight, and hinders 'em to disjoin. Secondly, It strengthens the under-Bandage, and keeps it firm. Thirdly, It keeps the Compresses in their proper Situation. Fourthly, It hinders the Past-boards to gall or bear too hard on the Parts. Of Splints us'd in Fractures I shall have occasion to speak hereafter.

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The Sixth and last Difference of Bandages, is taken from the Parts to which they are applicable. Pursuant to this Difference we call some Bandages *Common*, and others *Proper*. The *Common* are such as may be applied not only to one Part, or for one particular Disorder, but to several Parts of the *Body*, and that upon several different Disorders. The *Proper* Bandages are such as are only suitable to certain particular Parts and Disorders, and are not proper in any other Case.

The simple common Bandages are either equal or unequal, under or upper Bandages, with Wounds, or without, Incarnative, or Expulsive or Retentive. As for the Bandage call'd *Rhomboides*, I shall take but little notice of it, for tho' it be listed into the Number of common Bandges, it does but little Service, and is not us'd either in Hospitals or elsewhere, not to mention that it can't properly be applied to any part but the Feet; so that 'twould be needless to spend time upon it; however, I shall shew its Use, as well as that of all the other common Bandages in the proper Places. In the mean time I can't but remind my Reader, that some Bandages are Remedies of themselves, and others serve only to keep the Medicines upon the Parts. Those which are Remedies of themselves, are either *uniting*, *dividing*, *expulsive*, or *attractive*. The Union-Bandages are us'd on several Occasions, such as Fractures, longitudinal Wounds, and
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the like. The disjoining Bandages are us'd in Burnings of the Fingers, and in Burnings of the Chin, to prevent its sticking to the *Sternum*. The Expulsive Bandage is us'd in Ulcers, to squeeze out the Matter retain'd in the Sinuosities. The Attractive Bandage is of use to recall the Spirits to a decay'd Part. A Contentive serves only to keep the Medicines upon the Part; and this is the only sort of Bandage that the Neck can conveniently bear, by reason of its being employ'd in the two most necessary Actions of Life, *viz.* Respiration and Deglutition.

Having thus explain'd the Nature of Bands, with their Differences, Parts, and Conditions, together with the Differences and Uses of Bandages, I come now to treat of the Application of Bandages.

CHAP. III.

Of the Application of Bandages, both Common and Proper.

I Here propose to lop off a great many Bandages that are of no Use in Practice, such as the *Rhombus*, the *Demi-Rhombus*, the *Tolus* of *Diocles*, the *Scafa*, the *Cancer*, the Bandage with four Heads, or six Heads, or Eight Heads, the Royal Bandage, the *Bolonese*, and the Web of *Perigenna*, which are all common Bandages of the whole Head,
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excepting *Diocles's Tulus*, the *Demi-Rhombus*, and the *Scafa*, which are proper Bandages. The *Scafa* is proper or peculiar to the bleeding of the Vein in the Forehead, the *Demi-Rhombus*, and the *Tulus* of *Diocles*, to Wounds about the Ears. In regard I am not to mention these hereafter, 'twill be needless to shew the manner of applying 'em; and forasmuch as we have other Bandages that may be apply'd to the whole Head, and to any of its Parts, I shall content my self in giving a clear Explication of those that are serviceable.

I begin with the great *Kerchief*, which ought always to lead the Van of the common Bandages of the Head. We make it thus: We take a Napkin, and fold it lengthways, in such a manner, that the two lower Ends run two large Fingers breadth beyond the upper; then we double the Napkin four times, so that the Thumbs may be within, and all the Fingers out, and the right Hand hold the four Ends or Heads. This done, the left Hand takes hold of the other side of the Napkin thus folded, at the distance of two Fingers breadth from the Selvage; and a Mark ought to be made there with the Nail of the Thumb of the right hand; after that, let the right Hand open or turn out the Napkin, the left Hand continuing to keep hold of the Plait or Fold till the Napkin is quite spread and unfolded. Then with your two Hands take hold of the Napkin under the broadest Selvage, keeping your two Thumbs out,

out, the one opposite to the other; then apply the middle of the Napkin to the Head, in such a manner, that the Root of the Noose may fall directly between your two Thumbs that hold the Cloth, which must be apply'd to the Root of the Hair, and with the Palm of the right Hand you must take care it does not give backwards; with the left Hand give one of the upper Heads to one of the Assistants, or to the Patient, to hold: This done, place your left Hand where the right one was, and give the other Head to some-body to hold on the other side. The two Heads being held opposite to the Chin, the Surgeon takes hold of the lower Heads by the Extremities, and pulling them equally on either side, forms 'em into the figure of a Goose's Foot, which he fastens with a Pin behind the pit of the Neck: And to give the *Kerchief* the last degree of Perfection, he puts in his Thumb at the upper part of the Sinuosity, and then pulls from before backwards up to the top, with intent to make the Plaits equal that compose the Goose's Foot.

Now, to know what the Sinuosity is, we must consider, that the great *Kerchief* is made up of six parts; namely, four Heads, two behind, that fix at the Nape of the Neck; and two before, that fasten under the Chin; and that which hangs down upon the Breasts, which is no more than the Cloth plaited, is call'd *the Sinuosity*. To make up the six Parts, this Sinuosity is double, one on each side, of
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which we make the Cap, by turning each of 'em up in a strait Line near the lesser *Canthus*, or the outer corner of the Eye, and making 'em joyn equally together, or meet one-another on the Crown of the Head. Then you are to make the rest of the Napkin very even, without any Plait. And this is what we call the great *Kerchief* with its Cap.

The *Second Kerchief*, properly so call'd, is made of a Handkerchief laid cross, which folded from the middle, is form'd into four very equal Heads, two before and two behind; the Cloth is folded again into four Doubles, equally in the middle, where a Mark is made; then you take hold of the Handkerchief with both your Hands, keeping all your Fingers on the under, and your two Thumbs set one against the other on the upper side of the Cloth: And thus you apply it to the Head directly, at the Extremity of the middle part of the Forehead, each Head being pull'd on each side with one Hand; then you run along with your Thumbs which are still above the Cloth, and the other Fingers under it, gliding them along the Skin to the Nape of the Neck, where each Hand shifts its Head, and then the Heads are brought round to the Forehead, where they are made fast with a Pin, without any Plait; the Posterior Heads lying equally one upon the other, being made fast with a Pin on the Crown of the Head, and a Plait being likewise made on each side, which pulls from below upwards,
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in order to make the Linnen lie smooth and even, that so it may not hurt the Patient. So much for the two common Bandages of the Head, that are us'd in Practice. The rest I wave, as I said before.

The next in order that deserves our regard is a Sling with four Heads, which is made of a piece of Linnen half a Yard long, and as broad as the breadth of 6 or 8 large Fingers. The Cloth must be folded in the middle of its Length, and about a fourth part of it cut or slit, leaving the rest entire. The Band is applied to the Crown of the Head, the Nape of the Neck, the Forehead and the Chin. The manner of Application is this: Take hold of the Band with your two Hands near the end of what is cut, and apply it cross-ways upon the top of the Head, placing the flat unslit Part upon the Place affected. By this means the upper Heads will fall downwards, and the lower ones will mount upwards crossing the upper, the lower being made fast behind the Ears, and the upper upon the Forehead.

To apply it to the Chin, place the flat entire Part upon the Chin, draw the superior Heads downwards, cross them at the Nape of the Neck, and make 'em fast at the Crown of the Head; at the same time make the lower Heads cross the upper, and run upwards along the Cheeks, to be made fast upon the Crown of the Head.

The Forehead has a peculiar Sling, notwithstanding

withstanding that the Sling with four Heads is common to it and the other Parts. Take a small piece of Linnen, and cut it into four Heads or Ends, leaving no more uncut than just the breadth of the Forehead. In this Case the Heads cross one another, just as above. These Slings are very proper in hot Countries, where 'tis not proper to load the Head; and they are of use in all the Wounds of the Head and Forehead, and in the Abscesses of the Chin and Neck.

Besides the last, there are other Bandages peculiar to the Forehead, particularly the *Uniting Bandage*, which is made thus: Take a Fillet two Ells long, and two Fingers broad, make a Slit in the middle of it, apply it to the Nape of the Neck, pulling the Heads or Ends on each side, and passing them thro' the Slit, which ought to be plac'd in the middle of the Wound, and so make 2 or 3 circular Rounds about the Forehead. This *Uniting Bandage* of the Forehead is proper for longitudinal Wounds.

There are three Bandages more, peculiar to bleeding in the Forehead, namely, the *Discrimen*, the *Royal*, and the *Scafa*: But I shall here content my self with shewing the Application of the *Discrimen*, because 'tis better and more in use than the other two.

Before I shew the manner of applying this Bandage, 'twill be proper to reflect upon the way of Bleeding in the Forehead, and all the
Parts

Parts of the Head; for upon such Occasions you must make a Ligature upon the Neck, drawing the two Heads of it forwards under the Chin, and giving them to the Patient or some Assistant to hold; and the Ligature must be girded as much as the Patient can bear. This done, the Patient must shake his Head downwards three or four times, in order to raise the Spirits and make the Vessel appear. When you have taken as much Blood as is necessary, cover the Orifice with your Thumb, and apply the Compress with your left Hand, then take a Fillet of two Fingers breadth, and three Ells long, roll'd up to a Head; measure from the End of the Fillet the Length that reaches from the Forehead to the Nape of the Neck; then take the Part thus measur'd in your Right Hand, and apply it to the Compress, so that 'twill hang down over the Eyes. Thus hold the Fillet fix'd upon the Compress with the Thumb of the Left Hand, and the Ball or Head in the Right Hand, which run obliquely upwards under the Left *Os Parietale*, after which bring it down to the Nape of the Neck, and so under the Right Ear, so as to cover the Compress; then raise the first end of the Fillet that was left dangling down, and draw it obliquely to the right *Parietale*, that it may make a Round equal to the other. With the right Hand draw out the Ball to 3 or 4 Rounds about the Forehead, upon the Orifice. This Bandage
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is call'd *Discrimen*, i. e. Distinction or Separation. 'Tis proper for Bleeding in the Forehead, and in the Temple Artery.

The proper Bandages of the Eye are of two sorts, one for one Eye only, and the other for both. A Fillet for one Eye ought to be two Ells and a half long, and three small Fingers broad. Before you apply it, you must cover the Eye with a round Compress of Linnen steep'd in an appropriate Liquor. If you mean to dress the left Eye, hold the Roller in your right Hand, apply the end of it to the Nape of the Neck, which you hold with your left hand, run it behind the Ear, upon the Cheek, and so cover the Eye, after which raise it obliquely above the Forehead to the upper part of the right *Os Parietale*, then bring it down the Nape of the Neck, and so run it along the first Cast of the Fillet, which by this means becomes double. When you come to the Nape again, raise it, and make two circular Convolutions round the Forehead, and at last fasten it with a Pin where you will.

A Fillet for both Eyes ought to be three Ells long, and of the same breadth with the last. This may be apply'd in a Roller, either with one or two Heads; but a Roller with one Head is most commodious, and more easily apply'd. You begin as in the former, by applying the end to the Nape of the Neck with the left Hand, holding the Roller roll'd up to one Head in the right Hand, above either the
right

right or the left Eye ; then bring it about to cover the Eye, running obliquely upon the upper part of the left or right *Os Parietale*, and so return to the Nape ; after which run it forwards again along the other *Os Parietale*, above the Eye, and upon the Cheek, and so return again along the first Round to the Nape. Then raise it above the Ear, and make circular Convolutions round the Forehead, and at last make it fast by the Ear. In this Application you must take care not to gird the Eyes hard, for they are very sensible Parts, and the flux of Humors and Pain would thereby be encreas'd.

Here I can't pass by a great Disorder in the Eyes that I met with in my Practise, as being a fit Subject for *young Surgeons* to reflect upon. ' I was call'd to a young Lady in the Country, ' about six Leagues from *Paris*, that had a great ' *Erysipelas* or *St. Anthony's Fire* in her Face, her ' Eyes very much inflam'd, and a violent In- ' flammation in her Eye-lids, with a livid Co- ' lour, and disposition to a Gangrene. Being ' all alone, without any Physician to consult, I ' scarify'd the two Eye-lids all over, and made ' a Digestive of the Yolk of an Egg, Myrrh, ' and Aloe dissolv'd in *Spir. Vin.* with which I ' anointed the Pledgits, applying above each ' Pledgit a round Compress to each Eye steeped ' in a Decoction of *Roses, Wormwood, Fenugreek, ' Fleabane, Linseed, and Marshmallows*, in *White- ' wine*. Before I apply'd the Compress, I moi- ' sten'd the Eye-lids twice a day with the same ' Li-

‘Liquor very hot, making use of false Tents,
‘for the Junction of the Eye-lids was very te-
‘nacious and apt to adhere. - The Eyes were
‘quite shut for ten Weeks, *viz.* from the mid-
‘dle of *May* to the end of *July*. I waited upon
‘her all *June*, and confin’d her to an exact
‘and suitable Diet, for there were ugly Symp-
‘toms about her, particularly a *Fever*, and a
‘*Delirium*. She was blooded 15 or 16 times,
‘took several Clysters a-day, and had Caute-
‘ries apply’d to her Neck and behind her Ears.
‘At the end of *June* I brought her to *Paris*,
‘and was assisted by Dr. *Deuxvioye* all the
‘Month of *July*, during which we continued
‘to dress her with the above-mention’d emol-
‘lient Liquors, and at the end of that Month
‘she open’d her Eyes, and saw perfectly well,
‘having suffer’d no Alteration in the Body of
‘her Eyes; and her Eye-lids were so well
‘cicatriz’d, that no Scar was to be seen.

● This Observation may afford Instruction to
Young Students of Surgery, who in the like Case
happening to be destitute of the Assistance of a
Physician, in the Country or elsewhere, may
use the same Method, with a particular Care
not to leave the Patient if they can stay by
him, and to injoin a suitable Regimen in the
way of Diet. Upon this Occasion I may say
after *Galen*, *Averroes*, *Albucasis*, *Guido*, and
Falco, That tho’ *Surgery* be a Manual Opera-
tion, a Surgeon ought to be acquainted with
some Principles of Physick, in order to be a

Judge of Natural Things, and to prescribe such Diet and Medicines as are proper for every Distemper.

The Nose has both *proper* and *common Bandages*; the *common* are three, *viz.* the *Sling*, the *Rag*, and the *Uniting Bandage*. The *proper* are of two sorts, *viz.* the *Nose*, and *Fossa of Amyntas*.

The *Sling* ought to be an Ell long, and two good Inches broad. You must fold it into a double, and cut it along the middle lengthway into two Heads, leaving only the breadth of two Fingers uncut. This Bandage is proper for the transverse Wounds of the Nose and the Cartilage, and is apply'd like that of the Forehead, by taking it into your two Hands at the place where the Cutting ends, placing it upon the middle of the Nose, and drawing the upper Heads downwards to cross at the Nape of the Neck, and so be made fast at the top of the Head; the lower Heads being brought along the Cheeks, to cross likewise behind the Head, and be made fast upon the Forehead.

The *Rag* is a common Bandage of the Nose, which may serve for all its Disorders, excepting Longitudinal Wounds. To make this, you measure from under the Nose to the Nape of the Neck, which makes about half an Ell; and that part of it which runs from the Nose to the Nape ought to have the breadth of two large Inches; but what covers the Nose itself should be somewhat broader, which occasions its being call'd a *Rag*. The remaining part of
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the Fillet or Swath must be slit as far as under the Nose, and the Heads that cover the Nostrils must be slit, to give way to Respiration. Under the Nostrils, and above the Band, apply a small Ribbon of half a Finger's breadth, and an Ell in length, and make it fast at the Nape: The two Heads that hang down must cross one-another under the Nostrils, so that *that* on the left side moves to the right, and that on the right turns up on the left, near the lesser *Canthus's* or Corners of the Eyes, there to form the *Sparhawk*; and if there be a Fracture in the Nose, you may make of the same Heads the *Fossa* of *Amyntas*, by conducting them accordingly. The Head on the right side runs from before backwards above the Ear, and behind the Head; then it rises obliquely above the left *Parietale*, and making a cross upon the Nose, glides along the Cheek, and under the right Ear. The Head on the left side takes the same course with the other along the right *Parietale*, above the middle of the left Cheek, and under the Ear, so that the two Heads cross one-another at the Nape, and then rising on their respective Sides, come under the Ears; after which, they make circular Convolutions upon the Nose, running from before backwards, and so cross at the Nape, and at last rising above the Ears, circulate round the Forehead.

The Bandage call'd the *Nose*, is proper for the Venæsection perform'd on the Tip of the

Nose, by making a Ligature in the Neck: It ought to be two Ells and a quarter long, and two Fingers broad. In order to apply, roll it up to a Head, hold the Roller in your right Hand, apply your Compress to the tip of the Nose with your left Hand, and keep it on with your Thumb; then measure upon the end of the Roller the distance from the tip of the Nose to the Nape of the Neck, and hold the Roller at the end of the Part thus measur'd; this done, apply that very place of the Roller where you hold it upon the Compress, and keeping it firm upon the Compress with the Thumb of the left Hand, hold the Ball or Roll still in your right, and run it above the Suture call'd *Sagittalis*, from before backwards, and so pass it above the Nape of the Neck, then under the Ear, afterwards upon the Cheek, and so on above the Nose. Then take the end of the Fillet that hangs dangling down upon the Breast, raise it above the Nose, along the *Sutura Sagittalis*, to the Nape, and so to the main Body of the Roll, with which you are to make three or four circular Turns, or more if there be occasion, round the Nose.

Having promis'd in my Preface to shew the Way of reducing Fractures and Dislocations, and of distinguishing their Signs, I find my self oblig'd to commence that Task with the Fracture and Luxation of the Nose.

CHAP. IV.

Of the Fracture and Luxation of the Nose.

THE Bones of the Nose may be dislocated; but the Accident is very unfrequent. I once saw a young Surgeon that had suffer'd a Luxation of one of the Bones of his Nose by a Fall; and being imploy'd to set it right, I presently discover'd that the young Man's Nose was very crooked, and set it accordingly. I took a small Stick fitted to his Nostril, and having cover'd it with Linnen, conducted it into that Nostril with my right Hand, and push'd the Bone strongly upwards, resting the Thumb of my left Hand upon the Root of the Nose; by this means I put the Bone into its proper place, and in rejoyning the other Bone it made a noise. There was no occasion to lay any thing above it, because here there are no Ligaments, and the Bones being only cover'd with their *Periostiums*, can't slip out.

The two Bones of the Nose may be fractured, and so may any one of 'em by it self, and the Reduction is not very easie, by reason of their situation, smallness, and figure, for they are very thin in Substance, convex on the outside, and concave within, in order to form the Nostrils. By this means it comes to pass that upon a Fracture the Splinters sink inwards; and the Difficulty lies in raising these small

Fragments, and keeping 'em in a due posture of Union. However, with a little Dexterity the Reduction may sometimes be accomplish'd, by introducing into the Nostril a small piece of *Fir*, or any other *soft Wood*, garnish'd with *Lint* or *Cotton*. If it be the left Nostril, we must convey it in with the right Hand, and the Surgeon ought to rest the Fore-finger of the left Hand upon the *Bone* of the *Nose*, or upon *both*. If both are fractur'd, the Surgeon conveys his garnish'd piece of *Wood* into one Nostril, and a Servant thrusts another piece of *Wood* into the other Nostril; and the Surgeon makes the *Conformation* or *Regular Position* with the end of his Fore-finger, or of his Thumb. This Process being over, the Surgeon is to put in a *Leaden Pipe* (or two, if the Fracture affects both the *Bones*) well arm'd with *Lint* or *Tow*, that it may be soft and inoffensive.

The Pipe serves for two Uses, *viz.* to keep up the due Position of the *Bones* thus set, and to procure Respiration. We tie 'em to the Patient's Cap with small Ribbons on each side. 'Tis needless to speak of the Signs of this Fracture, since the Deformity or unwonted figure of the *Nose* is sufficient to discover it; for nothing disfigures a Man more than the *Nose's* being sunk, or plac'd in a *crooked Position*; and if the Fracture be not remedied, 'tis follow'd by two very *troublesome Inconveniencies*. If the *Bone* continues sunk and flat, the Patient will have a stinking *Nose*; if it stands awry, nothing

thing is more unsightly and disagreeable to the Eye. Upon this Consideration I would have all *Young Surgeons* be particularly careful in the Cases of this *Fracture*, and omit nothing that's proper to be done upon the Occasion.

The Bandage for the Fracture of the *Nose* is the *Fossa of Amyntas*, which is made of a Fillet three Ells long, and of the breadth of one's little Finger. The Dressings consist of small Compresses and Pastboard to contain the *Bones*. There ought to be two small Compresses of Linnen, doubl'd four times, two inches long, and half a large Finger broad, which are to be laid along each side of the *Nose*, to fill up the Cavity of the great *Canthus*; and above these we should lay smaller Compresses. We are likewise to lay on another Compress of Linen in a triangular form, of the same breadth with the *Nose*, and guard it with a small piece of Pastboard of the same figure, the *Pastboard* and *Compress* being sew'd together. This little *Compress* and *Pastboard* ought to be laid upon the *Longitudinal Compresses*, and its Points should reach to the tip of the *Nose*. This done, we take two other *Compresses*, the breadth of one Finger, and eight Fingers breadth long, and apply it cross-ways, so that the middle of it falls upon the *Root* of the *Nose*. In the mean time 'tis still to be remember'd, that the little Pipes mention'd above are to continue in the *Nostrils* (or only *one Pipe* in *one Nostril*, if only *one Bone* be broken) till the Re-union is accomplish'd.

complish'd. The Fracture is to be ty'd up with a Fillet or Swath the length and breadth prescrib'd before, roll'd up to a Head. If you begin from the left Side, you must hold the Roll with your right Hand, and the end of the Roller with your left, which you are to place on the Nape of the Neck, and there keep it firm. With your right Hand you draw the Roller obliquely over the lowest part of the Cheek that you can reach, passing it above the *Os Parietale*, and by the Nose; then rising upwards to the upper part of the right *Parietale*, you run it behind the Head, and so return forwards above the left *Parietale*, over against the other Head; then having cross'd the two Heads upon the Nose, you descend by the lowest part of the right Cheek, so that the two Rounds of the Roller upon the Cheeks may be equally low. After that, you continue to roll from the right Cheek to the back parts of the Head, as low as you can go, and then make a Round upon the Nose from before backward. This done, you turn along the middle of the *Os Occipitis*, and at last make a Circle round the Forehead, in order to make fast the Bandage.

CHAP.

CHAP. V.

Of the Bandage of the Ears; and of the Cap of the Head.

THE proper Bandages of the Ears, are Slings with six Heads. The Linnen of which the Sling is made must be three quarters of an Ell long, and four Fingers broad. You first fold it into three Doubles, then fold it again in the middle, after which the end of the Plait must be folded in about the breadth of two inches; then you cut the Linnen at the two ends, on each side, to the Mark of the Plait or Fold, which gives you six Heads. You must take care to cut but very little of these ends of the Fillet. Having dress'd *one* or *both* Ears with proper Remedies, you're to lay two Compresses of the same figure with the Ear, one above, and another under the Ear; then you place the uncut part of the Sling upon the Ear, not across, but lengthways, so that three Heads may rise upwards, and the other three fall downward, and passing under the Chin, rise again to the top of the Head, where all the six joyn one-another. This Bandage is a *Contentive Bandage* for the *Wounds* and all other *Disorders* of the Ear.

Tho' the Cap is rarely used for the Head, yet considering that 'tis made use of in Amputation of Arms and Legs, I would have young

Students to know it, that they may be capable to use it upon Occasion. The Filler of which 'tis made should be about six Ells long, and two large Inches broad. It must be roll'd up in two Balls or Heads, one to be held in each Hand; then placing the middle of the Filler upon the Forehead, you advance the Ball of the right Hand to the left Ear, and there stop; after that you advance with the Ball in the left Hand that rested upon the Forehead, beyond the right Ear, where you stop till the Ball in the right Hand comes to the Nape of the Neck; then the Ball in the left Hand advances likewise to the Nape, where your Hands are to exchange Balls; after which, while the left Hand holding the Ball that was in the right, rests upon the Nape, the right Hand with the Ball must pass above the left Hand, and advance to the right Temple, where it stops and stays for the other: This done, the left Hand that was posted at the Nape, raises its Ball by a *Reflection*, and passes over the *Sagittalis Sutura*, upon which the Thumb being planted directly upon the middle of the Ball, 'tis drawn directly to the Root of the Nose, where it rests under the Fore-finger of the left Hand, while the Ball in the right Hand passes above the first Head, upon the Forehead; and there the two Hands exchange Balls again, and the right Hand keeping fast the Ball upon the lower part of the Forehead, the left advances as at first, beyond the right Ear;

Ear, and there stops; upon which the right that rested upon the Forehead, raises its Ball with a renvers'd Turn in forming a second *Doloire*: And thus by continuing to round in the same manner from behind forwards, and from before backwards, so that the Fold of the renvers'd Turns are all one above another, both on the Forehead and the Nape, the *Capeline* or *Cap* is finish'd by *Doloires*, and the Head is cover'd all over.

I know very well that there's another way of making it, by running the Fillet along the lateral Parts of the Head, and making the renvers'd Turns both at the Forehead and the Nape, the use of which is to keep the Sutures right; but considering that 'tis very uncommon, I wave the Description of it. 'Tis sufficient for any young Beginner to know the Method I have now laid down, which will prove very easie upon the least Reflection. In the mean time, 'twill be proper to take notice, that all Caps are made by three Bandages, namely, the *Circular*, the *Renvers'd*, and the *Doloire*.

Having thus demonstrated the common Bandages of the Head, and part of those of the Face, and the way of applying them, it remains to touch upon those of the lower Jaw; to which I must first premise the Fractures and Luxations of that part, with their Signs and Ways of Reduction, but not in a distinct Chapter, for my Method leads me to include
all

all relating to one Part in one Chapter, as I have already done in treating of the Fractures and Luxations of the Nose.

CHAP. VI.

Of the Signs by which we discover a Fracture and Dislocation of the lower Mandible, and of the Means to reduce it, with the proper Bandages, and the whole Process of the Dressing.

THe lower *Mandible* may be fractur'd all over the Extent of its Body, which includes all the Teeth. When 'tis broken in the middle, the Signs are apparent, and obvious enough both to View and Touch. If 'tis broken obliquely into Splinters, you must put your Fingers into the Patient's Mouth, and press up the Eminencies both on the inside and the outside, in order to unite the Ends one with another; if the Fracture runs quite thro' a-cross, so that the Ends lie one against another, you must make an Extension, and Counter-Extension, by pulling with your two Hands, the one forward, and the other backward, in order to join the Bones one with another; and if the Teeth are divided, shatter'd and struck out of their Sockets, they must be reduc'd to their proper Places, and join'd and fasten'd to those which are fast, with a Silver

or

or Gold Wire, or small Brass-Wire, or else upon a fresh Occasion, with a wax'd Thread. The Teeth ought always to continue thus chain'd till the *Callus* is made.

As the lower *Mandible* may be broken several Ways, *viz.* either into Splinters, or across, or lengthways, so it creates a great deal of Trouble to a Surgeon, by reason both of its Figure and its Action, and especially when 'tis broken into several Splinters.

I can't well shew the manner of reducing all the Fragments of the Jaw; a thorough-pac'd Knowledge of that matter depends upon the Industry of a skilful Practitioner. But that our Surgeons may not be quite destitute of Instruction, I must acquaint 'em, that in such Cases they must have Recourse to Advice from others; and above all, when they examine the Bigness and Extent of the Fracture, they ought to consider the Figure of the whole lower *Mandible* that forms the Chin. The true way will be to invent upon the Spot a Machine, whether of white Iron, or of Leather or Past-board, which is very much in Use. For if there are several Splinters in the *Mandible*, then you must compress it the harder, and make use of a Chin-piece made of Tin, arm'd with Cotton, and good Linnen Compresses. The *Sling* with four Heads, describ'd above for the Chin or the Forehead, may be us'd upon this Occasion. But when the lower *Mandible* is broken in length or cross-

cross-ways, you're to make use of Compresses of Linnen and Past-board, of the same Figure with the lower *Mandible*, or as near as they can be. Here I address my self only to young Surgeons; if they're acquainted with the Figure of the Bone, I'd give 'em the Advice of *Pareus*, one of the greatest Practitioners of his Time, *viz.* That *that* which in his Youth instructed him perfectly to reduce Fractures and Luxations, was the gathering of Bones in the *Church-yard*, with intent to view 'em narrowly.

After a due Survey of the Figure of the lower *Mandible*, and the means to reduce it, we must endeavour to keep up the Union by Bandage and Compresses. The Bandage is call'd the compound *Horse-Bandage*, with allusion both to its Figure and its Use, for by its Figure it represents the way of bridling a *Horse*, and its Use consists in preserving and guarding the Union of the Bones. The Bandage ought to be made of a piece of Linnen folded in four Doubles, as I said before. It ought to be sixteen Fingers breadth long, and have a Hole or Slit in the middle to receive the Chin. Then you must have another Compress of Linnen sew'd to a Past-board, of the same Figure with the Compresses, and open in the middle. Let the first Compress be steep'd in some Anodine or Defensive, such as the Yolks of Eggs beaten up in Vinegar and Water, and apply the Slit of it to the middle of the Chin, pinning it to the Patient's Cap,

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on each side the Temples. The second Compress, with its Past-board, should be apply'd in the same manner. As for the Fillet for the Bandage, it must be six Ells long, and two Inches broad, and being roll'd up in two Balls or Heads, should be apply'd under the Chin, and from thence mount upwards along the Cheeks, near the lesser *Canthus* of the Eyes, till it comes at the Crown of the Head, where it crosses, and the two Hands shift Balls; this done, you must descend to the Nape of the Neck, and after crossing and shifting Balls again, return from behind forwards under the Chin; there you must cross again, and then re-ascend to the Nape, and after crossing again, return under the Chin, from whence rising upwards upon the Cheeks, you make a third *Doloire* on each side. This done, you cross yet again upon the Crown of the Head, and re-descending to the Nape, cross yet once more, and so return under the Chin, where you are now to observe, that you must not cross, but pass the Ball in the right Hand above the Chin, and under the Ball of the left, running it to the right Ear, where you stop a little. Then the right Hand takes the Ball of the left, and passing above that of the right, circulates it upon the Chin; after which you re-descend to the Nape, to cross after the usual manner, and make a circular Turn round the Forehead; and if the Fillet be too long, you must run it once more about the Chin.

Chin. This is what we call the *Chin-cloth*.

This I take to be a satisfactory Account of the Fracture of the lower *Mandible*; it remains now to treat of the Signs of its Luxation, and the Means to redress it.

We know that the lower *Mandible* is dislocated, first, when the *Chin* turns to one side, and the *Condylus* makes an Eminence on the other; and secondly, when the Mouth stands awry.

The *Mandible* may be dislocated either forwards or backwards, but more readily forwards, because the upper part of the *Glenoides* Cavity of the Temple-Bone is smooth, even, and slick, which makes the *Condylus* throw to the Fore-side rather than backward, and in that Case the *Chin* leans a great deal more to the dislocated side, than when the *Condylus* flies backwards, and rests upon the *Mastoides Apophysis*.

There are two Signs by which we distinguish the one Luxation from the other: The first Sign that speaks a Dislocation backwards is, that the *Chin* does not lean so much towards the side of the Dislocation; and the other Sign of the same Importance is, that the *Condylus* makes no Eminence on the sound side. For an Experimental Proof of this, take a lower *Mandible*, separated from the Head, and place the right *Condylus* in its Cavity, supposing the left to be violently out, and resting upon the *Mastoides Apophysis*, you'll then see that the *Chin* does not lean so far to the right Side.

Side, and the *Condylus* of the same Side does not jut out.

Such are the justest Signs we can give of the Dislocation of one side of the *Mandible*, either forwards or backwards.

To set the lower *Mandible* dislocated, the Patient should be plac'd lower than the Surgeon, with a Servant behind him to hold his Head, with his two Hands upon his Forehead, the Head being strongly supported by the Servant's Breast. The Surgeon ought to chuse the most convenient Posture, which I take to be that of sitting upon his Knees before the Patient. If 'tis the right Side of the *Mandible* that's dislocated, he must put into his Mouth his Thumb, guarded with a small Filler, both to rest the surer upon the Grinders, and to prevent his Thumb's slipping or sliding off. If one Thumb is not strong enough, he must put in both his Thumbs, and forcibly pull the *Condylus* of the *Mandible* downwards, and so push it into the Cavity. This is what we properly call Impulsion.

The Luxation being thus reduc'd, he must lay the Bandage call'd the *Simple Horse-Bandage* upon the dislocated Side. The Filler should be three Ells long, and two Inches broad, and roll'd up to a Head. After the Compress is apply'd under the Chin, and conducted along the Cheeks, it must be made fast on the fore-part of the Ears. If the Dislocation is on the right Side, the Surgeon
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takes the Ball or Head in his right Hand, and the end of the Fillet in his left, and so places his two Hands behind the Head. Then he passes the Ball in his right Hand under the Chin, and under the end of the Fillet that he holds in his left; after which the right takes hold of the end formerly held by the left, and stops, and then mounts upwards by the back parts of the Cheek, over the dislocated *Condylus*. This done, he makes the first Round of the *Horse-Bandage* from below upwards, and then descends to the Nape; after that, passing the Fillet under the Chin, on the right Side, he rises equally upon the first Cast of the Fillet, and coming to the upper part of the Head, begins to make the first *Doloire* from behind forwards; then he runs it again under the Chin, and re-ascends by the left Side upon the same Cast. Here Care must be taken that the Rounds lie equally one above another on the side that is not dislocated; but this Caution extends only to the simple *Horse-Bandage*. This done, he returns to make the third *Doloire* after the same manner with the former two, running from behind the Nape, makes circular Turns over the middle of the Bone of the *Occiput*, above the right Ear, and ends with two Rounds above the Forehead.

We know that the *Mandible* is dislocated on both sides when it hangs down upon the Breast, and the whole Chin advances forwards; when

when above the *Mandible* we see the temporal Muscles bent, when the *Saliva* drills from the Mouth of the Patient, he being incapable to retain it, and the Patient can neither shut his Mouth, nor move his Tongue in order to speak. The Reduction of a Luxation on both sides, is more difficult than that of one side, and the Symptoms are more grievous. It behoves us to reduce it with all Expedition, in order to prevent the Pain, Inflammation, Convulsion, and oftentimes Death, which ensues on the seventh or eighth Day, sooner or later, according to the Constitution of the Body. All good Practitioners agree, that after 'tis well reduc'd, it becomes firm in twelve Days, and then cannot fall off.

To reduce the Luxation of a *Mandible* on both Sides, you must lay the Patient upon the Ground, or place him upon a little low Chair, and hold his Head fast. Then the Surgeon placing himself before him in the most convenient Posture, must run into the Patient's Mouth his two Thumbs, each of 'em guarded with a small Filler, to prevent the Teeth, as well as to hinder them to slide off. If the Reduction can't be accomplish'd by this Means, by reason that the Mouth is so close shut that he can't put in his two Thumbs, he must have recourse to little Wedges of Fir, of a square Figure, and as big as one's Finger, which being put upon the Grinders to push the *Condylus's* downwards, will serve to set the *Mandible*

dible in its Place, when 'tis push'd from below upwards by the Servant that sits behind the Patient; for which end he puts a Fillet under the Patient's Chin, and pulls it upwards with great Force, resting his Knees upon the Shoulders, the Surgeon at the same time pushing the *Condylus's* downwards, to re-place 'em in their Cavities. The Reduction being made, the Surgeon makes his Bandage, applying a Compress under the Chin as long as the breadth of sixteen Fingers, which is not at all open, but soak'd in Oyl of Roses beaten up with the White of an Egg. The Bandage is the compound *Horse-Bandage*, which is a Fillet done up in two Rolls (as I intimated above in speaking of the Fracture of the lower *Mandible*.) This Compress being plac'd under the Chin, must be made fast on each side of the Temples, being cut sloping in the two ends like a Half-Moon, to answer the Figure of the lower *Mandible*. The Fillet is applied by putting the two Rolls under the Chin, and so mounting upwards under the Ears, crossing upon the top of the Head, by shifting the Roller naturally from one Hand to the other, after which they descend to the Nape of the Neck, then cross and run under the Chin; then they cross again, and so rise up on each side along the first Rounds. This done, they make two *Dolours* from behind forwards, on each side, then they cross on the top as before, after which they re-descend to the

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the Nape, cross there, and re-passing under the Chin, cross again, and rise up along the Cheeks in a third *Doloire*; after which they cross yet again, both above and at the Nape, and re-ascending above the Ears, end in circular Turns round the Forehead.

Having thus endeavour'd to explain, as much as possible, the Application of the Bandages of the Head, it remains now to shew the Application of the Bandage call'd *Divisive*, which is very necessary in Practice. It consists of a Filler done up in two Rolls, about five Ells long, and two large Inches broad, which being apply'd to the middle of the Forehead, runs from before backwards, and then crosses at the Nape of the Neck; then passing from behind forwards, under the Arm-pits, returns from before backwards, and crosses at the Nape; after that mounting up behind the Ears, it crosses upon the Forehead, re-descends to the Nape, and crosses once more; at last, re-passing under the Arm-pits, the two Rolls or Heads make a circular Turn round the Body.

The Bandage call'd *Divisive* serves for the Burnings of the Chin, Neck, and *Sternum*: Whether it be in Children that fall in the Fire, or in an Army, when on the bursting of Cannon, the firing of Magazines, or other Accidents, the Men are burnt either all over the Body, or only in some Parts, as the Head, Chin, Breast, &c. Thus I saw, at the Siege of *Bastie*,
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in *Flanders*, at which the two Batteries of Cannon unfortunately burst, three Gunners were burnt almost all over the Body : One of these three was burnt almost all over the Breast, the Neck, and the Chin, and so there was Occasion to make a Divisive Bandage for him.

For the advantage of young Students in Surgery, I shall here relate what we cur'd these great Burnings with, for I was then in the Hospital of the Army. The Remedy we made use of with Success, was no more than a *Nutritium*, made after the following manner :

Take of *Ceruse* 8 Ounces, common *Oyl of Walnuts* 12 Ounces, *Plantane* and *Rosewater*, or, which is better, *Juice of Housleek* 4 Ounces, with about an Ounce of *Vinegar* ; mix all in a Marble or Leaden Mortar, putting in first a little of the *Oyl*, with a little of the *Ceruse*, a little *Water* or *Juice*, and a little *Vinegar*, and so alternately till all's in ; stir it with a wooden Pestle for six hours, and so nourish it to the consistence of a *Nutritium*.

As for the Neck, the Bandage that properly belongs to it is a *Contentive Bandage*, made of a Fillet an Ell long, and two Fingers broad, the middle of which is applied to the Head, with the two Ends dangling down upon the Shoulders on both sides : After which they take another Fillet about two Ells long and three Fingers broad, done up a Roll, and with that make several circular turns, and so make it fast round the Body. This last Fillet must
not

not gird at all. As for the two Heads or Ends that hang down, they are then rais'd up, and made fast upon the Crown of the Head.

The Breast has its Bandages both *Common* and *Proper*. The *most common* is the *Napkin* with the *Scapulary*, which is call'd the *Scarf of the Breast*, and may be us'd in several Cases, such as the Operation of an *Empyema*, or a *Paracentesis*, in all the *Wounds* and *Fistula's* of the Breast, in fractur'd and dislocated Ribs, and in a Fracture or Luxation of the *Sternum*. Each of these Bandages shall be spoke of in their proper places, when I come to treat of the Diseases of every Part, as they are naturally situated.

CHAP. VII.

Of the Fracture of the Clavicula, or Channel-bone.

THE Channel-bone may be broke forwards, backwards, or in the middle. 'Tis observable, that whatever way it breaks, the end which articulates with the Shoulder-blade is still lower than that end that joyns the *Sternum*, by reason that the Arm makes it lean downwards.

If the Fracture is transversal, 'tis easier to reduce than a round Fracture, upon account that in a transversal Fracture the broken Bone returns to its place, by being rais'd to one side
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or t'other with the Palms of one's Hands and the Fingers; but in a round Fracture 'tis hard to keep the two Ends one upon the other, and they are not so ready to glue together. If the Fracture is round, you must set and pull the Arm backwards, while a Servant pulls the Shoulder forward from his opposite. If the Fracture is transversal, whether forwards or backwards, in order to reduce it, you must place the Patient upon a Chair without Arms, after which set your Foot against the Chair on which the Patient sits, and with your Hands take hold of the two ends of his Shoulders; then pull strongly from before backward, pushing with your Knee from behind forward: And if it so happens that you can't reduce it thus, by reason of one of the Splinters sunk downwards, lay the Patient on his Back, upon something that's hard, as a Kettle, Pan, square Stone, or any thing that's proper, cover'd with a coarse Covering; and placing your self in a convenient posture, press the two Palms of your Hands with all your force upon the two Extremities of the Shoulder-blades, from above downwards: And if, after all, there remain any Splinters of the broken Bone that could not be reduc'd, you must make an Incision, and take 'em out with Pincers, cutting the Points that gall the Flesh.

If the Fracture is oblique, or transversal, or if there be many Splinters, you must bring 'em together as near as you can, and on that occasion

sion heedfully guard the Cavities that lie above and below the Channel-bones. If only one Channel-bone be broken, you must apply four Compresses in four Doubles, soak'd in an astringent Defensive made of *Bole-Armoniac*, *Whites of Eggs*, *Dragons-blood*, and *Rosin*, all beaten together. Some apply the Defensive hot in Winter, and lukewarm in Summer, but the better way is to have it hot in all Seasons. The abovemention'd Compresses being carefully apply'd both above and below the *Clavícula*, you're to add two other Compresses, cover'd with Pastboard, and sew'd, to make 'em pliable; these you're to apply over the others in the form of *St. Andrew's Cross*, and they ought to be cut to the figure of the *Clavícula*.

The Bandage is made with a Fillet six Ells long, and four Fingers broad, done up in two Rolls or Heads held in the Surgeon's Hands: The Fillet must be run under the Patient's Armpit, then mount cross upon the Process call'd *Acromion*, after which one of the Rolls should be carried forwards, and there held fast, while the other turning behind, passes under the sound Armpit from behind forwards, and runs above the Roll held fast on the fore-part. The making of this Bandage requires two Persons, one to make the renvers'd, and the other the circular Rounds: And he who makes the renvers'd must be very careful in doing his Duty. He takes the Roller in his right Hand, holding it fast between his four Fingers, with

his Thumb upon the middle of it; then he rises with a renvers'd Turn upwards above the Channel-bone, as near the Neck as he can, lowering the Roll that makes the renvers'd just by the Armpit. Then he stops and holds fast, while the other which makes the circular Rounds about the Body passes above the Roll thus stopt, and then the Surgeon makes the renvers'd Turns with his left Hand. Then he runs the Roller above the first Cast of the Fillet, which he covers three times equally all over. After that, he continues the *Doloires* till the Channel-bone is quite cover'd. This is easily done without any Perplexity, for the two first Renvers'd Convolutions, both before and behind, serve for a Rule and Direction to all the rest. You must know, there's one Roll or Head that makes the Renvers'd, and another that makes the Circular Convolutions. With the last we make the *Geranium*, which is done by drawing the Head of the Fillet from before backwards: Then we bring two Turns to the upper part of the *Humerus*, covering all the Renvers'd Turns, and after passing under the opposite Armpit, make Rounds about the Body, as long as the Fillet serves. Of the other Head that makes the renvers'd Turns we make a Sling for the Arm, or else bring it to circular Rounds, after the same manner with the other, and provide a Gentleman's Scarf, which is better for holding the Arm.

CHAP. VIII.

Of the Luxation of the Channel-bone.

THO' the Channel-bones are articulated with the *Acromion* Process of the Shoulder-Blade and the *Sternum*, by very close and tight Cartilages and Ligaments, yet *Galen* says, that he underwent a Dislocation of the *Clavicula*, which created unsufferable Pain; that he bore such a tight-Bandage as no Man else would have bore, and after having the Bandage upon him for a long while, was cur'd at last. Upon this Subject I shall only stay to make one Reflection that's of use in the way of Practice, namely, that when the Channel-bone is fractur'd in the upper part, near the Articulation of the Shoulder-blade, you must make the Bandage call'd *Spica*, which comprehends the *Geranium*; but if 'tis fractur'd in the middle, or near the Articulation of the *Sternum*, you must apply the *Capeline*.

CHAP. IX.

Of the Luxation of the Humerus.

THE Bone that's articulated with the *Omo-plata* or Shoulder-blade, is call'd *Humerus*, or *Os adjutorium*, because 'tis strongly bore up above, both by Muscles, and by the *Apo-physes* of the Shoulder-blade and the Channel-bone.

bone. *Hippocrates* calls it the Arm, or Bone of the Arm. In this Bone we must first of all remark its Head, which is round, very smooth, slick, and polish'd, and lodg'd in a superficial Cavity, that has neither Borders nor Ligaments, like the *Ischium* and the Knee: Besides, this Cavity is fill'd with a viscous slimy Matter, to facilitate the Motion of the Arm and Hand, which, as *Galen* has well observ'd, are the principal Instruments of Reason: And indeed, if we consider the use of this Member with reference to Mechanicks, we must own, that to it we owe all the fine Pieces of Workmanship that the World boasts of; and that Nature has display'd a wonderful Ingenuity, in allotting the Arm all the Advantages that render it so convenient, and even so necessary in the Course of Life. Upon this Consideration 'tis at once both just and necessary that we should preserve this Part in its natural Posture as much as we can.

Galen says, the *Humerus* may suffer Luxations four ways, *viz.* upwards, downwards, forwards, and backwards. *Hippocrates* says, he never saw the *Humerus* dislocated forwards; and adds, that he does not think such a Luxation is possible: But *Galen* makes an Apology for this Saying of *Hippocrates*, upon the Plea, that the Country where *Hippocrates* liv'd and practis'd was but thin of Inhabitants, and consequently did not afford so many Instances of Wounds and Accidents as *Rome*, which was the

Residence of *Galen*: And to this purpose *Galen* affirms, that there were more People in one Street at *Rome*, in his time, than there were in *Hippocrates's* time in all the Country where he liv'd. *Galen* adds, That he had seen a Luxation of the *Humerus* forwards five times; once at *Smyrna* in *Asia*, and four times at *Rome*. One of the Causes that produc'd this sort of Luxations, he says, was the Wrestling Games, that were very frequent at *Rome* in his Time. The other Cause proceeded from no other Source but the Ignorance of the Bone-setters. He adds, That he saw two Men at *Rome*, who had the Heads of the two Bones under the Armpits, and assur'd him, that instead of one Dislocation, they had undergone two apiece. Now *Galen* perceiv'd well that this proceeded from the Ignorance of the Surgeons, as being unacquainted with the nature of the Articulation, and that they had with great Violence push'd the Bones from behind forwards. Upon this Head I can't but take Occasion to caution *Young Surgeons* to take care of falling into this Error in the like Case, and to inform 'em, that if they observe the Precepts of *Hippocrates*, they'll never be liable to such Mistakes. Since the *Humerus* can only be luxated three ways, viz. downwards under the Armpit, forwards, and backwards, the Luxation upwards being rather a Fracture of the *Omoplatæ* or Shoulder-blade, both in its *Acromion* and in its *Coracoïdes* Process, I shall confine myself to the Luxation

known by *Hippocrates*, namely, that downwards under the Armpit, and lay open the Signs to know it by, and the Means to reduce it four Ways.

The Signs of a Luxation of the *Humerus* in its lower part, are, when you find a Cavity on the Shoulder, and the Extremity of the *Spina* of the Shoulder-blade, call'd *Acromion*, bends outwards, because the Head of the Bone of the Arm slipping under the Armpit, makes an Eminence; the Elbow throws it self outwards, and falls off upon the sides, but if you press it with force, you may make it answer the touch; the Patient finds more difficulty in bending his Arm forwards than backwards, the Arm is longer than it was, the Patient can't raise it on the opposite Shoulder, or touch his Mouth; in handling his Arm he feels a violent Pain, by reason that the Muscles are much bent and press'd, tho' (after all) Pain is not always the most certain Sign of the Luxation: As in the Case of the rending or breaking of some Fibres, the Arm can't raise or extend it self, and its Action may be disturb'd by a *Contusion* upon the *Deltoides* Muscle, an *Inflammation*, an *Imposthume*, and other Accidents.

In the *Cure of Luxations* there are three general Intentions; the first is to set the Bone in its right place; the second, to keep the Bone in this its due posture; and the third, to correct the Accidents that happen. The first Indication is answer'd three ways, namely, by

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Extention, Retention, and Impulsion. As I pretend to shew the Reduction of the Shoulder three or four ways, which I have follow'd in my Practice, and are like to be made use of by other Practitioners, I shall begin with the *most common and convenient Reduction*, which takes place when the Bone is easily set, the Luxation not being of long standing, and the Patient not very fleshy. In this case, place the Patient upon a Chair without Arms, and lower than the Surgeon: If the Luxation is in the left Shoulder, order a Servant to grasp the Patient on the right Side, and clasp his Hands fast, the one upon t'other, under the Armpit of the dislocated Arm; then the Surgeon takes hold of the upper part of the dislocated Arm, under the Armpit, with his two Hands, one on the outside, and t'other on the inside, placing his Thumbs upon the upper end of the Arm, one against another. This done, a Servant takes the dislocated Arm between the Surgeon's Legs, holding by the lower part of the *Humerus*, and pulls it forcibly downwards as much as he can; upon which the Surgeon makes the Impulsion, keeping fast hold of the Arm, as above. In making this Impulsion or Shove, he must still keep in view that excellent Precept of *Hippocrates*, of knowing whence the Bone slip't out, what Road it took, and where it stops; for it must always go back the same way it slip't out. This being well consider'd, the Surgeon must make three different

Motions, and all almost at once ; the first in drawing the Arm from behind forwards by a Line ; the second in raising it upward ; and the third in pushing it directly into its Cavity. When the Bone re-enters its Cavity, it always makes a noise. The Bone is known to be set when the Patient can put his Hand to his Head and behind his Back.

The second way of setting the Shoulder, is to single out a Man that's bigger than the Patient, and place the Patient's Armpit upon the tip of his Shoulder. If the Luxation be in the left Arm, he takes hold of the lower and inner part of the *Humerus* with his right Hand, and with his left Hand grasps the Wrist of the dislocated Arm, the Hand of which must be placed in its natural figure, with the Thumb pointed upward, and the little Finger towards the Ground : In this fashion he pulls the Arm with his two Hands with all his force, resting them upon his Breast. Then the Surgeon embraces the Patient on the right Side, and with his right Hand pushes as forcibly as he can the Head of the Bone that's under the Armpit, from below upwards, and with the Palm of his left Hand behind presses the Extremity of the *Omoplata* downwards, in order to lower the Cavity, by which means the Head of the Bone enters with great facility.

The third way of reducing the Shoulder, is with a Napkin ; and this is a very ready and commodious way. You take a Lift of Cloth,

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or a strong Ribbon about an Ell and an half long, and an Inch, or two Fingers breadth, over: This you fold in at the middle, making a running Knot of one of the Heads, and another running Knot of the other Head. The Knots being join'd after the Arm is put thro' 'em, you apply 'em to the inner part of the dislocated Shoulder, upon a *good Compress* of Linnen four times doubled, and laid circularly round the Arm. The Knots must fall at the external lateral part of the *Humerus*, above the Compress; then you draw 'em as hard as you can, running the two Heads from without inwards; after that you pull the two Heads from within outwards, above the external part of the Elbow; the Patient being set, as I have said, upon a Chair without Arms. This done, a Servant must come and embrace him upon the sound Side, and hold him fast with all his force. If the Patient's Seat is not large enough, another must be got, upon which the Surgeon is to mount, having hung about his Neck a Napkin folded in the middle, and ty'd at the two ends: Then a Servant comes behind the Surgeon, and draws the Arm with the Lift between the Surgeon's Legs, pulling it down with force downward, from without inwards, at the same time that the Surgeon grasps the head of the Arm, and raising the Arm, with the Napkin about his Neck, pulls it with his two Hands from the out to the inside, bearing his Hand towards the other Shoulder,

by which means he thrusts it into its Cavity.

The fourth way of reducing the Shoulder, is with the Heel, when the Patient can neither stand nor sit. The Patient is laid on his Back on a Quilt or Covering, and a Clew of Thread or a Ball of Leather fill'd with Saddle-stuffing or Cotton, proportionable to the Capacity of the Armpit, is put in it ; then the Surgeon sitting opposite to the Patient, before the dislocated Arm, reduces the Bone, if it be the right Shoulder, with the right Heel, and with the left Heel if it be the left Shoulder : He grasps the lower part of the Patient's Arm above the Elbow, and pulls it down towards the Feet, at the same time pushing the head of the Bone upwards with his Heel. While this is doing, another Servant keeps up the Arm with a Handkerchief, a fine Napkin, or a piece of Lint, and with the sole of his Foot presses the Shoulder downwards, to facilitate the re-entrance of the head of the Bone into its Cavity. This Method is indeed *very good*.

Here I only take notice of what is most regular in these four Methods of reducing a Luxation of the *Humerus* ; and I'm fully persuaded, that unless the Dislocation be of very long standing, and the Body very corpulent, *Young Surgeons* will succeed, if they observe the Methods now laid down. But if after all necessary Precautions they can't compass the end, then recourse must be had to Machines, such as the *Gate*, the *Ladder*, the *Glossocomus* of *Hippocrates*,

pocrates, and the *Lambi*. For my part, I can say and affirm, that without such Machines I have set dislocated Shoulders in Persons of all Ages, some above 80 Years old, both *Men* and *Women*; but at the same time it must be remember'd, these *Luxations* were of no long standing.

After the Reduction of the *Humerus*, you must make the Bandage call'd *Spica*, which is done two ways; first, with a *Swathband* roll'd up to one Head; and secondly, with a *Roller* done up to two Heads. Before you put on the Bandage, you must apply the Dressings, consisting of a round Ball or Cushion of the bigness of an Egg, stuffed with *Cotton* or *Worsted*, and laid under the Armpit; then a large piece of Linen cut into half-*Malta* Crosses, with a Compress of four Plaits, cut in the same shape, steep'd in Vinegar and Water, and cover'd with the Whites of Eggs beat up with Oyl of Roses. This Compress must be apply'd very hot to the Shoulder above the Cushion; and then, in order to tie up the Shoulder with a *Roller of one Head*, you must begin to apply the end of the Roller under the sound Armpit, in the outer part of it, and ascend forwards crossing the Neck, after which you run it from behind forwards under the Armpit, making a Cross call'd *Chiaсте*, or X, directly upon the tip (or *Acromion*) of the Shoulder. At every *Chi* or Cross you are to put a Pin. This done, you continue to run the Roller backwards upon the Back, and so turn forwards along by the first
Cast.

Cast. Thus continuing to put a Pin at every *Chi*, you run the Roller along upon the former Turns, both before and behind ; at last you strike above the hinder Plait, and running forwards cross upon the Shoulder, make a fourth *Chi*. All these Crosses, which we call *Chi*, will form by degrees little *Doloires*. This Bandage is call'd *Spica*, because it represents the figure of an Ear of Corn ; and under the Ear the *Geranium* is form'd, which makes a Triangle of the figure of a Crane flying. For the *Geranium* you must make two Turns, about two Fingers breadth above the *Spica*, round the Neck of the Arm ; so running from before to the hinder parts, cover the whole *Spica*, and at last repass under the Armpit. If you have a mind to make a Sling of the Band or Roller, bend in the Patient's Arm, and run it under his Wrist, so that the Thumb may be a little higher than the Elbow ; then run it over the Patient's Shoulder, near the Neck ; after that, make a circular Round or Turn about the Body, and so pass it above the upper part of the Arm, continuing these turns till the Roller is spent. This is the *Spica* made with a Roller of one Head.

We come next to describe a *Spica*, done with a Roller with two Heads. This Roller must be of the same length and breadth with the former. You begin to apply under the affected Arm-pit, then you rise over the Shoulder, and so cross, making the Head in the right Hand to pass first, when you shift the Heads.

Heads from the one Hand to the other. I imagined, that when we make use of a Roller with two Heads, the right Hand must always give its Head to the left, and the left to the right. Each of the Heads must be turn'd both before and behind; then you pass under the sound Arm-pit, and shift Hands in passing over the first Turns. This done, you come to cross upon the Shoulder, and so re-pass under the Arm-pit, and form the *Spica*, as I shew'd you with the other Roller. Having made three *Spica*'s, you then make the *Geranium*, with the Head that runs forwards, and the Head that runs behind must rise over the affected Shoulder along the Neck. Then having put the Arm into a Scarf or Sling, you re-pass over the same Shoulder from behind forwards, and make a circular Convolution round the Body, in passing above the upper part of the Arm. At last you make fast the Roller where it ends.

The double *Spica* for both Shoulders dislocated, is made as follows: After having apply'd the Compresses and Cushions, as in the other Bandage, you take a Swath-band eight Ells long, and the breadth of five Fingers over, roll'd up to two Heads. Beginning under one of the two Arm-pits, you cross upon the Shoulder, and shift Hands, running one Head before, and the other behind. After that you cross under the other Arm-pit, and then rise above the other Shoulder, and crossing,
form

form three small *Doloires* at the upper part of the Arm of each Shoulder, as you did in the *Spica* for one Shoulder; and under the *Spica* of each side, you must make the *Geranium* by two Turns of the Roller round the Neck of the Arm, run from each of the Heads that make the *Spica*. This done, you make a circular Convolution from each Head round the Body, and with two Napkins make Slings for the two Arms.

CHAP. X.

Of the Fracture of the Shoulder-blade.

HAVING thus shewn the distinguishing Signs of the Luxation of the *Humerus*, or the Bone of the Arm, its flying out of the Cavity of the Shoulder-blade, and the means for reducing it, together with the most necessary Remedies, we come to treat of the Fracture that may happen, either in the whole Body, or in the Parts of the Shoulder-blade. For sometimes the *Spina* or Ridge may be fractur'd; sometimes the Tip or Extremity call'd *Acromion*, and sometimes the Body of the Shoulder-blade, which is very slender, are so serv'd. In the Course of my Practice I have seen the Shoulder-blade broke into several Splinters; and if these are quite separated and prick the Flesh, you must make an Incision, and pull 'em out; but if they are not quite asunder, you must

must keep 'em close with a Compress done over with Glue or black Pitch apply'd upon the Fractures, and over that Compress you must lay a Pastboard, with a Compress four Plaits thick sew'd to it, in order to keep the Bone tight and safe. After this Application is duely perform'd, you must make the Bandage call'd *Etoile*; and let the Fracture be either in one or in both Shoulders, this must still be the Bandage. This Bandage is made as a Roller with one Head. If the right Shoulder is fractur'd, you must apply the end of the Roller behind, under the left Arm-pit, and then rise obliquely over the right Shoulder, moving from the out to the inside, then re-pass from the inside backwards, and so make a Cross upon the first Turns. 'Tis this Cross that gives it the Name of *Etoile*, and all the Tracts are mark'd by vertue of this Cross, which is backwards; and follow the same Convolutions of the Roller, you're to pass still from the out to the inside, and from the in to the outside, crossing always behind, by which you're to make *Doloires* two Fingers broad, for you must cover the whole Shoulder-blade. At last you compleat the Bandage by a circular Convolution round the Body.

C H A P. XI.

Of the Fracture of the Humerus, or the Bone of the Arm.

THE Signs of a Fracture in the Bone of the Arm, are evident, even to external View: For if 'tis a compleat Fracture, there will be a Faultiness in the Figure, and the Arm will appear crooked. Besides, the Sense of Touching will likewise discover it, for in handling the Arm a Crack will be heard. In order to reduce, you must make an Extension, and a Counter-Extension; and if the Ends lie one upon another, you must make a stronger Extension with strong List. Here there's one Remark to be made that's very necessary in the way of Practice; namely, that in setting the Arm, the Patient must sit upon an unarm'd Chair, that a Servant may embrace and grasp him under the Arm-pit of the sound Arm; that another Servant must take hold of his Arm, and draw it upwards, without raising it; that at the same time a third Servant is to pull the Arm downwards towards the Ground; and in fine, that the Arm must never be extended, and that the Elbow must always be bent in when you thus draw the Arm. This prepar'd, the Surgeon must make the Conformation, by taking hold of the Arm with the Palms of his two Hands, and adjust the Bone by re-instating it in its pro-

proper Place. The Apparel must all be ready, with the Whites of Eggs beaten up with Oyl of Roses, and a little Vinegar warm'd. At the same time you must have four Swathbands or Rollers, with four Longitudinal Compresses, one Transversal, and two pieces of Past-board. The first Roller must be an Ell and a half long, and two large Inches broad. The second ought to be an Ell and three quarters long, and of the same breadth with the first: But the length and breadth of the third can't be exactly determin'd, a Variety arising from the difference of Age, and the different bulk and length of the Parts; however, generally Persons of equal Age require Rollers of equal length and breadth. 'Twas for this Reason that *Hippocrates* left all to the Prudence of the Surgeon; and when he spoke of the length and breadth of the Rollers, he understood it of Persons of a mature compleat age, that were arriv'd at their full Dimensions. The same Rule did he observe with reference to every part of the Body; and I, in imitation of his Example, give the same Caution to young Surgeons, relating to the length and breadth of Bands, computing their Measure to be always proportionable to the Dimension of each Part. For the Arm the Roller may be an Ell and a half long, and two Inches broad; and when I say the Arm, I mean the *Cubitus* as well as the *Humerus*. The Roller for a fractur'd Shoulder-

Shoulder-blade ought to be five Ells long, and the breadth of five Fingers broad; for the Leg, two Ells and a half in length, and three Fingers in breadth, that is, relating to the first Under-band, and the two Upper-bands; but the second *Hypodesmis* or Under-band ought to be three Ells long. A Roller for the Thigh should be three Ells long, and four Fingers broad; only the second Band for the Thigh should be three Ells and a quarter long. All this I only design for a general Rule, extending to every Part that stands in need of Bandages.

Having already describ'd the length and breadth of the two first Bands, for a Fracture in the upper Bone of the Arm, I am now to tell you, that the two other Bands that are proper in this Case, must be of the same length and breadth. But before I come to shew the Application of 'em, I must give you to know, that as Bones may be fractur'd in several places, so they must be roll'd up different Ways: For if the great Bone of the Arm be fractur'd in the lower Part, and the Bone flies off to the inside, you must run the end of the Roller from the out to the inside, and make three circular Rounds upon the Fracture; after which you rise upwards by little *Doloires*, till you come under the Armpit. With the second Roller you make two Convolutions over the first Turns of the Band, then you descend under the Elbow, where you make a circular Round,

Round, leaving the Elbow uncover'd; after which you re-ascend, and terminate the second along with the first.

Tho' the great Bone of the Arm is rounder, and withal more even than any other Bone, yet there's no danger in applying some transverse Compresses to make it equal all over. After that, you apply four longitudinal Compresses, four times doubl'd, about eight Fingers breadth long, and two broad. These longitudinal Compresses must be laid along the Arm lengthways, leaving a small distance between every two of 'em. Towards the fold of the Elbow they may be a little shorter, to avoid Pain. The third Roller is apply'd to the Fracture with a single Turn, after which it rises upwards in great *Dolours*, and terminates with the two first.

Galen orders four, and would have the fourth to begin on the upper part, and then descend in great Circuits, being apply'd on the same side with the two Under-bands. This done, you apply Pastboards of a convenient length, about six Fingers broad, and of the same length with the Compresses. These must be made fast with small Ribbons, one in the middle, and one at each end. If the Arm is fractur'd in the middle, after making three Convolutions round the Fracture, you must mount upwards, pass under the Armpit, make a Round about the Body, and continue as above. If the Neck of the Arm,
near

near the Head, is broke, you must make the *Spica* Bandage: The Success I my self have experienc'd, in the Case of a Woman that was fourscore Years of Age, and not above two Months under Cure.

CHAP. XII.

Of the Fracture of the fore-part of the Arm.

AS the fore-part of the Arm is compos'd of the *Cubitus* and the *Radius*, so these two Bones may be either jointly fractur'd, or one of 'em only at a time. There is more Danger and more Difficulty in the Cure, when they are both broken, upon the account that they are not so easily kept tight as when only one is fractur'd; for the one, which remains unbroken, sustains the Arm, and hinders the Muscles to retire, which they do upon a joint Fracture. The Fracture of the *Radius* is more easie to cure than that of the *Cubitus*, because the latter serves for a Stay to the former. If both are fractur'd, you must make a greater Extension than you do when only one is broken, for then the sound Bone is a Stay and Prop to the other.

In order to compass a due Reduction, you must make an Extension and a Counter-Extension; after which, you make the Patient sit down upon a Chair, or lie in Bed, and order one to take hold of his Elbow with his two Hands,

Hands, grasping it both on the outside and the inside, and another to grasp the fore-part of the Arm above the Wrist with his two Hands. These two Servants are to pull or draw equally, putting the Hand in its natural Posture, so that the Thumb is pointed upwards, and the little Finger to the Ground. After this, the Surgeon comes and makes the Conformation with both his Hands. This done, and the Dressings being prepar'd, you must have in readiness four Rollers, tho' indeed three might serve. These must be of the same length and breadth with those for the upper Arm. If the Fracture is in the lower or middle part of the fore-arm, and if one or both the Bones are sprung to the inside, it behoves you to apply the end of the Roller on the outside, and so make three Convolutions, as upon other Fractures. Then you mount upwards in little *Doloires*, the Arm being bended or bow'd in, and finish or make it fast above the Elbow, which is left uncover'd. The second Roller is to be apply'd on the same side with the former, making two Turns round the Fracture, after which you descend lower, and then re-ascend in great *Doloires* to join the first Band. After that, you apply transverse Compresses, or rather only one of them, that being sufficient. The way of cutting the Compresses is this: Take a piece of Linnen that's twelve Fingers breadth long, and eight broad, fold it lengthways in 3 or 4 gradual Plaits, so

so that the Plaits do not touch one another. This Compress you are to apply to the lower part of the two Bones, placing the thickest part, where the Plaits fall, down towards the Wrist. You lay it over the Band to render the fore-part of the Arm equally big and round, to the end that the longitudinal Compresses may bear upon an equal Plan, having the same length and breadth with that of the Arm. The two small Pastboards must be apply'd on the outside and the inside, to support the two Bands, being distant or separated about the breadth of one Finger both above and below. These you tie on with three small Ribbons, and put the Arm into a Scarf or Sling. You must not forget to bend in and extend the Patient's Arm after ten or or twelve days, that the *Callus* is a little firm; and that, for fear of making an *Anchyleosis* in the Articulation of the Elbow, which would hinder it to stretch and bend.

CHAP. XIII.

Of the Dislocation of the Cubit.

HAVING thus dispatch'd the Diseases relating to the Continuity of the *Cubitus* and the *Radius*, namely, their Fractures, and the Means to reduce them; it remains now to set forth those relating to their Contiguity,

ty, viz. a Defluxion, an *Anchylosis*, and a Luxation. The last of these I mean to demonstrate exactly ; and indeed, we may say justly, that the Luxation of the Cubit is very hard to be reduc'd, especially if it be compleat, and the internal Process is got into the place of the external.

The *Cubitus* may be dislocated four Ways, viz. outwards, inwards, upwards and downwards ; and of these Luxations some are compleat, some incompleat. The external Dislocation may happen several Ways, whether by an over-violent Extension, or by a Fall, or by a violent Blow, that makes the external Process rub upon the bottom of its Cavity. In this Case the Bone is dislocated outwards, or to the outside, and the internal *Coronides* Process stands in the Place of the external ; the internal being then very low, whereas the external is much rais'd. The most certain Sign of an outward Luxation is, when the Arm is streight.

The other compleat Luxation is occasion'd in like manner by some great Fall, or by a Fall upon something that's very hard. In this Case the Arm is more bended or bow'd than it should be, and the internal Process touches the bottom of its Cavity ; the Luxation falls out behind the internal *Condylus* of the *Humerus*, or the upper Bone of the Arm, and the external *Coronides* Process is plac'd in the room of the internal, and the inside of the Hand
and

and the Wrist is turn'd outwards towards the Back. Another very certain Sign is, that the Arm is always folded or bent in.

The incompleat Luxations are two in number, *viz.* one upwards, and one downwards.

To distinguish these two, we must remark, that in the first we feel an Eminence above, upon the external *Condylus* of the Arm; and in the latter, the two Processes of the *Cubitus* are hook'd in between the Process of the Pulley, and the internal *Condylus* of the Arm.

In order to make a compleat external Luxation, you must set the Patient upon an unarm'd Chair of a middling height. If the Luxation is in the right Cubit, a Servant must get on the left Side of the Patient, and embrace him; another Servant on the right Side must grasp with both his Hands on the upper part of the *Humerus* or great Bone of the Arm, and a third Servant, plac'd just before him, must take hold of the fore-part of the Arm, a little above the Wrist, and keep both the Arm and the Hand in their natural posture. The two first Servants must pull both upwards and downwards, and the Surgeon takes his Place between the Patient's Legs. If the right Arm is affected, the Surgeon places the bending part of his left Arm four or five Finger's breadth under the luxated Cubit; then he pulls with all his force from the out to the inside, and so the *Cubitus* is reduc'd. If the left Arm is affected, the Surgeon places himself in like man-

manner on the inside of it, and with the bend of his right Arm pulls the dislocated *Cubitus* from the outside inwards.

To reduce a compleat internal Luxation, the Patient must be held by two Servants, one having hold of his Body, and the other of the upper part of his Arm. Then the Surgeon takes the Arm in his left Hand, and grasps the Elbow on the outside; and with his right Hand takes hold of the Wrist, and so pulls the Arm with both his Hands, from the outside inwards, raising the Cubit forcibly upwards, so that the Patient's Hand is plac'd upon his Shoulder. By this means an internal Luxation is easily reduc'd.

The incompleat Luxations are not so hard to set. When the Eminence of the Elbow rises upwards above the Pulley, then you must push from above downwards; and if 'tis hook'd in under the side of the Pulley, you must push that Eminence from below upwards, and that with greater Force, because the side of the Pulley is higher below than above. At the same time you must not forget the necessary Extension.

Every time you dress the Patient, make him bend and extend his Arm, for fear of an *Anchylosis* in the Cavity. As for the Dressings, cut your Plaister and Compresses in this Fashion. Take a Rag about sixteen Fingers breadth long, and six broad, fold it lengthways, and then upon the breadth, into four Doubles;

and cut it sloping, running along by the Plaits to the four Ends, and then leave three Fingers of the Cloth whole. As for the single Cloth that is first apply'd, you must cut it like the Compress, and cover it with a Defensive, and apply it partly to the Cubit, and partly to the upper Arm: And the Compress steep'd in warm'd *Oxycrale*, must be apply'd so as to fit the Cubit and the Arm.

The most proper Bandage is the *Doloire*, which is made of a Roller with one Head, about five Ells long, and two Inches broad, apply'd to the lower part of the *Humerus*, and then run in two Rounds or circular Convolution about the Arm, in order to descend by the Elbow. After that it makes two circular Rounds about the upper part of the Cubit, and so passes to the inside of the Elbow, or bend of the Arm. Then it re-passes upon the inferiour part of the *Humerus*, or great Bone of the Arm, in making two little *Doloires* from above downwards, and from below upwards, till the whole Elbow or Cubit is cover'd. At last it rises in *Doloires* along the Arm to the Armpit, and concludes in a round or two about the Body.

CHAP. XIV.

The Bandage for Phlebotomy in the Arm.

THE Bandage for Bleeding in the Arm is made with a Fillet of the breadth of two Fin-

Fingers, and long in proportion to the Arm. When you tie up the right Arm, you take the Fillet in your right Hand, holding it with your Thumb, your fore-finger and your middle-finger; and with the two other Fingers you keep fast the end of the Fillet, which ought to hang about half a quarter under the little-finger. Then you must join the Lips of the Orifice with the fore-finger and the middle-finger of the left Hand; after which, folding the two other Fingers, you push with the end of your fore-finger the Lip of the Orifice from the outside inwards; and with the tip of the middle-finger you draw the Skin from the inside outwards. This done, you apply the Compress with your right Hand, and hold it on with the fore and middle-finger of the left Hand. Then you put your Thumb behind the Elbow, holding your other two Fingers folded; and with your right Hand you place the Fillet upon the Compress with two Fingers, at the same time that the Thumb of the same Hand stays upon the Elbow: Then with the left Hand a little rais'd you make the Bandage, by taking hold of the Fillet that hangs on the inside, and pulling it from within outwards above the Elbow; then passing it over the Compress by lifting the two Fingers one after another. This done, you draw the Fillet above the Elbow, from the inside outwards, in order to make two or three Rounds upon the Orifice: And with the end of the Fillet

held in the right Hand, you make a *Renverse*, and at last tie the two ends together behind the Elbow.

CHAP. XV.

Of the Bandage for an Aneurisma.

THE Bandage for the Operation of the *Aneurisma* (or Dilatation or Rupture of the Arteries) is made with a Fillet six Ells long, and two Inches broad: But still you're to observe, that when we fix a Measure, we only mean it of the generality and common Size of Men; for in particular Cases regard must be had to the Age and Size of the Body. Before you apply the Fillet, you must apply a round Compress of four Doubles, and lay above that two other Compresses made crossways, being a quarter and a half long, and of the breadth of three Fingers. The Fillet being roll'd up to a round Ball, you take it in your right Hand, and place the end of it above the Elbow; then you run it over the Compresses that lie in cross-fashion, and so conduct up and down in forming little *Doloires* both above and below, after having made several Turns within the bend of the Elbow. This done, it mounts upwards along the Arm in *Doloires*; and at last you put a Compress eight Plaits thick near the Armpit, and after covering it with several Convoluti-
ONS, you terminate in a round about the Body.

CHAP.

CHAP. XVI.

Of the Dislocation of the Wrist.

THE Wrist is compos'd of eight Bones, drawn up in two Rows, four a-breast. Three of the Bones of the first Row are receiv'd in a double Cavity in the lower part of the *Radius*; and the fourth, which is under the Bone that sustains the little-finger, is not articulated. The Bones of the second Row are articulated by their lower Parts, with the upper Parts of the *Metacarpus*. Commonly these Bones are not dislocated but in the upper part, when they depart from the Cavity of the *Radius*; and this may come to pass inwards, outwards, and sideways. When they are dislocated to the inside, the Hand falls backwards, and if the Luxation runs outwards, the Hand bends inwards. When the Dislocation is sideways, the Hand turns sometimes to the little-finger, and sometimes to the Thumb.

Having thus laid down the Signs of a Luxation of the Wrist, we come now to shew how to set and reduce it: For which End, a Servant must take hold of the Cubit of the Patient above the Wrist, and draw it. The inside of the Patient's Hand must be spread upon a Table, drawing every Finger one after another to reduce the Tendons to their natural Situation. Then the Surgeon is to press the Eminence with the Palms of his two Hands from above downwards. The same is the

Method if the Luxation be on the inside. If the Luxation is lateral, a Servant must take hold of the Arm by the lower *Cubitus*, upon which the Surgeon takes the Hand, and sets it right in making it turn to the side that's opposite to the Eminence.

Having thus set the Wrist, you are to tie with three Fillets, each of 'em two Ells long, and two Inches broad. Before you make the Bandage, it behoves you to apply a single Rag about ten Fingers breadth long, and as broad as the Wrist; and above that a Compress of four Doubles of the same length and breadth. The single Rag must be steep'd in Vinegar and Water, and cover'd with a Defensive made of the Whites of Eggs and Oyl of Roses. You apply the Rag thus prepar'd in a circular way, round the Wrist, and lay the Compress above it after 'tis likewise steep'd in Vinegar and Water. If the Dislocation is on the inside, you must run the first Cast of the Fillet from the out to the inside, and then make two Rounds upon the dislocated Part; after that you descend obliquely upon the Hand, forming small *Doloires*; then passing between the Thumb and the Fore-finger, along the inside of the Hand, you come to cross upon the Wrist, and so ascend upwards by *Doloires*: The Arm being bended in, you come at last to make fast above the Elbow with two or three Rounds, leaving the Elbow uncover'd. The second Fillet runs the same Course;

Course; that is, it passes by the inside of the Hand like the other, and terminates in the lower part of the great Bone of the Arm, leaving the Elbow bare. The third must be apply'd over two Past-boards, guarded with their Compresses in which they are sew'd. These Pastboards must be about six Fingers-breadth long, and as broad as the Wrist, one of them being laid on the inside, and another on the outside of the Wrist. With this Fillet make two turns about the Joint, and, without running it between the Thumb and Fore-finger, carry it upwards in *Dolaires*, and terminate with the former two, leaving the Elbow bare.

CHAP. XVII.

Of the Dislocation of the Carpus, Metacarpus, and Fingers.

THE Bones of the *Carpus* are more apt to relaxate than to suffer Luxation. But if any of these Bones is dislocated, you feel a sort of Cavity on the outside, and an Eminence or Rising on the inside. This Luxation is redress'd after the same manner with that of the Wrist, by placing the Hand upon a Table, and making a pressure upon the Eminence.

All the three *Phalanx's* or Ranks of the Thumb may suffer Luxation, and these Luxations are sometimes very easie, and sometimes very hard to reduce. Not long ago, I had to do with a Luxation of the middle Row of

the Thumb of a Boy, that gave me a great deal of Trouble. When I came to see it, I found the Thumb quite incurvated, and very much shorten'd, and the Extremity of the middle Bone advanc'd very far in the inside of his Hand under the *Thenar* Muscle. In order to set it, I plac'd his Hand upon the Table, and apply'd two *Carguesian* Nooses, one to the Wrist, and another upon the middle of the affected Bone, the former being stronger than the latter. This done, I turn'd over his Hand upon the Table, and order'd the Noose to be pull'd by two Servants, observing all the while carefully, that a due Reduction requires Retension, Extension, and Impulsion, which I regularly put in Execution, or else I had never compass'd my End. The Noose I put upon the Wrist, was only to keep the Hand firm, and to make the back of the Hand bear strongly upon the Table. The other Servant pull'd the other Noose with all his Force, and I in like manner apply'd all my Force in making the Impulsion with my two Thumbs.

Thus did I reduce it, but with a great deal of Trouble. After setting it, I made a Bandage with a Fillet about an Ell long, and after making three Rounds about the Wrist, I carry'd it down to the Extremity of the Thumb, and back again in small *Doloires*, in order to make a *Chiaſte* (or Cross) upon the Joint of the Thumb. At last I made a circular Convolution round the Wrist; and in eight or ten days
time

time the Patient made use of his Thumb.

Of the four Bones of the *Metacarpus*, those in the middle suffer Luxation both inwards and outwards, but not sideways: But those which support the fore-finger and the little-finger, undergo Luxation all the three Ways.

All the Bones of the Fingers may undergo Luxation inwards, outwards, and sideways, and are reduc'd upon a Table, like those of the Wrist, by making an Extension, and a Pressure upon the Eminences, as above. For the Bandage we make a half *Gantlet* (describ'd elsewhere) which serves for all the Joints of the Fingers. The Fillet should be three Ells long, and an Inch broad, and roll'd up to a Head. If the Luxation affords three or four Joints of the inferiour parts of the Bones of the Fingers, you must make the half-*Gantlet* a whole one, by beginning to apply the Fillet on the outside of the Wrist, and running it towards the inside of the Hand. Then you pass it between the Thumb and the fore-finger, from within outwards; after that you make a Cross upon the Article or Joint of the Thumb, and passing along the outside of the Hand, return by the inside to the outside again, running between the Thumb and the fore-finger, and so make a *Cbi* (or Cross) upon the Joint of the Fore-finger. Thus you continue the same Turns or Convolutions, and cross upon all the first Joynts of the Fingers, and after all, terminate in two Rounds about the first. If

only one Bone of any Fingure is dislocated, you must make the *Chiaſte*, as in the Bandage of the Thumb.

CHAP. XVIII.

Of the Fractures of the Carpus, Metacarpus, and Fingers.

THe Bones of the *Carpus* are seldom fractur'd; unless it be by very violent Blows; but those of the *Metacarpus* and the Fingers are easily broken. To reduce them, you must place the Hand upon a Table, and order a Servant to pull the Wrist upwards: The Hand being thus supported, you must pull all the Fingers, one after another, in order to restore the Tendons to their Primitive Situation.

The Bandage of the *Metacarpus* is made with a Fillet two Ells long, and two Fingers broad, roll'd up to a Head. With this you make two or three Turns round the Wrist; then descending obliquely, making two *Doloires*, and passing from the inside to the outside of the Hand, you afterward run the Fillet 'twixt the Thumb and the Forefinger, and make a small *Doloire* above the Hand. After that, you run from the out to the inside of the Hand, and form another small *Doloire*, to be three times repeated, so as to make a *Spica*. Upon the *Metacarpus* you must lay a Compress, with its Pastboard sew'd together; there being in the Pastboard
and

and Compress a Notch or Hollow cut betwixt the Thumb and Forefinger. This Compress is to be laid over the first turn of the Fillet, and with the remainder of the Fillet you make two *Convolutions* of a *Spica*, passing as in the first *Convolution*, between the Thumb and Forefinger: Then you re-ascend to the Wrist, after making two Turns to cover the *Spica*; and when you are at the Wrist, you make fast the Fillet with two circular Rounds, and after all hang the Arm in a Sling.

If the Thumb is fractur'd, you must tie it with a Band or Fillet an Ell and a half long, and of the breadth of one Finger. After making two turns round the Wrist, to fix the Fillet, you must obliquely roll the Thumb, having first laid upon the Fracture a little Compress steep'd in a convenient Liquor. This done, you make three small turns round the Fracture, observing the same Course upon the two *Phalanges*, if two Bones be fractur'd. After this, you apply four little Compresses, the breadth of the Thumb, to be laid conveniently one against another, with two small Pastboards of the same length and breadth with the Thumb, one to be apply'd on the outside, and the other on the inside. With the remainder of the Band or Fillet you are to cover the Compresses and Pastboards in little *Doloires*, mounting upwards; then make a *Chi* upon the Joint of the Thumb, and at last circulate round the Wrist.

If only one Row of one Finger is fractur'd, you must tie it tight and strait, and by it self: If two Rows are fractur'd, you must tie it up with another Finger, keeping 'em both strait. If the first four *Phalanx's*, or those of the middle are broken, you must bend or fold the Hand, and the Fingers resting one upon another, must be ty'd with a Fillet an inch broad, and three Ells long, making two or three *Convolutions* at the Wrist, from the inside outward, crossing on the external part of the Wrist, then passing to the inside of the Hand, near the Thumb, and above the four folded Fingers, just by the juncture of the *Metacarpus*, leaving the four Knuckles uncover'd, you make 3 circular Rounds about the Fracture, and at last descend to the Points of the Fingers in little *Doloires*.

After having roll'd up the four Fingers thus bent, and resting with their ends equal to one another, you're to apply in the inside of the Hand a Compress, with a Pastboard of the same length and breadth with the Hand, including the Wrist, and made a little narrower towards the *Carpus*. The Compress thus apply'd along the inside of the Hand, from the tips of the Fingers to the Wrist, must be afterwards made fast by the same Roller, beginning to roll from the ends of the Fingers, and re-ascending in *Doloires*. In this Course the Roller must cover all the other *Convolutions*, and then repass between the Thumb and the Forefinger, after which 'tis fasten'd at the Wrist.

CHAP. XIX.

Of the Bandage of the Salvatella.

TO the description of the Disorders of the Arm and Hand I subjoin, by way of *Conclusion*, those of the *Salvatella*, as being a Retainer to the Hand. Some pretend, that the opening of the Vein that lies between the little Finger and the *Medicus*, is a sovereign Remedy against a *Quartan Ague*. Perhaps some may have found it successful; but, for my own share, I try'd it upon my self for a *Quartan Fever*, and found no benefit by it. However, if there be Occasion to open it, you must know, the proper Bandage is done with a Fillet an Ell and a half long, and two Little-fingers broad. But before you make the Bandage, you must perform the *Venæsection*, by putting the Hand into hot Water, casting a Ligature upon the *Wrist*, and stopping the Vein with your *Thumb*. After the Detraction of the Blood, apply a Compress upon the Orifice, and if it be the right Arm, lay with your left Hand a Fillet over the Compress, leaving one end of it to hang down under the Little-finger, and with the other end you're to cross upon the end that hangs down, and upon the Compress. This done, you pass to the upper part of the Hand, between the Fore and the Middle-finger, and then make a turn upon the Ring-finger, and after that, a Cross upon the Root of the same
Fin-

Finger, from within outwards; next pass under the Little-finger, from the out to the inside, pulling the Fillet under the inner part of the Thumb: With the End that hangs down under the Little-finger you are to make a *Reverse* above the Compress, and at last tie this End to the other that's under the Thumb.

CHAP. XX.

Of the Fracture of the Sternum.

A Fracture of the *Sternum*, or *Breast-bone*, discovers it self by these Signs: In the first place you'll have an Unevenness and Inequality in the fractur'd Part: Secondly, it yields to your Finger when you touch it; and thirdly, you'll hear a cracking Noise, and when you thrust it down you'll perceive a Cavity, and at the same time the Patient is extreamly pain'd in that Part, and troubled with a difficulty of Breathing, by reason the *Pleura*, the *Mediastinum*, and the *Lungs* are press'd, upon which occasion he spits or hawks up *Blood*. For the Reduction of the Breast-bone, you must lay the Patient on his Back, on a Quilt, or some coarse Coverlet, with something that's hard underneath, such as a Kettle, a Jar, a piece of Stone, or the like. This done, the Surgeon comes, and with his two Hands presses as much as he can the two anterior and lateral Extremities of the Ribs, from above downwards,

wards, by which means he raises the Splinters or Pieces of the *Sternum* upwards. On such Occasions you must bleed the Patient as much as is necessary, and observe a very exact Regimen. The proper Bandage of the *Sternum* is the *Quadriga*, which signifies four Crosses, or four X's, which Crosses are plac'd at each Shoulder, both before and behind. If there be a Contusion along with the Fracture, steep the Compresses in *Wine* wherein *Roses* and *Wormwood* have been boil'd. The Compresses must be doubled four times, twelve Fingers-breadth long, and eight broad. Their figure must be triangular, and the Point downwards, in the form of a Hanger. After the application of the first Compress steep'd in *Aromatick Wine* hot, if there be an Inflammation, you must make use of a Defensive made of the Whites of Eggs beat up with a little Vinegar. Next to the first Compresses, is a Pastboard of the same figure with the Compress, having a Compress sew'd with it.

The Bandage is made of a Filler or Roller with two Heads, five Ells long, and four Fingers broad. You begin the Roller under the Armpit, then ascend and cross upon the Shoulder, then passing just upon the Neck, you conduct the two Heads, one before, and the other behind, under the Armpit. This done, you cross, and direct each Head, one before and the other behind, to the other Armpit, grazing in the passage near the Neck; at last you terminate

nate in a circular Turn, if so be that nothing but the *Sternum* is hurt: But if any of the upper Ribs partakes of the Fracture, you must make the *Thorax*, which is nothing but turning the Fillet to each side, by making *Doloires* from above downwards, and after a sufficient number of *Convolution*s round the Breast, making 2 or 3 circular Rounds above the Hips.

CHAP. XXI.

Of the Fracture of the Ribs.

AS we have two sorts of Ribs, so these may be broken different ways. The long or true Ribs are all over boney, and may be fractur'd in any part; but the spurious Ribs being cartilaginous before, and boney behind, receive Fractures behind, and commonly bend forwards, so that all the Ribs may break outwards; but forwards and inwards they are sometimes not broken, but only bent and split. 'Tis possible likewise that they may be broke and split inwards, in which case the Splinters press and gall the *Pleura*, and the Danger is great: But if the Rib is simply fractur'd, and the *Pleura* is not rent, nor much press'd or loaded, *Hippocrates* says, there's no danger; and in such cases advises to eat much, on pretence, that the Belly, when moderately full, restores the natural posture of the Ribs, whereas when 'tis empty they want that Support.

port. 'Tis the spurious Ribs chiefly that are reliev'd when the Belly is full.

The Fractures of the Ribs are easily distinguish'd. If the Fracture falls outwards, in handling 'em one after another you'll hear a crackling. But if the Pain is very great, and the Patient very fat and corpulent, this Sign is not so easily perceiv'd. A Rib fractur'd to the outside may be cur'd in 25 days ; but if the Fracture is inwards, the Patient feels a violent Pain, we call *Pungitive* or *Pricking*, and which is much more violent than that of a *Pleurisie*. He has great difficulty in breathing, and perpetually spits Blood ; in which case 'tis necessary to administer the Remedies with the earliest expedition. But the greatest difficulty of all, is when the Splinter is sunk in the inside, for then 'tis a very hard matter to raise it. *Paracelsus* proposes a Remedy of *Resin*, *black Pitch*, and *Oatmeal*, with *Mastic* and *Aloe*, all melted, mix'd, run upon a new Cloth, and so apply'd to the Fracture. This must lie on for some time, after which you snatch it off with great force, bending upwards ; and this you continue to do several times, till the Patient finds relief, which you'll perceive by his breathing more freely : But if the Symptoms continue, *viz.* an exquisite Pain, a Fever, a Cough, and a spitting Blood, you will then be forc'd to make an Incision upon the Rib, and raise the Splinters with Hooks, and with your Incision-nippers cut off the sharp Points that gall so much. All this must

must be accompanied with the general Remedies, and a good Regimen.

For a due reduction of Ribs fractur'd outwards, you must hold the Patient upright, and the Surgeon embracing him by the Side, must make him bend or lean to the sound Side, and blow thro' a Horn in the Hand of the sound Side, after which he makes the Extension and Counter-extension with his Hands upon the fractur'd Side, pulling with each Hand the Ribs towards him: By this means the Splinters will re-unite, and the Bones thus reduc'd must be kept up to the Reduction by the common Bandage, call'd the *Napkin*. This takes place when only one Rib is broken; but if several Ribs, and those of the superiour Class, are broken (which I have oftentimes seen) then the *Napkin* will not do.

But before I go further, I am oblig'd to describe the Apparel or Dressings of a single Fracture of a Rib.

When any Accident accompanies the Fracture, the Bandage is made with a Napkin four times doubled, if the Fracture is high, and three times if it be in the middle of the Breast, or in proportion to the age and size of the Patient. The Napkin thus folded, must be roll'd up to two Heads. This done, you beat up two or three *Whites of Eggs* with a little *Oyl of Roses*, and a small quantity of *Vinegar*; and making it moderately hot in Summer, and very hot in Winter, steep in it five Linnen Compresses

ses, all of four doubles, four of which Compresses should be as long as the Ribs, and two Fingers broad; and the fifth ought to be a little longer than the rest, and of the breadth of ten Fingers. The Application is in this manner: The two first are laid sideways, according to the length of the Ribs, so as to touch one another; over these you lay the other two, in the form of a *St. Andrew's Cross*, and the great Compress above all. And if 2 or 3 Ribs are broken, the same number of Compresses will serve, only they must be larger. If the Patient coughs violently, 'twill be proper to apply two Compresses strengthen'd with Past-board, and lay 'em crossways (like the former two) over the Linnen Compresses.

The Napkin being roll'd as I directed above, you hold it in both your Hands, and lay it even or equally upon the Compresses. After that, you put a Scapulary to the Neck, and then turn the Roller equally, by making circular *Convolution*s round the Breast, sustain'd by the Scapulary both before and behind; then you make one end of the Swath pass over the other, and at last make it fast with Pins in the middle and the two sides of its Extremity, or else sew it, to hinder its going downwards. If the Fracture affects two or three Ribs, you must make a strong firm Bandage, such as the *Quadrige*, which I describ'd above for the Fracture of the *Sternum*.

C H A P. XXII.

Of the Luxation of the Ribs.

IF the Ribs suffer Luxation to the outside, you'll perceive a Cavity on one side, and a small Eminence on the other; besides, 'tis attended with a Difficulty of Respiration, and the Patient can neither bend nor erect his Body; so that it calls for a speedy Cure. If the Luxation happens in the upper Parts, you must keep the Patient streight and extended, and make him hang by his Hands upon some Door or some Flier of a Window; after which, the Surgeon must, with the Palms of his Hands, press the Eminences of the Ribs from without inwards. If the lower Ribs are dislocated, you must make the Patient bend his Body, and clap the Palms of his Hands on his Knees, while the Surgeon pushes the Ribs as above. The Bandage is the *Quadriga*; only care must be taken to guard the place whence the Bone slipped with proportional Compresses, apply'd lengthways on the transversal Processes of the *Vertebræ*.

C H A P. XXIII.

Of the Fracture of the Vertebrae.

THE Body of the *Vertebrae* may be broken and sunk inwards, and in regard that the Spinal Marrow does then endure a Pressure, it
affords

affords but an ugly Prognostick, for the Disease is incurable, and a'most always mortal: Upon which consideration I chuse to pass over this Disorder in silence, and shall now confine my self to the Fractures of the Spinous Processes.

We distinguish, that these, and not the *Vertebrae*, are broken when no grievous or very troublesom Symptom attends, and when in pushing a Finger upon the tip of the Process we feel the Splinter of the Bone move and shift its place, and instead of a Fracture, perceive a Cavity with a small cracking. In this case the Patient feels more Pain in endeavouring to bend his Body than when 'tis erect, by reason that, in bending the Body, the Skin stretches it self, which makes the Points of the Bones prick and twitch the Part. If these Bones are quite separated from the *Periostium*, you must make an Incision, and take 'em out. These Fractures are easily cur'd.

To procure the Union of the Bones, and make the Splinters hold, take a small piece of new Linnen cover'd with Glue, and lay it on the Fracture with a good Linnen Compress doubled four times above it, and above that a Pastboard guarded with its Compress, and sew'd together, with the *Quadrige* Bandage over all. I here omit speaking of the internal Luxation of the *Vertebrae*, by reason that it is incurable; and therefore shall shew by the bye how to reduce a Luxation of the *Vertebrae* in the external Part, and an incompleat Luxation

tion of the Neck, which I have sometimes met with in my Practice.

CHAP. XXIV.

Of the External Luxation of the Vertebrae.

TO reduce the *Vertebrae* dislocated in the External Part, you must place the Patient on a Table, flat upon his Belly; then take two Fillers, each of 'em 3 Ells long, and of the breadth of about 8 or 10 Fingers, and run one of 'em over the Hanches, making a single running Noose, which a strong and robust Servant must pull downwards with all his force; and at the same time make another Noose over the Shoulders, which another Servant is to pull with all his force. While the two Servants pull equally, the Surgeon must push with his two Hands the *Vertebrae* that stands most out: If he can't perform the Reduction by that means, let him wrap up in Linen two little Sticks of the bigness of a Finger, and as long as four Fingers, less or more, and apply these to the Sides of the *Vertebrae*, making a pressure upon 'em. Here he must take care not to press hard upon the Extremities of the pointed Processes, for fear of breaking 'em.

When the *Vertebrae* is reduc'd, you'll know it by this, that it is equal to the other neighbouring *Vertebrae*. After the Reduction is perform'd, you must sustain it with two Compresses

resses of six or eight Doubles, each of 'em 8 Fingers-breadth long, and two Inches broad. Each of these Compresses should be strengthened with a small Plate of Lead much of the same length and breadth, sew'd in, and then applied to the lateral Parts of the *Vertebrae*, between the Spinous *Apophyses*. The Patient must lie still as long as ever he can, and the Bandage must be the *Quadriga*; of which above.

CHAP. XXV.

Of the Fracture of the Os Sacrum.

THE *Os Sacrum* may suffer Fractures in all its Parts. If the Fracture happens in the middle of its *Spina*, 'tis mortal; but in the other Parts 'tis not always such: As we learn from Instances in the Army, and in Hospitals.

CHAP. XXVI.

Of the Fractures of the Coccyx.

THE *Coccyx* is compos'd of three little Bones, the first of which is join'd to the *Os Sacrum*; and at the end of these little Bones we have a small Cartilage.

To reduce this Fracture, you must put two Fingers of the left Hand into the Fundament, having first par'd your Nails) and thrust 'em to the fractur'd Part, in order to push the broken
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ken Bones from the inside outwards; and with the Fingers of the other Hand you are to make the Bone even and equal. The Bandage is made of a piece of Linnen ten Fingers-breadth long, and six broad, with a Compress of the same length and breadth. The piece of Linen and the Compress should be sew'd together, and pierc'd both of 'em in the middle, and sew'd on the upper side to a Fillet that makes circular Convolution round the Body: Their two lower Corners must join two small Swathbands that are to pass between the Groins, and return on the fore-side, to be made fast to the Fillet that makes the Rounds. Besides this Compress, there must be another with a Pastboard, sew'd together and perforated in like manner, and (like the first) furnish'd on the upper side with a Swath, to circulate round the Body; and at the lower, with two little Fillets, that are to pass in like manner between the Groins, and terminate upon the Fillet that makes the Rounds about the Body. The Fillets and Compresses being thus prepar'd, you begin with the application of the piece of Linen of the same figure of the Compresses, and perforated in the middle, taking care that the Hole answers the Fundament exactly, and to cover the Linen with a Defensive before you apply it. Then you apply the Fillet with the Compress sew'd to it, and after that the second Compress with the Pastboard, the first Compress being steep'd in *Aromatick Wine*, if no
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Accident forbids it. This done, you roll the circular Fillets for the Body, and the two pair of Fillets that pass between the Groins, both the Compresses being sew'd to the one on the upper side, and to the other on the lower.

The Patient should have under him, as long as he can, a Pan that has a soft Roll or Cushion prepar'd for the Purpose, till the *Callus* is formed; and if he gets out of his Bed before the *Callus* is made, he should seat himself upon a perforated Chair, with such a Roll to it.

CHAP. XXVII.

Of such Bandages as are proper for the Disorders of the Privy Parts.

THE Bandage for the Yard, is a simple Contentive Bandage, made of a Cloth or Rag laid upon the Yard, with a Compress of the same figure, both of 'em being cut into a half *Cancer*, after this manner: Take a piece of Linen ten Fingers-breadth long, and six broad; fold the Linen first in two, then fold it a second time into four, and a third time re-fold it angular ways. This done, cut the angle Point, which will make a Hole for the Urine to pass; a Fingers breadth under the Hole cut the Linen in a streight Line, and at last make the Ends even. Thus you have the *Demi-Cancer*, which represents a Cross perforated in the middle.

The Bandage is made with a Band or Fillet about twelve Fingers-breadth long, and about an Inch broad : In the end of the little Fillet you must make a Hole, that the other end may pass thro' it. The Linen Cloth and Compress being soak'd in a proper Liquor, apply 'em to the Yard, so that the little Hole of the Compress and the Cloth may come just before the end of the Yard. Before you apply the Fillet, you must cut the unperforated end in two for the length of four Fingers-breadth, and the two new-cut ends must be pass'd thro' the Hole in the other end, so as to form a sort of a Ring ; then you roll moderately tight, and in little *Doloires* conduct the Fillet to the Root of the Yard, where you make it fast, by tying the two ends together.

A Remarkable Observation.

NOW I am upon this Subject, I shall here take occasion to relate the History of a *Phimosi*s which happen'd to a Waterman that brought Salt from *Guivaudan* to *Compeigne*. Being at *Paris*, he shew'd me his Yard, upon which I saw a *Phimosi*s with a very great Inflammation : He could not stay to have it dress'd, but went on board, and was 8 or 10 days upon the Water without having it dress'd, after which time he came again to me. In the mean time the *Gangrene* had over-run all the Nut and Prepuce for a Fingers-breadth. Immediately

mediately I order'd him to Bed, and after making him observe an exact Regimen, feed on Braths and Decoctions, and confin'd him to Water for his only Drink, by reason his Fever was very high, I found him a little alter'd; upon which I set about redressing the most urgent Evil, and began to make Incisions along the Glands and Prepuce. The Incisions being made, I applied to 'em *Ægyptiacum* diluted in good *Spirit of Wine*, with a little common Salt and *Venice Treacle*. With Rags dipt in this Liquor I bath'd the Part for half a quarter of an hour, as hot as he could suffer it. I likewise soak'd my Compresses in the same Liquor, and made the Bandage describ'd above. He was blooded twice or thrice a day. The first Incisions were made about two in the Afternoon on *Friday*, and in making 'em I run about two Lines into the quick: About six that Night I took off the Dressings, and found the *Gangrene* had surmounted and cover'd the Incisions. At eleven a-Clock that Night I open'd the Dressings again, and made Incisions afresh, striking to the quick. On *Saturday* Morning, at five a-Clock, I perceiv'd the *Gangrene* still gain'd ground, and it continued to encrease till *Monday* at two in the Afternoon, that it stop'd. I may say, without stretching, in the whole course of my Life I never smelt such a noisom Stink; and in the Inn where he lodg'd he was oblig'd to shift his Room three or four times, for no-body could come near the House where

he was: And as for my self, who lost my Rest for three Days and three Nights that I attended him, a'most always my Mouth and Nose were so infected with the Stink, that I was oblig'd to be often using Spirit of Wine, to wash my Mouth and Nose, and expel the Malignity that still haunted me. This Gangrene carried off half his Yard, and the whole Substance and Body of the Glands, so much being putrified with the Corruption. In process of time he was very well cur'd, and after Cicatrization, considering 'twas still cold Weather, instead of a single *Suspensorium*, I made him a Bag for his Yard of Lamb-skin, lin'd with the Wool, in order to recall the natural Heat.

CHAP. XXVIII.

Of the Bandages proper for the Disorders of the Fundament and adjacent Parts.

THE Bandage for a *Fistula* in the *Anus* is the same with that for a *Fracture* of the *Coccyx*.

The Bandage for *Lithotomy*, or Cutting of the Stone, made use of in the *Hotel de Dieu* at *Paris*, is a Sling with four Heads, made of a piece of Cloth an Ell and half long, and four Fingers broad. To cut it, they fold it in two, and so cut thro' from the end, leaving about the breadth of ten Fingers uncut. This Bandage

dage is assisted by a *Demi-Scapulary*, which in that Hospital is call'd *le Collier de Misere*. The *Demi-Scapulary* is made of a Fillet three quarters of an Ell long, and two Inches broad, folded in two, cut at the two ends, and put round the Patient's Neck : Then you take the Sling with four Tails, and having first laid upon the Ulcer of the *Perineum* little Compresses of four Doubles, in the form of a Halfmoon, you lay over it the uncut part of the Band, and taking each of the Tails of the upper side, conduct 'em up on each side, moving from the in to the outside, and make 'em fast behind the Back to the *Demi-Scapulary* that hangs down from the Neck. The Tails of the lower side you pass between the Thighs, and moving from without inwards, make 'em fast before to the *Collier de Misere*, above the Knots of the former Tails. Such is the most proper Bandage for *Lithotomy*.

The Bandage for the *Scrotum* is the *Suspensorium*, viz. Take a piece of Linen twelve Fingers-breadth long, and equally broad, fold it in two, and cut it in the form of a Mask, leaving the upper part square, and cutting one of the sides in the form of a Semicircle, running still narrower and narrower, till you end in a Point; then cut this Point obliquely on the side of the fold of the Linen, from without inwards, for about two Inches long: This done, join the two Points, and sew 'em together, having first folded the upper part of the Linen to

the breadth of about three Fingers, in several folds, running to a sharp Point, to be cut with Scissars, to make a Hole for the Yard. The body of the Bandage being thus made, you must sew to it four little Fillets about an Inch broad, two above and two below, to be made fast with Points to a Girdle round the Body.

The Contentive Bandage, call'd *Beuveron*, is nothing but half a *Suspensorium*. It has only three ends to be made fast by, two of which lie above, as in the former, and one below passes by the inside of the Thigh, and is made fast upon the outside, with another Point to the Girdle round the Body.

Thus I have finish'd what relates to the Bandages of the upper Limbs, so I now proceed to the lower.

CHAP. XXIX.

Of the Fracture of the Thigh, whether in the upper Extremity, the Middle, or the Lower End.

I Was once deceiv'd in viewing a Thigh-bone fractur'd near its Neck, under the great *Trochanter*, for I could not distinguish whether it was a Fracture or a Luxation, by reason of the great Inflammation that was about the Thigh; the Person being withal of a very large size, and corpulent. Being loth to trust
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to my own Judgment, I consulted M. *Petit*, a Surgeon; upon which we compar'd one Thigh with the other, and found 'em of equal length, and by reason of the great Inflammation, we could not hear any cracking; but the Extremity of the head of the Bone appear'd very high in the inner part, near the Share-bone: Thus continuing in doubt whether it was a Fracture or Dislocation, we concluded to use no violent Means, and accordingly made the Bandage call'd *Spica*, with a Roller done up to one Head that was about five Ells long, and five Fingers broad: We applied four or five triangular Compresses of four Doubles, laid one over another; the Plaits were upon the Groin, and one of the lower Angles along the Thigh: Above these we laid a Compress of eight Doubles, three quarters long. The Compresses were soak'd in hot Wine. The triangular Compresses were plac'd in the fold of the Groin, and the great Compress above 'em over the Thigh, crossing the two Heads upon the articulation of the Thigh-bone with the *Ischium*. After all, we made the Bandage, which I design to describe when I come to speak of the Luxation of the Thigh-bone. Seven or eight days after, the Bandage broke loose, and I took off the Dressings; then the Inflammation of the Thigh was quite gone, and as I took hold of the Thigh with my two Hands, by the upper and lower end, and made a strong pressure, I heard the cracking of the Bone. Upon

that discovery, to make amends for former Omissions, I made the *Spica* Bandage, and the *Geranium*, with four longitudinal Compresses, one of which was thicker than the rest, soak'd in Aromatick Wine, and laid under the Cavity of the Thigh. I applied under the Thigh the Roller with two Heads, and cross'd upon the Joint; then I run it from behind forward above the Hanch, and repass'd again from before backwards along the first Turns of the Roller, moving equally to the Joint. At every turn of the Roller I form'd small *Doloires*, one on the inside, and another on the outside of the Thigh; thus continuing as I began, I still carried it from behind forwards, and brought it back to run upon the Thigh, repeating the little *Doloires* three or four times, which form'd the *Spica*; and under the *Doloires* I repeated the *Geranium* in two circular Convolutions round the Thigh, crossing upon the *Spica*, and turning the Heads, one to the inside, and the other to the outside; at last I conducted the Roller in Rounds about the Body.

Oftentimes the Thigh-bone is fractur'd in the middle, and sometimes the Splinters of the Bone lie one upon another: In such Cases the Hands not being strong enough for the Extension that's requisite, we must have recourse to Gins or Nooses, one near the Knee, and another by the Groin, the Parts being guarded about with good Compresses under the Nooses, to prevent their galling. These Nooses must
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be pull'd by two Servants with all their force, one pulling upwards, the other downwards, in a streight line, observing carefully that the Thigh is neither rais'd nor lower'd. The Extension being thus made by the Servants, the Surgeon gives the Conformation with the Palms of his two Hands, raising the Splinters from below upwards, with the two *Thenar* Muscles under his Thumbs, and the posterior parts of the Thigh under the eight Fingers of the two Hands, which he is not to move.

To know if the Extension is duly perform'd, you must compare the affected Thigh with the sound, and when the one Limb is just as long as the other, 'tis a sign the Splinters are disengag'd and united. Things being carry'd thus far, both the Surgeon and the Servants must take care to keep all tight, without giving way any where, and to keep the Part exactly in the same Figure, while a third Servant applies a piece of Linnen of a breadth proportionable to the Thigh, and about eight Fingers long. There being such difference of bulk and size, according as the Patient is thin or corpulent, 'tis impossible to fix the extent of the Dressings to one Standard. As for this piece of Linnen, it must be so large as to cover all, and the two Ends must over-lap an Inch. The Cloth should be dipp'd in a Defensive before 'tis apply'd. After this Application the Surgeon is to make a Bandage with four Fillets or Rollers, the first of which should

be four Ells long, and the breadth of four Fingers over. All the Rollers, and all the Compresses, must be soak'd in hot *Oxycrate*, or Vinegar and Water. If the fractur'd Bone leans to the inside, the Surgeon places himself on one side, and indeed the outside if he can. If the Fracture is round, you must apply the end of the Roller to the solid part of the Bone, as I told you in speaking of Fractures of the Arm; and if 'tis oblique, you apply it to the Fracture it self. The Surgeon takes the Fillet well roll'd in the right Hand, and unrols it as much as the breadth of six Fingers; then he takes the unroll'd end in his left Hand, and holds it firm with his Thumb and his Fingers, resting what is unroll'd along his Arm. In this Fashion he applies that end to the Fracture, and the whole Security of the Bandage depends upon this first end.

This ought to be minded as a general Rule in the rolling of any part whatsoever. The Extremity of the Roller being held tight upon the Fracture, you raise with your right Hand that part of it that rested upon the left Arm, placing your Thumb upon the middle of the Roll, and pulling very equally till you have made a Round, and secur'd the End; then you make a second Round in the same manner, pulling always equally. *Hippocrates* frequently cautions not to make the first Convolutions too tight, and withal advises to make em conformable one to another. And with
this

this view we must ask the Patient whether he finds it too tight or too slack. After making the second Convolution, you unrol about as much as will go half round the part; and the Roller being held by the left Hand rais'd, the right Hand then takes it, and holds it in the same Posture without moving, till the left Hand has grasp'd the part: This done, the right Hand sets the Roller a-going. After three Convolutions upon the Fracture, you mount upwards with small *Doloires*, forming renvers'd Turns either on the inside or the outside of the Thigh. Thus you ascend to the Groin, and spend the rest of the Roller in two Rounds about the Body.

The second Band is apply'd like the first, from the outside to the inside. After two circular Convolutions upon the Fracture, it descends in small *Doloires* and renvers'd Turns, then it passes under the Ham, and makes two Rounds under the *Rotula*, about the upper part of the *Tibia*. This done, it re-ascends to the Groin, in *Doloires* a little larger than the former. This second Roller should be as broad as the first, and four Ells long. The part that's thinnest and falls off, should be bolster'd up with transversal Compresses; (of which above.) After the lower Parts are made equal to the upper by these transversal Compresses, you must apply longitudinal Compresses sixteen Fingers-breadth long, and the width of four Fingers broad, for a Man of a common size.

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The third Roller must be three Ells long, and apply'd from the inside to the outside, just contrary to the former two. It makes a Convolution round the Fracture, and rises in little *Doloires*, with small Intervals, to the Groin, after which it gives a round or two about the Body. These three Rollers being thus apply'd, you're then to clap two Pastboards on the lateral Parts, one on the inside, and another on the outside, all along the Compresses, not touching one another, but leaving an interval of a Fingers breadth. These Pastboards must be tied on with three Ribbons, as in the Fracture of the Arm, beginning with the Ribbon in the middle, for the Reason mention'd heretofore.

This middle Ribbon you take in one Hand on the outside of the Thigh, and with the other you make two Rounds one over another; and then make fast the Ribbon on the external lateral part. After that you manage the other two Ribbons after the same manner. This done, you come to apply the Junks, which must be of a length proportionable to the Age of the Person.

In preparing the Junks, you must observe, that they ought to pass above the breadth of three Fingers under the Ankle. To make them, you must have Rye-Chaff, with little Rods of the thickness of one's little Finger. Having put the Rods in the Chaff, you take a Fillet or Band that's longer than the Rods,
and

and after fastening it at one end, you surround the Chaff and Rods with the rest, and make fast at the other end.

As there's a necessity of two Junks, so that on the inside of the Thigh ought not to be shorter than the other, and not reach further than the Groin; whereas that on the outside should go the breadth of three Fingers above the Hanch.

The Rods thus prepar'd, must be put lengthways in a piece of Linnen Cloth, and encompass'd by it tightly and equally.

To make the Junks surer, they should be sew'd in with the Linnen from one to the other. For the Thigh, the Linnen Cloth should be three quarters of an Ell long, and for the Leg half an Ell. The Junks must be thus wrap'd to half the bigness of the Thigh and of the Leg. Under them you must put six Ribbons, and guard off the Unevenness of the inside with Compresses, both on the inside and the outside of the Ham, and above the *Gemelli* Muscles.

In the course of Practice, 'tis of the last Consequence to make all the Parts of an equal thickness, and make the Junks bear equally above and below. You must put longitudinal Compresses of seven or eight Doubles on the anterior Parts of the Thigh and Leg, and then guard the Foot with a good Compress dipp'd in *Oxyerate* heated: After which apply a sole of Pastboard, with a Ribbon run thro' the

the middle of it, to receive the Foot, and another Ribbon at the end. This done, a Servant comes and makes a Pressure upon the middle of the Junks, on each side, to bring 'em as near together as may be; and the Surgeon ties the Ribbons, remembering still to begin with the middle Ribbon. The two Ends of the Ribbon that's run thro' the middle of the Sole, must be made fast at the lateral Parts of the Leg, and the Ribbon at the end must be tied to the first Ribbon above.

Hippocrates, who forewarns us so often of the Danger of making the Bandages either too tight or too slack, gives us a certain sign of the due tightness of the Bandage, *viz.* the Inflammation and rising Softness of the lower Extremity, whether the Foot or the Hand. So that if the Foot is not at all inflam'd, you must immediately undo the Dressings, for fear of a false *Callus* that may afterwards be unretreivable, and so begin again. If the inferiour Extremities are very much inflam'd, and have a hard Tumour upon 'em, you must slacken the Rollers; for daily Experience shews, that too tight a Bandage is follow'd oftentimes by a mortal Gangrene, and many other Accidents.

'Tis highly incumbent upon a Surgeon to take care of this Circumstance, without being influenc'd by the Complaints and Cries of the Patient; for some Patients make a great deal of Noise and Whining for a trifling Pain,
and

and others are quiet under the heaviest Disorders, so that no Rule can be taken from the Conduct of the Patient.

Let the Patient cry or roar, or say what he pleases, this is still a certain Rule, That if the Thigh is right set, if no Splinters are out of their place, and the Bandage is right made, after 24 Hours, all or the most considerable part of the Pain will cease, and no Itching or Pimples disturb the Patient, which sometimes are a Presage of a Gangrene. If things be in this posture, without any sign of an Imposthume, or the like, do not offer to touch the Fracture or the Bandage till after the 9th or 10th Day. Some do a great deal of harm by undoing the Bandage too soon, to moderate some trifling Uneasiness. But in one Word, I would advise all young Surgeons not to touch the Bandage, unless it be too strait, for the Pain and other Accidents proceed commonly from an over-bearing Stricture.

So much for the Fracture of the upper end and middle of the Thigh-bone. As for the lower part, it may be fractur'd either to the inside or to the outside. If to the inside, the first Cast of the Roller must be made on the outside, and so you go on, observing the same Progress as in the Fracture of the middle of the Thigh-bone. After making three Turns round the Fracture, you ascend in small *Do-loires* and renvers'd Turns to the Groin. The second Roller you begin to apply like the first,
and

and after two Rounds about the Fracture, conduct it under the Ham, and make a Turn round the upper part of the *Tibia*: Then leaving the Knee unroll'd, you ascend and terminate at the Groin along with the first. This done, you apply the transversal and longitudinal Compresses, and compleat the Operation with the last Roller, which must run from the inside to the outside, in order to restore and re-instate the Muscles. At last you apply the Pastboards, Junks and Sole, as in the Fracture of the middle.

CHAP. XXX.

Of the Luxation of the Thigh-bone with the Ischium.

THE Thigh-bone is dislocated four Ways, namely, inwards, outwards, forward and backward. In the articulation with the *Ischium* there happens no incompleat Luxation from external Causes, as in the Cubit, the Wrist, &c. by reason that its Cavity is round, its Edges high, the Muscles very strong, and the head of the Bone very round, so that it can't rest upon the edges of the Lips of its Cavity; and the Strength of the Muscles is such, that they will not suffer it to rest part without and part within the Cavity.

Indeed, an incompleat Luxation may happen from internal Causes, by virtue of a Relaxation

Laxation of the Ligaments, which being drencht by the Moisture that comes from the Habit of the Body, may insensibly slacken and extend themselves.

The Luxations of the Thigh-bone being either internal, external, anterior or posterior, I begin with the internal.

The most frequent Luxation is that of the internal part upon the Hole of the Share-bone, by reason of the hollow cut in the internal lateral part of the Cavity of the *Ischium*.

We know that the Thigh-bone is dislocated in the internal part, when the affected Limb is longer than the sound one, the Knee and the Foot turn outwards, the Patient can't bend his Leg, and in the Region of the Groin we feel the head of the Bone sticking. In this case the Leg is longer than at other times, because the Head is not in its Cavity: And as for the Knee and the Foot, their turning outwards, 'tis common to all Bones, that the inferior Parts turn outwards when the Head is luxated to the inside.

After thus distinguishing the internal Luxation, we proceed to the setting Part; for which end we order the Patient to be laid upon his Back on a Table or a Bench, with a Hole in it, opposite to the Patient's Groin, in which we put a Peg about a Foot long, and half as thick as one's Arm, cover'd with Linnen. This Peg we drive forcibly into the Holes, so as to make it firm and tight; so that after raising
the

the Patient's Testicles, 'twill serve to push the Bone from the inside outwards. Under the Peg we have a Noose, which assisted by the Peg, draws the Bone from the inside outwards. At the lower part of the Thigh we have another Gin or Noose apply'd to the external lateral part. We run in the Heads of the Nooses from the outside inwards, and then pull from the inside outwards, the Person who pulls being always a strong robust Man, and plac'd on the outside of the Thigh.

The Places upon which the Nooses are apply'd must be guarded with thick Compresses, to prevent their being pain'd. The two Servants being conveniently seated, the one above the other, the upper one has the Patient's Head and Shoulders resting upon his Knees, and against his Breast, and pulls with his two Hands the two ends of the Noose, one on the inside, and the other on the outside: And the other Servant, who sits below, pulls the two ends of his Noose with yet more force than the other, because the Peg does great Service in pushing the Bone from the inside outwards, in order to make it re-enter its Cavity. These two Servants must take care to pull both in a strait Line. If it be the right Thigh, the Surgeon forcibly pushes from the outside inwards with his left Hand, being assisted by the Peg, which is much more effectual than the Surgeon's Hand; then with his right hand he grasps the Knee below the Noose,
and

and pushes from the outside inwards. Then he bends the Knee, laying the Leg across towards the other as much as he can.

This is undoubtedly the best Invention for reducing an internal Luxation that's recent ; but if the Luxation be of long standing, we must have recourse to Machines, several of which may be readily made out of hand.

The most commodious of 'em all is the Mill made of two Pieces of Wood, with three Holes in each. In the Holes of the two ends we put a Peg to keep the Boards together ; and in the middle Holes we put a stick about half an Ell long, at the end of which are two little Holes for receiving two Pegs of a moderate bulk, and a Foot long, in the form of a Cross. This Machine being held firm against a Wall, a Servant takes hold of one of the Pegs, and by this means the Noose twists it self round the Stick, and so the Extension is as strong as can be desir'd. In this Method the Servants are plac'd as above, and all other Circumstances the same.

The Nooses pull'd by the Mill must be pull'd downwards in a strait Line, and the Surgeon acts the same part as when no Mill is made use of.

This Invention of the Mill I recommend to the *Country Surgeons*, that can't come at the other Machines us'd in great Cities ; for in a difficult Luxation all our Design is, to make a
strong

strong and great Extension, which this does very effectually, and very easily.

The Bandage proper for this Case is already describ'd, in treating of the Fractures of the Thigh-bone, and shall be further view'd after I have shewn the *Signs* and the *Reduction* of the remaining three Luxations of the *Thigh-bone*.

The *Signs* of the external Luxation are very different from those of the internal; for in the external the affected Leg is always shorter than the sound one, by reason the head of the Bone is then above the Cavity; besides that, the extending Muscles draw towards their Head, and so pull the Bone upward. The Knee and Foot turn in this case inward towards the other Leg; and the Heel, which turns outwards, is so affected, that the Patient cannot stand upon it, and so can only rest on the ball of his Foot. If this Luxation can't be reduc'd, in process of time it beats out to it self a false Cavity behind the *Ischium*; for the Flesh being frequently and forcibly grated and bruis'd by the Head of the Bone, it becomes callous, and serves for a Cavity to the Bone; and in that case the Patient may walk without a Cane, because the Body bears upon a direct Line, which can't be when the head of the Bone is lodg'd in the internal Part.

The external Luxation of the *Thigh-bone* is the easiest reduc'd of 'em all. We lay the Patient upon his Belly, without any such Peg as was order'd for the internal Luxation, and ap-
ply

ply two Nooses, in a different way from those us'd in the internal ; for the Noose that's above the Knee is applied to the internal, lateral, and inferior Part of the Thigh, and pull'd upward from the inside to the outside, by a strong Extension : The Servant that pulls it sits uppermost, with the Patient's Face on his Lap, and draws the Strings upwards.

The second Noose is applied to the upper internal part of the Thigh : One of its Heads passes inwards under the Armpit, and the other outwards over the Back, along by the Neck ; and the Patient's Arm is extended in a streight line downwards, and ty'd by the Wrist to the Servant's Girdle, the Hand resting upon his Breech. Two Servants are to pull this, one upwards, and the other downwards.

If the right Thigh is dislocated, the Surgeon plants himself on the left side, and with the Palms of his Hands pushes the Bone from the outside inward, in conjunction with the lowermost Servant, who pulls his Noose with all his force from the inside outwards, endeavouring to make the Knee turn in towards the other Leg, by pulling the Heel outwards.

If these Means are not sufficient, you must have recourse to Machines.

CHAP. XXXI.

Of the Anterior Luxation of the Thigh-bone.

WE know that the Head of the Thigh-bone is slipt out on the fore-side, when we find the head of the Bone resting upon the *Os Pubis*, and a great Tumor in the Groin, the Breech wrinkl'd and thin, by reason of the contraction of the Muscles; when the Patient extends his Leg without Pain, but can't bend it towards the Groin, because the Anterior Muscle is squeez'd by the head of the Bone, so that it can't extend it self; when the Patient can't bend his Ham without great Pain; when upon comparing that Leg with the other, we find 'em equal in length, and the Patient can't support himself but upon his Heel. When this Luxation happens, we must reduce it betimes, because it causes a Suppression of Urine, for that the Parts which convey the Urine to the Bladder are violently press'd and squeez'd by the head of the Bone, and thereupon a great Inflammation ensues.

To accomplish the Reduction, place the Patient on the sound side, and perform the same Extension as in the internal Luxation. The Extension must be directed from without inwards, and suitable Endeavours must be us'd to make the Head of the Bone return the way it came. To this end apply a hard and round
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Compress on the Head of the Bone, and press the Compress down with your Knee ; then pull the Patient's Knee towards the other Leg, and by observing the above-mention'd Extensions you'll compleat the Reduction.

C H A P. XXXII.

Of the Luxation of the Thigh-bone in the Hinder Part.

TH E Posterior Luxation of the *Thigh-bone* happens but seldom, by reason the Cavity of the *Ischium* is very deep on that side, whereas on the inner side 'tis shallower and notch'd, which makes the internal Luxations more frequent than the other.

The Signs of the Posterior Luxations are these : The Patient can neither extend nor bend his Legs, by reason the Muscles that encompass the head of the Bone are extreamly press'd and extended ; the Pain encreases violently when he offers to bend the Ham ; the affected Leg is much shorter than the sound one ; and in feeling or pressing the Breech, the head of the Bone is felt to make an Eminence under the Muscles ; a great softness in the cavity of the Groin is obvious to the Touch ; the Heel can't touch the Ground, by reason the head of the Bone lies hid between the Muscles of the Breech, which draw it upwards, especially the great Muscle, which undergoes a
grea-

greater pressure than any of the rest ; (for the same reason the Patient can't bend the Knee, for in bending it he must make a great extension of the upper *Aponeurosis* of the *Tibia* ;) if the Patient strives to stand upon the Foot of the dislocated Limb, without something to support him, he falls backwards, because the Body is not plac'd in a perpendicular line over the Bone, so that in this case he must have a Crutch under the Armpit of the affected side.

Such are the Signs of this Luxation. To reduce it, you must place the Patient upon a Bank, or a Table cover'd with a Quilt or some other thing.

In the next place you must remember, that the Part where the Bone rests must needs be more prominent than that from whence it dropt. 'Tis likewise to be remember'd, that if the Patient be a Child or a Woman, we ought not to make violent Extensions with Nooses and Machines, for that the Hands of the Surgeon for the most part will suffice : I say, *for the most part*, for I do not deny but that sometimes Luxations happen both in Children and Women, which can't be reduc'd without Nooses.

In reducing this sort of Luxation the Extension must be more violent than in the other. You must push the head of the Thigh-bone with the great *Trochanter* from above downwards in a streight line, and with great force pull the posterior part of the Thigh backward ; by which means the head of the Bone
will

will re-descend the same way it came, and so slip into its Cavity.

*Reflections upon the Luxations of the Shoulder
and the Thigh.*

I Dare to say, without reflecting on any Practitioner, that of all the Writers upon the *Dislocation of the Thigh-bone*, not one has taken notice of that excellent Precept of *Hippocrates*, quoted above, importing, that in all Luxations three things are to be consider'd, viz. whence the Bone went, which way it went, and where it stops. This *Galen* advises us to mind with attention, that we may avoid the Mistake of some Surgeons in his Time, that not only mis'd of the Reduction of the Bones, but turn'd one Luxation into two. This, says *Galen*, proceeded from their Ignorance, in not being acquainted either with the Cavity of the Bone, or its Head, or the way it took in removing from its proper station, or the place where it met with a Stay. He adds, That thro' this Ignorance, instead of raising the head of the Shoulder-bone upwards, when 'twas fallen below the Cavity under the Arm-pit, they violently push'd the Arm from behind forwards, and so dislocated it a second time in the fore-part.

I know very well, that whoever is but slenderly vers'd in *Osteology*, will avoid such gross Miscarriages ; but at the same time I think it

highly proper to advise 'em always to have in view this Precept of the great Master of our Profession, when they are employ'd upon the two famous Luxations of the Shoulder and the Thigh-bone.

The true way of learning to reduce these Dislocations successfully, is to do it frequently upon a Skeleton.

To apply this great Precept of *Hippocrates* to the Reduction of the Thigh-bone, which lies now before us. This Bone, as I intimated above, may be dislocated four Ways. In an internal Luxation, the Head of the Bone departs from the Cavity of the *Ischium*, it takes its Passage over the hollow Notch, and stops upon the Hole of the Share-bone, the Neck of the Bone resting on the Notch, and the *Trochanter* possessing the Cavity of the *Ischium*.

Now these Things being duly minded, 'twill be an easie matter to set the Bone, by making it return the same way it past, in pushing the Bone from before backwards, and making it repass by the same Notch. In doing this, we must call to mind what *Hippocrates* says, That the Neck of the Bone rests upon the Notch, and to facilitate the re-entrance of the Bone into its Cavity, it behoves us to push the inferiour Part of the Thigh from the outside to the inside, by laying the Leg across upon the other Leg; for as the lower end of the Thigh advances forwards, it throws the Head of the Bone behind or backwards.

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The external Luxation is different from the internal, upon the Account that there the Head of the Bone sallies out in another Course. It gets behind the *Cotyle* or Cavity, and rests upon the Sinuosity of the *Ischium*, between the Tuberosity and the verge of its Lip. Now, here it must be remark'd, that the hinder side of the Cavity is lower than the other.

In reducing this Luxation, we take Measures contrary to those last mention'd: Being appriz'd that the Head of the Bone departed from its Cavity, steering from the inside outwards by a transverse Line, pointing directly to the Notch of the inner part.

In this Luxation the Patient is plac'd upon his Belly, as I intimated above; after which the Servants do their Office, and the Surgeon exerts all his Force in pushing the Bone with his two Hands or his Knee. He pushes it from the outside inwards in a transverse Line, making the lower part of the Thigh approach from the inside outwards.

The Dislocation in the anterior or forepart is more uncommon than the former two, by reason that the Cavity of the *Ischium* has higher Sides before, than either on the inside or outside. When this Luxation happens, the Head of the Bone slips out of its Cavity thro' a small Notch in the upper part of the Cavity, and steers in a transverse Line over the upper part of the Share-bone, just by the Union of the two Bones.

To make it return the same way as it went out, we push it from before backwards in a transverse Line, pulling the Nooses both above and below, from the inside outwards. The Patient is laid on his sound Side, as I said before, and the lower part of the Thigh is push'd with the Knee from the outside to the inside: By which means the Head of the Bone comes to re-enter its Cavity.

The posterior Luxation of the Thigh-bone being more uncommon than any of the rest, I shall add to what I have said before, that I do not meet with any Author that has well explain'd in what Luxation of the Thigh-bone the round Ligament is broken, and in what Luxations it continues to extend it self.

It must be own'd, that this Ligament is very short, as not being above an Inch long, so that it can't remain entire in any Luxation besides the internal, where the side of the Cavity is a little rais'd. If it subsists entire in this, it must stretch it self to two large Inches; but in the posterior Luxation it must stretch above six, and in the anterior above three. From whence we conclude, that the round Ligament which fastens the Head of the Thigh-bone in its Cavity, can remain entire only in the internal Luxation.

The Luxation of the Thigh-bone requires the same Bandage as was describ'd for the Fracture of the upper part. The Groin must be defended with four triangular Compresses, one
angle

angle of which runs downwards along the Thigh. A great Compress three quarters of an Ell long, and three Inches broad, should be laid along the inside of the Thigh, and come to cross upon the Articulation. This done, we apply a Roller with two Heads, beginning from the inside outwards; then crossing upon the Joint, conduct one of the Heads to the inside, and the other to the outside; after which, we return from behind forwards, and crossing again upon the same part, form small Edgings from above downwards. This done, we repass by the inside of the Thigh, and so return to steer from the inside outwards, keeping the small Edging so as to form a *Spica*.

Having made three *Spica*'s and a half, we must then make a *Geranium* or Crane, which is nothing else but a small Aperture left under the *Spica*'s, by making two circular Rounds about the Neck of the Thigh-bone. This Aperture resembles a Crane, and so gave rise to the Name. We finish the Bandage in covering the *Spica*'s, and making circular *Convolutions* round the Body.

CHAP. XXXIII.

Of the Fracture of the Rotula.

THE *Rotula* undergoes Fractures several Ways, *viz.* lengthways, crossways, or into several Pieces, either with or without a *Wound*.

When the Fracture runs across, the Signs are apparent both upon the Side of the Fracture, and in the failure of the Action of the Part. As to the first, there's a void space in the middle of the Bone, with an apparent Hollowness.

As for the Action of the Part, the Patient can't extend his Leg, because all the extending Muscles of the Leg are knit to the *Rotula* by an *Aponeurosis*; and at the Share-bone he can't bend it without a great Pain.

To reduce it, make the Patient sit down, and take the Knee in your two Hands, one on the inside and the other on the outside, making your Thumbs meet, and with your two Fore-fingers and your Thumbs pull down the Skin gradually till the two Ridges approach one another; then make the great Bandage call'd *Chiaste*, in the following manner:

Take a single piece of Linnen-Cloth, about ten Fingers-breadth long, and six broad. Soak it in the Whites of Eggs, with Oyl of *Roses*, then lay on a Compress of four Doubles, having an Aperture to receive the *Rotula*, with a Compress and Pastboard sew'd together with an Aperture in like manner, and over all a large plain Compress. Then make the Bandage with four Fillets, three of which must be two Ells long a-piece, and two Inches broad, and the fourth five Ells long, and the breadth of four Fingers over. The first *three* must be roll'd up with two Heads. The first that you apply is call'd *Lacy*, or Noose, and

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is not remov'd till the Cure is accomplish'd.

You begin the Application above the *Rotula*, and then make a Cross under the Ham; then returning from behind forwards, you pass below the *Rotula*, and thus continue to conduct your two Hands or Balls, crossing on every side, both within and without, under the Knee, so that you leave the *Rotula* uncover'd. The other two Fillets are roll'd and apply'd in the very same manner with the first. In the meantime, to avoid tangling, you must always remember to conduct one Head along, before you cross the other.

You finish the Bandage with the fourth Fillet roll'd up in one Ball, of the same length and breadth with the former three; beginning the Application under the Sole of the Foot, leaving about five or six Inches of one end to be made fast, in rolling upwards with great Edgings and renvers'd Turns. When you come at the Ham, under the *Rotula*, you stay your Fillet, and above the last Turn apply a Pastboard cover'd with a thick Compress, at least twelve Fingers-breadth long, and eight broad. This you lay under the Ham, and keep it on by the same Roller, which is then to mount upwards with Edgings or *Doloires* to the Groin.

At last you conclude the whole Dressing with the Junks, describ'd above for the Thigh. By this means the Patient may be cur'd in thirty or forty Days.

I do not know how it comes that *Paræus*, one of the greatest Practitioners of his Time, should affirm, that all those who have had the *Rotula* fractur'd are lame ever after, notwithstanding all the Precautions that can be taken.

For my own part, I do assure you, I have cur'd 3 or 4 cross Fractures of the *Rotula* without any such Consequence; and have seen several such Cures perform'd by my Brethren.

If the Fracture of the *Rotula* runs lengthways, you must make the Uniting Bandage, describ'd in the beginning of this Treatise.

CHAP. XXXIV.

Of the Luxation of the Rotula.

THE *Rotula* may be dislocated upwards, downwards, inwards and outwards. To reduce it, you must hold the Patient upright, ordering some robust Person to embrace him under the Armpits. Then the Surgeon pushes the *Rotula* with the Palms of his two Hands, from above downwards, if the Dislocation bore upwards; or from below upwards, if it bore down. If the Dislocation bore to the inside, he plants his Hands on the two Sides, and pushes to the outside; and if it bore to the outside, he pushes the contrary way. The proper Bandage is the *Tortoise*, so call'd from its representing the Figure of that Animal.

'Tis made with a Fillet four Ells long, and
of

of the breadth of two Fingers, roll'd up in one Ball, the same Compresses with the Aperture being apply'd as above, without Pastboard. With the Roller you make two or three Turns above the *Rotula*, then two circular *Convoluti-
ons* below it ; after that, you run it along the middle of the *Rotula*, making an Edging from above downwards ; then you descend under the *Rotula*, and there make an Edging from below upwards. Thus you continue the Edgings from above downwards, and from below upwards, till the *Rotula* is cover'd all over. This done, you lay a Pastboard guarded with a Compress under the Arm ; and so the *Rotula* will knit in thirty Days.

CHAP. XXXV.

Of the Anchylosis.

SINCE the Diseases of the Joints are related to those of the Bones, of which they seem to be a Species, I shall here oblige the young Surgeons so far as to explain an *Anchylosis*, which is a Disorder of the Joints, being nothing else but a viscous and glutinous Moisture, that insinuates its self into the Cavity of the Articulations of the Bones, and sometimes grows as hard as the Bones themselves.

*A very remarkable Observation upon the
Anchylofis.*

SOME Years ago, during my Attendance at the Hospital *de la Charite des Femmes*, I met with a young Girl ten or twelve Years old, that had an *Anchylofis* in the Joint of the Knee, occasion'd by a Wound in the internal lateral Part, between the *Condylus* of the *Tibia* and the *Rotula*. The *Anchylofis* was then of seven or eight Months standing, and her Heel was up to her Breech.

M. Houiller my Colleague, thinking there was no hopes of Cure, propos'd only to lay the Plaister *de Mucilaginis* upon it, without troubling our selves further in vain. At the end of the Month, upon which the time of our joint Attendance was up, I attempted by my self to redress this grievous Disorder, which all the ablest Surgeons and Practitioners at *Paris* took to be incurable.

I begun at first with Emollient and Discussing Remedies; after these I apply'd such Discussives as were more penetrating and attenuating, and that for five Months, during which time I dress'd it twice a Day. After fomenting it for a quarter of an Hour with an Emollient Decoction as hot as she could endure it, I bath'd for a considerable space of time with a Discussive as hot as she could possibly bear it.

But

But that which in my Opinion forwarded the Cure most, was the Bandage with the Junks, that they make use of in a Fracture of the Leg. I began to apply these when the Leg was a little extended; for after fomenting the Knee with the Liquors, I took the Leg and the Thigh in my two Hands, and carry'd the Flexion and Extension as the Girl's Strength would allow.

When I made the Bandage, I took a very thin Splent, about an Inch broad, and eight or ten Inches high, and folded it up in a Compress of eight Doubles. I plac'd the middle of this Compress under the Ham, so that it bore with the two ends upon the Thigh and the Leg; and in regard the Leg was still bended, there was a great void space between the Compress and the Ham. Above the Knee I laid another Compress of seven or eight Doubles, strengthen'd with a pretty thick Pastboard. I made my Bandage with a Fillet five Ells long, and two Inches broad. With this I made five or six Rounds about the Ham, over the Compresses, and then two or three Rounds above, and as many below it; at last I stay'd my Bandage in two or three circular *Convolution*s above the Knee.

You must remark by the way, that as I advanc'd in melting the *Anchylosis* with my Emollient and Discussive Remedies, I still made my Bandage tighter and tighter.

'Tis likewise to be remark'd, that every
Day,

Day, Morning and Evening, I made the Flexion and Extension of the Leg with a violent Force: And during all these great Motions I heard a Noise, which proceeded from the Agitation of the *Condylus's* of the *Tibia* and the Thigh-bone, while the *Anchylosis* was melting. All this could never pass without a great deal of Pain, and I lay under a great Necessity of looking narrowly after the Strength of this little Girl; for oftentimes after the Torture of my Operation was over, I was oblig'd to leave her in Repose for seven or eight Days: But as soon as she recruited, I renew'd the Flexion and Extension, in order to melt down and dissolve the *Anchylosis*. In fine, by this means the Girl was perfectly cur'd, and now walks without the least Lameness. I begun in *September*, and finish'd the Cure by the end of *January*.

CHAP. XXXVI.

Of the Fracture of the Leg, both Compleat and Incomplete.

WE call a Fracture of the Leg *Compleat* when the two Bones of the Leg are broken quite thro'; and *Incomplete*, when only one of 'em is broken: But at the same time a Fracture may be either *Compleat* or *Incomplete* upon a Part that has only one Bone, as the Shoulder or upper Arm, and the Thigh;
in

in which case we call it *Incompleat*, when only a Part or Splinter of the Bone is forc'd asunder from the rest, and the whole Body is not disunited.

We know that only the *Tibia* is fractur'd, when the Bone bears to the inside of the Leg, and is not crooked; for the *Perone* or *Fibula* hinders it from flying outwards. But the Fracture of the *Perone* is commonly more hard to distinguish, because this Bone is less, and makes a less cracking noise; besides that, 'tis cover'd with more Muscles than the *Tibia*.

When both the Bones are broken, they turn equally to the inside and outside, the foreside and backside. Both the Bones fractur'd, are harder to cure than only one, as I intimated above in the Fracture of the Cubit; for while one Bone stands, it serves for a Splint and Support to the other.

To reduce the Fracture of the two Bones, when they do not lie one upon t'other, you must make no great Extension, but be careful of what you're to do before and after the Operation, as well as in the interim.

Before you dress the Patient, you must have all your Dressings and Apparel ready, and two Servants qualified for making the Extension and Counter-Extension, call'd by the Greeks *Antistasis*; the Conformation call'd by the Greeks *Diaplasis* being the Surgeon's Province.

I have

I have already shewn how an Extension must be made equal and unequal with the other Parts. When the two Bones are fractur'd, and the Ends are at no great distance from one-another, you need make no other Extension but with the Hands of two Servants, one of whom claps his left Hand under the Heel, and with his right Hand full spread grasps the Foot, his Thumb being under the Sole of the Foot, and his four Fingers upon the upper part of the *Tarsus*, while the other Servant grasps the upper part of the Leg with his two Hands, one on the inside, and t'other on the outside, so plac'd that the two Thumbs are upon a level, pursuant to *Hippocrates's* Precepts.

The two Servants in this posture are to pull equally in a streight line, and care must be taken that the Leg is neither too high nor too low. This done, the Surgeon makes the Conformation with the Palms of his two Hands, taking hold of the Leg on each side, and bearing it up from below upwards with the *Thenar* Muscles that lie under his Thumbs; then holding the *Gemelli* Muscles under the Leg with his eight Fingers, passes his Thumbs over the Crest of the *Tibia*, to see if the Bone is even.

The Leg being held in this posture, both by the Servants and the Surgeon, without budging or giving way, another Servant comes and applys a piece of Linen Cloth about 12 Fingers-breadth long, and 4 or 5 broad, having first dipt it in *Oxyrate*, and cover'd it with a

De-

Defensive of the *Whites of Eggs* and *Oyl of Roses*. This piece of Cloth is cut at both ends almost two inches in length.

If the Fracture lies to the inside, 'tis apply'd from the outside to the inside, the Ends that are thus cut being laid one over another: Then the Surgeon takes a Fillet two Ells and a half long, and of the breadth of three Fingers; and if it be the left Leg, with either the *Tibia* or both the Bones cast to the inside, he places himself on the outside, and holds the Ball of the Roller in his right Hand, resting his Thumb upon the middle of it, while the end of the Roller is held by the left Hand, with the Thumb likewise resting on the middle of it; this done, he unrolls the Roller as far as the breadth of ten Fingers, and pulling it over the Thumb and Wrist, rests the Ball against his left Hand, and does not set the Roller agoing till this End is apply'd to the Part.

I have already told you, that all the Security of a Roller depends on the first turns, and if these slack, all the rest will prove the same.

The end of the first Roller being thus apply'd for a little way upon the solid part of the Bone, if the Fracture runs all round, or to the middle of the Fracture if it runs obliquely, we give three pretty tight rounds about the Fracture, taking care to make these three equally tight, according to *Hippocrates's* Rules, to unrol the Roller as far as what will go half round the Part affected, and to hold the Roller
in

in the left Hand, in a streight line, without moving : This done, the right Hand takes hold of it, and does not set agoing till the left Hand has grasp'd the lower part of the Leg ; after which the Surgeon continues to make the same turns, ascending to the Ham, and forming small Edgings, or renvers'd Turns, where there's occasion.

The second Under-Fillet must be as broad as the last, and three Ells long, and applied from the outside to the inside : With this you make two Convolutions upon the Rounds of the former, and then descend under the Sole of the Foot, leaving the Ankle-bones as open as you can : This done, you re-ascend with it, with Edgings a little larger than those of the first and renvers'd turns, if there's occasion. At last it terminates along with the first.

After this you apply a transverse Compress, made of a piece of Linen about a quarter of an Ell long, and as broad as sixteen Fingers. This Compress you're to fold lengthways, leaving about an Inch from the Edge uncover'd ; then you fold it again once or twice, and reduce it to the breadth of five Fingers, to be soak'd in *Oxycrate*, and cover'd with a Defensive or some other Liquor, if there's occasion. The Plaits of the Compress must be applied below, as near the Ankles as you can, and the ends of the Compress should lie upon another, not upon the Crest of the Bone, but upon the outside or the inside of the Leg.

The

The Longitudinal Compresses must be twelve Fingers-breadth long, and two Inches broad : Of these you're to apply four, *viz.* two forwards, one on each side, at the distance of a Fingers-breadth from the Crest of the Bone, which ought to be left open ; and two on the Sides, taking care to make 'em fit right.

This done, you come to apply the third Fillet quite contrary to the other two, that is, from the inside to the outside. You roll this upon the same Turns with the first, beginning with the single Round, and so ascending in Edgings with greater Intervals, till you come to terminate along with the others.

The fourth Fillet is applied first above, then it descends from the out to the inside in greater circuits than the third.

This done, you apply Pastboards to the lateral Parts of the Leg, leaving the ridge of the Shin uncover'd for about a Fingers-breadth : These Pastboards are to be held on with three Strings about an Ell long and an Inch broad. The middle String must be first ty'd, for which you hold the end of it in your left Hand, on the outside of the Leg, and with the right you hold the other end under the Leg, in order to make a circular Convolution about the first Turn. The same course is taken in tying the other two ; and withal you must remember that all the three Knots must lie on the external lateral Parts.

Having already shewn you how to make the Junks, I shall now only add, that the outside Junk should be two inches longer than that for the inside, by reason that the lower Part of the *Perone* is somewhat longer than the *Malleolus* of the *Tibia*; but at the same time both the Junks must extend their upper and lower part beyond the Knees and Feet. I mean, that both the Junks must go equally beyond the Knees the breadth of three Fingers; but the inside Junk shall reach beyond the Feet only one Inch, whereas the outside one ought to reach three Inches beyond 'em.

Here you must call to mind what I said relating to the making of Junks, namely, that the Chaff whereof they are made ought to be fortified with little Rods. Before you apply 'em, you must lay under 'em three small Ribbons, at the distance of four or five Fingers-breadth from one-another, and guard the lateral Parts, from the Ham to the Ankle, with two good entire Compresses, or else several little ones; after which you are to lay over the Leg, from the Knee to the beginning of the Foot, another thick Compress of eight doubles. The Junks laid under the Leg must be ty'd on with three Strings, beginning with the middle one, which ought to bind faster than all the rest; and all the Knots must be cast on the outside of the Leg.

I advise you to make use of a Sole as much as you can in all Fractures of the Thigh, the
Leg,

Leg, and the *Rotula*. The Sole should be of Pastboard, if you can have it, or at a distance from great Towns, where that can't be had, of some old Sole of a Shooe.

If you are forc'd to make use of Wood for this Service, let it be very thin, and guarded with a good Linen Compress, to hinder its hurting the Sole of the Foot. At the end of the Sole you must put a Ribbon about three quarters long, to be ty'd to the first upper String that ties on the Junks.

This Ribbon is of great use, it keeps the Sole in good order, and serves as a Stay and Security to the Leg, for nothing hinders the Union of the Bones more than Motion. If all these Circumstances be duly observ'd, the Leg will lie very soft and easie, and in such a manner, that the Foot is somewhat higher than the Knee.

The first day of the Dressing you must make a Rope to hang down from the top of the Bed, within reach of the Patient's Arm, and fasten to the end of it a Peg or Knob cover'd with Linen, that the Patient may not hurt himself when he goes to stool. At the same time, for the greater security of the Leg, you must arch up the Bed-cloaths with a Hoop, or some such thing, for the motion of the Cloaths might hinder the re-union of the Bones.

Here I refer the Reader to what I have already said upon the *Fracture of the Thigh*, of the Signs whereby we know whether the Bandage

dage is too tight or too slack; and can't but caution my Reader once more to be very careful upon that Head.

The greatest and most important Advice I can give a *Young Surgeon*, is, to visit his Patient frequently, because the whole Dressing may slacken in a little time. On occasion here's no Danger in untying the little Ribbons of the Junks, and opening these a little, in order to make a tighter constriction of the three Strings of the Pastboards, for this may be done without moving the Leg.

For the second Dressing, two Servants must hold the Leg, one the upper part, and t'other the lower, without pulling or drawing any manner of way, while the Surgeon neatly undoes the Rollers with one Hand, and with the other takes hold of the Leg very gently, and so takes off the whole Dressing.

But if he finds that the Leg is very streight, and of the right shape, he ought not to touch it at all. If the Part is disturb'd with an Itching, let him dip a Rag in Water and Salt heated, and let it drop upon the Leg beyond the Fracture. If no Accident forbids, he may apply upon the Fracture the Plaister against the *Rupture*, perforated with little holes in rows, to give way to the penetration of the Wine heated, in which all the Rollers and Compresses are to be steep'd. The rest of the Dressing is the same with the first.

Eight or ten days after, he is to dress it a third time, without any alteration. After the 24th or 25th day is past, he must take off the Dressings every three days, and foment the Leg with the hot Wine in which the Compresses are dipt, and lay on the Plaister again, leaving off the Roller.

After that he must not bind the Part so hard; and for the last eight or ten Days he is to apply only two Rollers, continuing still the Junks. About the fourtieth Day he may take off all the Dressings, and clap the Leg into some deep Vessel fill'd with Red Wine, boil'd with Aromatick Herbs. This Wine must be heated very hot in Winter, and moderately hot in Summer. The Leg being thus fomented two or three times a Day, the Patient must use a Stick for the first Days of his beginning to walk; for at first he does not dare to throw his Weight upon the broken Leg, and it seems to be shorter than the other, by reason that he does not dare to extend it to the full length. Some time after, you must make him quit his Stick, that so he may discard the Fear of being unable to walk without it. So much for the Compleat and Incompleat Fracture of the Leg.

Here I have taken no notice of the Rolls made for the Seat, which, after all, are very useful in a Compleat Fracture of the Leg, or even a Fracture of the *Tibia*.

C H A P. XXXVII.

Of the Luxation of the Tibia when its upper Part departs from the Thigh-bone; the Bandages requisite on that occasion.

THE Tibia may be dislocated from the Thigh-bone four Ways, viz. inwards, outwards, upwards and downwards. The Signs by which we distinguish these Luxations, appear in the figure or form of the Leg. If the *Condylus* flies inward, the Leg turns outward; if the Joint bears outward, the Leg turns inward; and when the two *Condylus*'s descend under the Ham, the Heel approaches to the Breech. The upward Luxation is very rare, tho' still possible.

C H A P. XXXVIII.

Of the Dislocation of the Tibia to the outside.

IF the Dislocation is external, cause the Patient to sit down on a Chair without Elbows, and order a Servant to embrace him, and hold him fast; while you clap your right Hand upon the inside of the Thigh, and your left Hand on the inside of the Leg, and so with your right Knee push the Eminence of the Bone from the outside to the inside, till 'tis right set.

CHAP.

CHAP. XXXIX.

Of the Dislocation of the Tibia to the inside.

IF the Bone flies off to the inside, the Surgeon places himself between the Patient's two Legs, and takes hold of the outside of the Thigh and Leg, and pulling inwards with all his Force, pushes the Eminence of the Bone from the inside outwards with which of the Knees he can most conveniently apply.

CHAP. XL.

Of the Posterior Luxation of the Tibia.

IF the *Tibia* is dislocated to the Back, or hinder Parts, let the Patient be set upon a Chair or a Bed, and held fast by a Servant behind him, while another Servant takes a wooden Peg, cover'd with Linnen, about twelve Fingers-breadth long, and lays the middle exactly under the Ham, so that its two Ends may be pull'd from below upwards by a Servant. The Surgeon places himself on one side of the Leg, and after applying a piece of Lint, or some other Fillet under the Knee, pulls with his left Hand the two Ends of the Fillet upwards, and with his other Hand bends the Leg, making the Heel approach to the Buttocks.

CHAP.

CHAP. XLI.

Of the Luxation of the Tibia forward.

IF the *Tibia* is dislocated towards the fore-part, you must lay the Patient upon his Back, on a Plank, with a Quilt or some other Covering under him, and a Servant behind him that holds him fast. Then comes another Servant, who with his two Hands pulls the lower Part of the Thigh-bone upwards; while a third Servant draws the Leg downwards, and the Surgeon with his Knee pushes the Eminence of the Bone from above downwards, so as to make it re-enter its Cavity.

The Bandage is made with a Roller with one or two Heads, and a Compress cut hollow, soak'd in *Oxycrate*, and cover'd with a Defensive of the *Whites of Eggs*, and *Oyl of Roses*.

If the *Tibia* is dislocated to the inside, apply the end of the Roller from the outside inwards, and make two circular Rounds above the *Rotula*; then descend under the Ham, and make two circular *Convolutions* under the *Rotula*: This done, cross upon the internal lateral Part of the Ham, moving from the outside inwards; then re-ascend over the first Turns from the inside outwards, and from the outside inwards; after that descend below the Ham from the inside outward, continuing your Edging from the upper Part down-

downwards, and *à contra*. At last compleat the Bandage in a circular Round or two above the *Rotula*. This Fillet or Roller should be three Ells long, and three Fingers broad.

As for the Anterior or Posterior Luxation, you must make the Bandage with a Roller done up to two Heads. In the Anterior you begin the Bandage upon the upper and fore-part of the *Tibia*, making two circular Rounds about the lower Part of the Thigh-bone, just by the *Rotula*; then descend under the Ham, crossing both on the inside and the outside.

Here you must call to mind what I remark'd before, that in making the *Chiastes* (Crosses) upon the lateral Parts of the Knee, one Head must cross and pass first, whether on the inside or outside. For Example, in holding the two Balls or Heads with your two Hands, you must pull one Head from the outside towards the inside, and cross under the Ham; after which you must pull the other Head from the inside outwards, and cross likewise on the outside; then pass over the other Head, continuing your *Edgings*, that is, so as to make the lower Ball edge from below upwards, and the upper Ball edge from above downwards.

You must take care to make a very slight Stricture in covering the *Rotula*, to make all the Crosses on the two Sides of the Ham, and to form the *Edgings* on the fore-part both of the Thigh-bone and the *Tibia*.

CHAP. XLII.

Of the Dislocation of the Joint of the Astragalus with the Tibia.

AFTER dispatching the upper Dislocations of the *Tibia*, we come next to its Luxation at the lower end.

The *Astragalus* is dislocated to the inside by an incompleat Luxation; and then it moves half out of its Cavity, and the internal *Malleolus* possesses the upper Cavity of the *Astragalus*; the Heel turns very much outwards, and the Sole of the Foot turns the same way.

Besides these Circumstances, there's a great Rising in the internal lateral Part of the Foot, which is the *Astragalus*.

If the *Astragalus* is dislocated to the inside, there's an Eminence in like manner on the outside, by reason that the Process of the *Perone* retires backwards.

CHAP. XLIII.

Of the Compleat Dislocation of the Astragalus.

A Compleat Luxation of the *Astragalus* can't come to pass without great Violence. For my own Share, I never saw any
of

of this Nature, but incompleat Dislocations I have met with in my Practice.

If the Dislocation is Compleat, the *Astragalus* must depart altogether from the Cavity of the *Tibia*, and the internal *Malleolus* must stand in the room of the Head of the *Perone*, and the Process of the *Perone* must advance to the outside, under the Sole of the Foot. Indeed, I doubt much if any such Luxation can happen. If it does, of necessity the *Tibia* must move to the distance of four Fingers breadth from its Cavity, and the Ligaments that knit the *Perone* to the *Astragalus* must be strangely relaxated; nay, I doubt much if some of the Ligaments must not be quite broken.

For a due Reduction of all these Dislocations, let the Patient sit down upon a Chair without Elbows, or upon the side of a Bed, if he can't sit in the Chair. Let a Servant behind him hold him fast by the middle of the Body, while two other Servants pull the Leg upwards with all their Force, the one holding it by the upper with his two Hands, and the other by the lower Part, near the Ancles. Then, if the Dislocation throws to the inside, the Surgeon must take hold of the Foot with his two Hands, and pull the Sole of the Foot from the inside outwards: If the Dislocation bend outwards, he makes the Servants make the same Extension, and the Surgeon pushes the Foot to the inside.

The Bandage is made of a Roller three Ells long, and two Inches broad, with a Compress of the breadth of two Fingers, and sixteen Fingers breadth long, dipp'd in *Oxy-crate* hot, and smear'd with a Defensive. This Compress is apply'd all round upon the juncture of the *Malleoli*. If the Dislocation is internal, apply the end of the Roller on the outside, and make two Turns; then run it from the inside outwards upon the fore-part of the Foot, and upon the Articulations of the *Malleoli* under the Sole of the Foot; after that, from the inside outwards, cross above the Foot, and so run round the Heel from the inside outwards, under the Sole of the Foot.

This done, you must cross from the outside to the inside; then pass inwards round the Heel, and under the Sole of the Foot, from the inside outwards, and so over the Foot, forming a *Demi-Lozenge*. After these Turns, you descend lower under the Sole of the Foot, over-against the other *Convolution* of the Roller, in order to form a *Rhombus* upon the middle of the Foot. Then making two Turns with a little Descent, you form yet another *Rhombus*. This is what we commonly call the *Sandals*. Forty Days are requir'd for recovering the Strength and Use of this Articulation.

Thus

Thus I have gone through the Signs of Fractures and Luxations, and the way to reduce 'em by the Means of Bandages, so it remains only to shew what a complicated Fracture is; for which end I shall treat particularly of the Fracture of the Leg, attended with a Wound, a Subject that *Hippocrates* is very large upon in his third Commentary of Fractures.

CHAP. XLIV.

Of the Complicated Fracture of the Leg.

Hippocrates is of Opinion, that if a Fracture is accompany'd with a Wound that is not very considerable, if no Scales or Splinters are separated from the Bone, and if the Extension and Conformation are duly perform'd, the Fracture ought to be dress'd in the same manner as if no Wound had been; and a circular Bandage, such as we use for compleat Fractures, will serve in the Case of such a complicated Fracture.

This small Wound ought to be dress'd as little as possibly we can, because the Suppuration must direct us whether to dress or to leave the Part in Repose, for as much as the whole Intention of the Surgeon ought to consist in keeping the Bones in the Posture to which they are reduc'd.

In former Times some would not use a Bandage for the Fracture till the Wound was consolidated, but *Hippocrates* absolutely disapproves those Sentiments, especially where two Bones are fractur'd with a Wound.

The same is the Opinion of *Galen*, who says, that if we neglect a Compleat Fracture in the beginning, and apply all our Care to the Flesh, we thereby occasion many Disorders, such as the Contraction of the Member, or a naughty deform'd *Callus*. To this purpose is the following Instance of a Complicated Fracture that fell into my hands some Years ago.

A Practical Observation.

A Man aged Sixty-eight Years had a great Fracture in his right Leg, which was broken and bruise'd into several Splinters, and the Flesh was torn so as to leave a Wound three Fingers over, above the inner Ankle. This Fracture was caus'd by a Cart-Wheel that threw him down upon his Face.

Now 'tis to be observ'd, that the Street was very steep, which was the cause of all the Mischief; for after the Wheel had run over the Man's Leg, the Carman not being able to stop the Cart by reason of the great Descent of the Street, the Wheel put back, and run over the Man's Leg a second Time. Upon which the Carman seeing what had happen'd, had a mind to get off as soon as he could, and
so

so drove his Cart over his Leg a third time.

The wounded Man being brought immediately to me, I presently saw a great Wound in the lower part of his right Leg, with a prodigious *Hemorrhagy*; then taking the Leg in my two Hands, and bending to the inside and the outside, I perceiv'd that it bow'd on all Sides, and had no other stay but the Flesh.

I mention this Instance as a proper Example for young Students, because 'twas the greatest Hurt that ever happen'd to a Man of that Age; and during the eighteen Months that I dress'd it, before I could bring it to a perfect Cure, there was a necessity of all the Industry, Diligence and Caution that Art and Practice can injoin.

For the purpose, you must know, that before the Fracture happen'd this Man had an Ulcer with a *Caries* in the same Leg, above the inner Ankle, where the Bone was broken, and that he had bore this Ulcer for forty Years.

First of all I stop'd the Blood with Lint and Astringent Powders, two good transverse Compresses, and two longitudinal Compresses; and after making five or six Turns of a Roller upon the Fracture, carrying it up with Edgings, I put two Props under the lateral Parts of his Leg, in the form of Junks. Thus I laid him on a Ladder, with a Quilt under him, and a Covering over him, and so order'd him to be carry'd Home, for he had desir'd to be convey'd to his own Home; so that this

first Dressing was not so orderly as I would otherwise have made it.

When he got Home, he was carry'd up three Pair of Stairs, which did a great deal of Injury to his Leg; and after he was laid upon his Bed, he was dress'd more exactly about Four a-Clock in the Afternoon; and the bleeding was so violent, that I was forc'd to dress him about the Midnight of that Day.

Mr. *Presidy* being likewise call'd, he and I tended him jointly, and found one half of the Leg, and all the upper part of the Foot gangren'd. Some were for Amputation; but by my vigilant Care and Diligence I put a stop to the Gangrene.

You must remark, that during the Dressing of this Fracture there happen'd great Disorders; for the Muscles which bend the Foot were quite putrify'd, so that we were oblig'd to make great Incisions: And about ten or twelve Days after, the *Tibia*, upon which the Fracture and *Caries* was about two Fingers breadth from the *Malleolus*, appear'd bare for the breadth of two Fingers, and as black as Ink.

Thereupon I try'd all the Remedies that are proper to procure an Exfoliation; such as the *Oyl of Guaiacum*, *Oyl of Camphyr*, &c. At the same time I was under an Obligation of saving and defending the great Tendon that extends the Heel, for that lay expos'd for the breadth of two Fingers. In fine, I made
Injecti-

Injectiōns twice a Day for four Months together; a part of the *Tibia*, as long as the breadth of three Fingers, exfoliated; and then the Leg was pierc'd so, that you might have seen thro' it; further, the *Perone*, which bore all the weight and shock of the Wheel, that pass'd and repass'd over it several times, was not only broken in several Pieces, but was likewise much bruis'd, which occasion'd constant Abscesses and Ulcers.

Six Months after, it appear'd bare for the length of three Fingers breadth, and finding it carious, I apply'd an actual Caustery to it several times. But after that, there ensu'd another grievous Disorder of a Gangreen'd Ulcer in the Heel, as long as the breadth of three Fingers. This happen'd about the eighth Month, and lasted two full Months; and notwithstanding I was oblig'd to lift the Leg twice a Day to dress this Ulcer, a firm *Callus* grew upon it.

Which shews, that all the Rules of Art, and all that Practice could invent, were put in execution; for I always kept his Leg in due Figure, and in a strait Line, with Junks and proper Bandages. He had a Sole under the Sole of his Foot for full eleven Months, and indeed all these grievous Disorders were not cur'd without great Labour and Pains; for during the first six Months, while the great Corruption and Putrification lasted, I spent every Day five or six Hours (including

Morning and Night) in preparing my Apparel, and dressing my Patient.

And, what is yet to be observ'd in the Conclusion of this Relation, he had nothing apply'd to him but the Junks and the Bandages with eighteen Heads, with longitudinal Compresses; for half the *Gemelli* Muscles was putrify'd by the Gangrene; and there was no firm or hard thing that could serve me during the whole time of the Cure.

I reckon this great complicated Fracture may serve for a Model and general Rule, for all that I can say upon this Head: But, what was the happiest Circumstance of all, the Patient recover'd perfectly in the space of eighteen Months, and six Months after walk'd without a Cane at the Age of Seventy, or Seventy-two Years. Nay, he liv'd nine or ten Years after.

CHAP. XLV.

Of the Bandage of Extirpation.

TH E R E are three Ways of stopping Blood, namely, the Ligature of the Vessels, the Vitriol Button, and the Turnstile. The first two I wave, as retaining to Chirurgical Operations; so it remains only to explain the third, which is a late Invention,

tion, and a very proper Means for stopping Blood.

The way of using it is this. Apply a Compress that goes round, above the *Rotula*. Upon this Compress you must put a Ribbon call'd *Tirebotte*, which is half an Ell long, and an Inch broad. This Ribbon you make fast at the two Ends, leaving space for running thro' it a little Stick, about as big as one's Finger, and half a Foot long; after which you make as many Turns over the Compress as you have occasion for.

But before I shew you the Application of the Bandage, I shall quote to you the Precepts of *Hippocrates*. He does not content himself in shewing the Situation and Posture every one of us ought to observe in all our Operations, but likewise would have us to consider the Posture of the Patient, especially in the Case now before us, where Life is in danger. Accordingly he tells you, the Patient ought to be upon his Bed-side, if his Strength will permit.

The Party that is to have the Bandage apply'd to him, must be held by such Servants as know how to do in such an Operation. Care must be taken to keep the Part as high as is possible, by reason of the Bleeding. You must apply no Rollers or Fillets till all the Pledgits and Compresses are laid on, which ought then to be held on by the Hands of
some

some of the Assistants, lest any should drop off in tying up the Part.

Hippocrates would have the Rollers and Compresses to be dipp'd in *Oxyerate* in the beginning, and towards the end in Wine. He adds, that when the Rollers are thus soak'd, they ply better to the Part, and the Bandage is better made, besides, that it helps to mitigate the Pain, moderate the Inflammation, and hinder the Flux of Humours. The same Divine Author orders the Surgeon to perform the Operation with both his Hands, that so it may be perform'd with more Sureness, Neatness and Diligence.

Galen would have the Member seated a little upon the Rise, and in a smooth, even, and painless Posture, especially when a *Hemorrhagy* is fear'd. After the Dressings are laid on, you must not take them off for two or three Days, unless some particular Symptom forces you to it. You must take care that the Bands or Fillets are neither too dry nor too apt to adhere; for which end you ought to have some warm Liquor to soften and moisten the Fillets and Compresses before you take 'em off, in order to avoid a *Hemorrhagy*.

Such are the Injunctions of *Hippocrates* and *Galen*, from which we may form a general Rule.

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I don't pretend to spend Time in this place in shewing the Application of the several sorts of Bandages recommended by Authors, and which are now scarcely in Use. In short, I would have the Application made in the following manner.

CHAP. XLVI.

Of the Application of the Medicines.

AFTER stopping the Blood, either by the Ligature of the Vessels, or the Vitriol-Button, or the Turn-stile, let the Patient's Thigh be held a little high by a Servant, while another holds the Stump as high as he can; then the Surgeon takes the Pledgits, cover'd with astringent Powders, such as fine *Bole*, *Incense*, *Mastich*, *Aloe*, calcin'd *Allum*, *Colophonia*, the *Hair of an Hare* cut very small, &c.

'Tis always most convenient for the Surgeon to lay on all the Dressings with his own Hands, and to have skilful Servants about him, one of whom is to hold the Basin with the Pledgits, cover'd with astringent Powders. The Surgeon takes these Pledgits in his right Hand, and applies 'em, and with his left Hand keeps 'em close up to the Vessels; if his left Hand is not strong enough for that end,

end, he must imploy his right Hand in the same service.

The astringent Powders should be diluted in Wine in which Roses, Pomegranate-flowers, and Sumach have been boil'd ; or if these Ingredients are not at hand, they should be diluted in Wine alone. After this, the Surgeon applies a Hog's Bladder well dry'd, and cut in the form of a *Malta* Cross : This done, he takes off the *Tourniquet*, which ought to have slacken'd after the Amputation, in order to throw out the Blood that's intercepted by the Ligature ; and lays on a Plaister cut in the same fashion with the Bladder.

If you would cut the Plaister right, you must take a piece of Linen that's two thirds of an Ell long, and half an Ell broad ; fold it sideways twice successively, then fold it a third time in the Angle of the close Plaits, and at last cut through the back of these Plaits about three Fingers-breadth under the Corner. The Compress, which must be of four Doubles, should be cut in the same manner with the Plaister, and applied next by the Surgeon. In the mean time, the whole Dressing must be kept upon the Part, as tight as two Hands can make it.

After that, the Surgeon lays on four longitudinal Compresses half an Ell long, and of the breadth of three Fingers, placing them cross-ways over one-another. Then he makes
the

the Edging with a Roller with one Head, about five Ells long, and of the breadth of four Fingers. He applies the end of the Roller above the *Rotula*, and then makes two circular Rounds: Then he runs it from before to the hinder parts, along the middle of the Wound, and passes under the Ham, where he makes a renvers'd Turn. After that, he descends upon the Wound, and then re-ascending above the *Rotula*, where he makes a renvers'd Turn, he descends again upon the Wound. After this, he re-ascends by the Ham, and makes another Renverse; then he repasses over the Wound, and continues in the same course both upwards and downwards, rising still higher and higher, till he comes at the Groin, that all the Apparel and Dressings may be cover'd. This is the true Practice of those who are most vers'd in this Affair.

But as for the young Surgeons, that have not much Experience, I would advise them to make use of two Rollers, one with one Head, and another with two. They must begin with applying the Roller with one Head above the *Rotula*, where they make two circular Rounds; then they pass by the middle of the Wound, and circulate round with small Edgings, ascending all along the Thigh, and covering the Dressings.

Then

Then they must make the *Capeline*, with the Roller with two Heads, which they hold with both their Hands, and apply it to the posterior part of the Member that was cut, upon which they make a circular Round, and with one of the Heads they make a Renvers'd Turn, passing from behind forwards over the middle of the Wound ; and with the other Head they circulate above the Head that made the Renverse round the lower part of the Thigh. This done, they continue to make a renvers'd Turn from before to the hinder Parts, covering the Wound, and with the other Head they make a Renverse from behind forwards. Thus they continue to make renvers'd and circular Turns both above and below, and cover the whole Wound by Edgings, as in the *Capeline* of the Head and the *Clavicula*.

Here you are to observe, that if you make an Amputation of a Leg at Night, you must hold the Stump for four or five hours, and if you apprehend an *Hæmorrhagy*, it behoves you to hold it all Night long ; that is, unless you have cast Ligatures upon the Vessels ; for if you have, there's no occasion to fear a Bleeding.

CHAP. XLVII.

*Of the Dislocation of the Perone, and
its Bandage.*

TO compleat this Treatise, it remains to speak of the inferiour Extremity of the Foot; but before I enter upon that Subject, 'twill be proper to insert a Word or two of the Dislocation of the *Perone*, which is articulated both above and below with the *Tibia*. The lower Neck of the *Perone* is receiv'd in the external lateral Cavity of the *Tibia*, and at the upper end it receives a small Eminence of the *Tibia*. At the Bone it has a double Articulation, one with the *Tibia*, and the other with the *Astragalus*; and the only Dislocations 'tis capable of, either above or below, are the *Anterior* and *Posterior*. The Sign of its being dislocated forwards, is an Eminence upon the lower and fore-part of the *Tibia*, towards the inner Ankle. When the Dislocation flies behind, there's an Eminence near the Heel. The Dislocations at the upper end are very unfrequent.

If 'tis dislocated at the lower end, we order one Servant to take the Foot in his two Hands, and rest the Patient's Heel upon the Ground, or some solid thing, and another Servant to clap a single Noose upon the upper

per and external lateral part of the *Perone*, at the place of its articulation with the *Tibia*: Then we take a piece of Lint, and fold it in two, and cast a running Knot upon it, to be applied to the upper and external part of the Leg, upon the *Perone*. After that, the two Heads of the Noose must be pull'd with a force, and the Surgeon pushes the Bone with his two Hands outwards, if the Luxation was inward; and outward, if the Dislocation was external. If the *Perone* is dislocated at the upper end, it must be push'd on each side, by clapping a Noose upon the lower part.

The Bandages must be *Chiaſte's*, both above and below. When the Reduction is made, the Patient must keep up forty Days.

CHAP. XLVIII.

Of the Dislocation of the Foot.

THE Heel may be dislocated in the internal lateral Part, but very rarely in the external, by reason that the Articulation of the *Perone* with the *Astragalus* hinders it from starting to the outside.

In order to set it, place the Patient upon a low Chair, and order a Servant to clap a Noose under the Sole of his Foot, pretty near the Heel, and then cross upon the fore-part, and pull upwards the two Heads, one in each Hand; then let the Surgeon push the Bone from the inside outwards. The Bandage is the *Sandal*, describ'd above.

The Bones of the *Tarsus*, the *Metatarsus*, and the Toes, are capable of being fractur'd; in which case they must be put to rights like the Bones of the Hand, by causing a Servant to hold the Patient behind, so as to make him stand upright, and rest the Sole of his Foot upon the Floor, or a Board; after which the Surgeon pushes the Bone from above downwards, or from the Side to which they are started. This done, he covers the Foot with a Linen Cloth, and a Compress of four Doubles, dipp'd in *Oxyerate*, and besmear'd over with a Defensive. The Bandage is the *Sandal*.

C H A P. XLIX.

Of the Dislocation of the Bones of the Tarsus, the Metatarsus, and the Toes.

THE *Tarsus*, *Metatarsus*, and the Toes, may be dislocated several ways, as well as the Bones of the Hand. The Bones of the *Tarsus* may be dislocated to the inside and the outside, but not sideways, by reason that they rest one upon another, and have a Joint-Stay. The three Bones of the *Metatarsus* suffer Luxation only to the outside or the inside. The Bone that sustains the great Toe may be dislocated forwards, backwards, and sideways; and the Sustainer of the little Toe is expos'd to the same hazard. The other Bones of the Toes may be dislocated every way, whether forwards, backwards, inwards, or outwards.

In order to reduce these Bones, let the Patient be held upright in a Man's Arms, so that the Sole of the Foot may rest firm upon the Floor, and let the Surgeon push the Eminence of the Bone from that side on which they lie in their preternatural state. If the Bones of the *Tarsus* are slipp'd out to the inside, you must take a Rolling-pin, or a piece of round Wood, and make the Patient rest the Sole of his Foot upon it as firmly as ever he can, and
move

move his Foot several times on the resting Point.

This sort of Accidents commonly perplex us more than Fractures, upon the account that we can't limit the Time of the Cure. Upon this Occasion we use *Roses*, *Pomegranate-flowers*, and *Linseed*, boil'd with harsh *Wine* : After the Decoction is taken off the Fire, we add to it *Oyl of Roses*, and with the Liquor of this Decoction, very hot, do we rub the Patient's Foot for a considerable space of Time. We likewise cover the Compresses with the Substance of these Ingredients thus boil'd, and so apply it very hot to the Foot. The Bandage is the *Sandal*.

I shall now conclude this Treatise with the History of a *grievous Disorder in the Foot*, which may afford Instruction to *Young Surgeons*, how to imploy their Judgment in managing hard and solid Parts.

Some Reflections upon a grievous Disorder in the Foot.

SOME Years ago I was call'd to a young Man in the Country that had an Illness in his Foot. All the Toes of the Foot were livid and cold, and he could assign no Cause for it, unless it were his having leap'd and jump'd

jump'd too briskly at some Play usual in their Country, or else his having held his Feet in Water.

In the beginning I dress'd him three times a Day, with such Remedies as are proper to resist Corruption, such as *Aloes* and *Myrrh* dissolv'd in *Ægyptiacum* and the best *Spirit of Wine*. Notwithstanding all my Precautions, and a strict Regimen, the Corruption and Gangrene got to the *Metatarsus* on both sides of the Foot. Upon this I propos'd to Mr. *Bienaise*, to have the Foot cut with a Wedge before the Gangrene reach'd the *Metatarsus*, upon the Plea, that 'twas better to have half a Foot and an Heel, than a Wooden Leg: He reply'd, That it behoved us to cut the Toes one after another. But the Gangrene advancing apace, I cut off the gangren'd Part with a Knife made of an old Sword, the Edge of which I had caus'd to be somewhat thick, that it might be capable to resist, and not turn and blunt in cutting the upper Extremity of the Bones of the *Metatarsus*, for I consider'd, they are thicker there than in any other Part. I had likewise caus'd a Wedge and Mallet to be made on purpose.

After causing the Patient to advance to the side of the Foot of the Bed, I order'd a Servant to hold him behind, and two other Persons to hold him, one on each side.

Having

Having fix'd my Block upon a firm Stool, I made him lay his Foot upon it, and press down upon it with all his Strength : Then I took the Knife in my left Hand, and apply'd it to the upper part of the *Tarsus*, half the breadth of a Finger above the Gangrene : Holding it in this posture, I brought down the Mallet in my right Hand with all my force upon the back of the Knife, which ran through full half an Inch into the Block.

In that very instant I cauteriz'd the Bones with a little square Cautey, of the breadth of two Fingers, and three Fingers-breadth in length. I had two of 'em, the which were made red-hot one after another with all the expedition possible : And then indeed he felt a very violent Pain, and cry'd out prodigiously.

Here you must observe, that we had not one drop of Blood in this Operation, notwithstanding I cut upon the quick.

The first thing I apply'd was a grand Anodine Remedy, consisting of nothing else but the Yolks of Eggs, which ought always to be apply'd upon great Pains occasion'd by Incision. I cover'd three or four Pledgits with this Anodine, as well as two Compresses dipt in Wine very hot ; this done, I wrapt up the rest of the Foot, and winded it with a sort of a *Capeline*.

At the end of fifteen Days I apply'd the Actual Caутery again, in order to produce a good and a firm Cicatrice; and two Months after the Incision he was perfectly well, and walk'd without Lameness. I keep his Foot still by me.

F I N I S.

