Practical observations upon amputation, and the after-treatment.

no Title

ON AMPUTATION, AND THE AFTER-TREATMENT.

PART I.

On the Mode of performing the Operation.

MY Deviations from the uſual Practice, conſiſt; Firſt, in the Mode of operating; and Secondly, in the After-treatment: I ſhall proceed to give as conciſe and clear an Account of both, as is in my Power.

Firſt, as to the Operation, we differ relative to the Application of the Tape, the Quantity of Skin ſaved, and the Manner of executing the Double Inciſion.

The Uſe of a Tape or circular Band conſidered.

After firſt viewing the Sentiments of the beſt modern Surgical Writers, and conſidering what I have to offer, I will leave the Reader to draw his own Concluſions.

" While one of the Aſſiſtants holds the Leg, you muſt roll a Slip of fine Rag Half an Inch broad, Three or Four Times round it, about Four or Five Inches below the inferior Extremity of the Patella: this being pinned on, is to ſerve as a Guide for the Knife, which without it, perhaps, would not be directed ſo dextrouſly." *Sharpe's Operations*, p. 226.

" The Part is then fixed upon for making the Firſt Inciſion through the Integuments, Half an Inch below which the Tape is to be paſſed round the Limb, (making ſeveral Turns as tight as poſſible,) and to be pinned. It ſeems to me to be the Intention of many Operators, to apply this Tape only as a Guide

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for the Knife, as directed by Mr. *Sharpe*, and to cut either above or below it, as it may happen: with this Intention, they roll it round the Limb looſely. *Heiſter* indeed, in his Book of Surgery, recommends the Tape to be applied tight round the Limb, in order to keep the fleſhy Parts cloſe to the Bone, his Intention being to amputate, by carrying his Inciſion through the Integuments and Muſcles down to the Bone at once. He likewiſe ſays that the Amputation is to be made below the Tape, as does *Monro* in the *Medical Eſſays*. The *French* Surgeons, in their *Memoirs*, are likewiſe of the ſame Way of thinking. *Le Dran* does not apply the Tape for the Direction of the Knife, but to keep the Muſcles compact and cloſe to the Bone. I muſt here remark, that cutting above the Tape will prevent the Operator from being embarraſſed when he is to make his Second Inciſion, which is to go through the Muſcles to the Bone, as the Tape generally ſlips off, and is in the Way of the Knife, if the Firſt Inciſion is made below it. Another Advantage, which ariſes from pulling the Tape as

tight as poſſible in paſſing it round the Limb before it is pinned, is, that the Skin will be raiſed from the ſubjacent Muſcles, when the Aſſiſtant draws it up, which cannot be the Caſe, if the Inciſion is made below the Tape; but, by carrying the Knife a little above it, the Integuments will be divided without cutting into the Muſcles, the Patients ſaved from ſome Pain, and a Neatneſs given to the Operation." *Bromfield*'s *Chirurg. Obſerv.*

The laſt-named Author, having taken a very full View of the Subject, I have tranſcribed the whole Paſſage; and have been the more particular in this Reſpect, as it likewiſe contains the Sentiments of others. To make ſhort of the Matter, I dare venture to aſſert, that whether you cut above or below the Tape; whether you conſider it as a Director to the Knife, or as giving Steadineſs to the Parts; or with whatever apparent View you apply it, that it may be advantageouſly laid aſide; as the following Method appears upon Trial, in every Reſpect ſuperior.

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The mental Sufferings of the Diſeaſed will ever be conſidered, by the humane Practitioner, as highly intitled to his Attention; and we cannot avoid obſerving, that after the Tourniquet is applied, every Moment's Delay detains the Patient in a moſt painful State of Mind, which the Application of the Tape greatly prolongs; therefore, if not attended with adequate ſuperior Advantages, here is ſufficient Reaſon for exploding its Uſe. Therefore, as ſoon as the Tourniquet is applied, let an Aſſiſtant graſp the Limb circularly with both Hands, and firmly draw the Skin and Muſcles upwards; the Operator now fixing his Eye upon the proper Part, will make the circular Inciſion through the Skin and adipoſe Membrane, with conſiderable Facility and Diſpatch, and the Knife will paſs much quicker, in conſequence of the tenſe State in which the Parts are ſupported; and the Operator's Attention not being confined to cut in the exact Direction of the Tape, will enable him to execute in Half the Time.

Hence it appears, that the Application of the Tape occaſions a conſiderable and anxious

State

State of Delay, previous to the circular Inciſion, and likewiſe is a great Obſtacle to the ſpeedy Execution of it. Now, as it is univerſally allowed, that the Diviſion of the Skin is the moſt painful Part of Inciſions in general, we are always directed to execute this Part of an Operation with Diſpatch. I may likewiſe obſerve, that the leading Objects are more fully kept in View, viz. the ſaving as much Skin and muſcular Subſtance, as will afterwards form a good Cuſhion upon the Extremity of the Bones; and this is promoted by the Method here recommended: Therefore, I think the Uſe of the Tape is exploded upon rational Grounds.

On the Double Incision.

THE Double Inciſion, as uſually adviſed and practiſed by all the beſt modern Surgical Writers, is, I believe, capable of conſiderable Improvement; as will evidently appear to every unprejudiced Perſon, that

that will take a candid View of the Subject: And this will be the moſt effectually accompliſhed, by conſidering the Precepts of the beſt Writers, and comparing them with the Reaſon, and Experience, I have to offer.

"The Ligature being made according to Cuſtom, with Mr. *Petit*'s Tourniquet to ſtop the Blood, and the Limb being ſupported by two Aſſiſtants, I made a circular Inciſion through the Skin and Muſcles, with the crooked Knife: Then ordering them to be drawn upwards, by the Aſſiſtant who embraced the ſuperior Part of the Arm, I began the circular Turn again with the Knife, even with the Wound, cutting a ſecond Time to the Bone, which I ſawed off even with the Fleſh." *Le Dran*'s *Surgery*.

"The Courſe of the Blood being ſtopped, you muſt begin your Inciſion juſt below the Linen Roller, on the under Part of the Limb, bringing your Knife towards you, which at one Sweep may cut more than the Semicircle; then beginning your ſecond

Wound

Wound on the upper Part, it muſt be continued from the one Extremity to the other of the firſt Wound, making them but one Line. Theſe Inciſions muſt be made quite through the Membrana Adipoſa, as far as the Muſcles, then taking off the Linen Roller, and an Aſſiſtant drawing back the Skin, as far as it will go, you make your Wound from the Edges of it when drawn back, through the Fleſh to the Bone, in the ſame Manner as you did through the Skin." *Sharpe*'s *Operations*, p. 227.

" As ſoon as the Tape is thus applied, the Tourniquet is to be ſcrewed tight: The circular Inciſion through the Integuments being made by the diſmembering Knife, if any little Parts of the Integuments ſtill adhere to the Muſcles, they ſhould be ſet at Liberty with the Point of it, ſo as that the Skin may ſlip eaſily over the Muſcles. The Aſſiſtant muſt then draw up the Skin as high as poſſible, which the Operator may aſſiſt with his Fingers. The Knife is then applied cloſe to the Edge of the Integuments thus drawn

drawn up, and carried quite through the Muſcles down to the Bone, in a circular Manner as before." *Bromfield*'s *Chirurg. Obſ.* Vol. I. p. 150.

Le Dran, after the circular Inciſion, directs the Skin and Muſcles to be drawn upwards; he then cuts through theMuſcles down to the Bone. *Sharpe*, after the circular Inciſion, directs an Aſſiſtant to draw back the Skin as far as it will go, and to make your Wound from the Edges of it, when drawn back, through the Muſcles down to the Bone. *Bromfield*'s Advice is more judicious, and agreeable to the Practice of the moſt eminent Operators of the preſent Day: His Words are, "After the circular Inciſion, if any little Parts of the Integuments ſtill adhere to the Muſcles, they ſhould be ſet at Liberty," *&c.* Now if we act agreeable to the Advice of the laſt named Author, it is extremely uncertain what Quantity of Skin we ſhall ſave; in ſome Subjects more, in others leſs; becauſe in ſome the cellular and ligamentous Attachments will yield more readily than in

 others,

others. However, it is certain not any of them ſave a ſufficient Quantity; that is, as much as will, after the Operation is finiſhed, fully cover the whole Surface of the Wound with the moſt perfect Eaſe; and upon this Circumſtance a ſpeedy Cure principally depends.

Bromfield's Advice is, "to draw up the Skin as high as poſſible," but gives us no exact Direction as to the Quantity of Skin we ought to preſerve. Directions "to draw the Skin upwards," "as far as it will go," "as high as poſſible," do not aſſign the Quantity proper to be ſaved; therefore, it remains for future Experience to decide, what Quantity ſhould be ſaved to produce the moſt ſpeedy Cure.

After you have made your Inciſion thro' the Skin and adipoſe Membrane, agreeable to the foregoing Directions, the Aſſiſtant ſtill continuing a ſteady ſupport of the Parts, ſeparate the cellular and ligamentous Attachments with the Point of your Knife, till as much Skin is

drawn

drawn up, as will afterwards fully cover the whole Surface of the Wound, with the moſt perfect Eaſe. And that this may always be executed, I have fully experienced in a Variety of different Subjects.

Our next Deviation from the uſual Mode of operating, is in a different Diviſion of the Muſcles, in making the ſecond Inciſion. "The Knife is then applied cloſe to the Edge of the Integuments thus drawn up, and carried quite through the Muſcles down to the Bone in a circular Manner as before." *Sharpe.*

It would be uſeleſs to produce any other Quotation upon this Point, as the Direction is ſimilar to that of all the beſt Writers, and exactly what is practiſed by moſt Operators of the preſent Time. Altho' the Production of a ſpeedy Cure does not depend ſo fully upon this Part of the Operation, as the foregoing, the following Deviation is of conſiderable Importance; as will enable you to ſaw off the Bone, much higher than is uſually prac-

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tiſed; and the Parts ſo divided, are much better adapted to cover the Bone, approximate, and unite.

Inſtead of applying the Knife cloſe to the Edge of the Integuments, and dividing the Muſcles in a circular Manner down to the Bone, let it be done as follows: We will ſuppoſe you are operating upon the Thigh; apply the Edge of your Knife, under the Edge of the ſupported Integuments, and cut obliquely thro' the Muſcles; upwards as to the Limb, and down to the Bone; ſo as to lay it bare, about three or four Fingers Breadth higher than you would by the uſual perpendicular circular Inciſion, and continue to divide the Parts all round the Limb, guiding the Knife in the ſame Direction: the ſpeedy Execution of this Inciſion will be much expedited, by the Aſſiſtant continuing a firm and ſteady Elevation of the Parts, as the Knife acts. With the Aſſiſtance of the Leather Retractor, as adviſed by *Gooch*, and *Bromfield*, you will now ſaw off the Bone higher than is uſually practiſed, which is a conſiderable Advantage,

vantage, and coincides with the original intention of the double Inciſion: viz. to prevent a Projection of the Bone, and form a ſmall Cicatrix.

A Stump thus formed in the Thigh, if you ſupport the Parts gently forwards, after the Operation; viewing the whole Surface of the Wound, may be ſaid in ſome Degree to reſemble a Cone, the Apex of which is the Extremity of the Bone: the Parts thus divided, are obviouſly the beſt calculated to prevent a Sugar-loaf Stump.

Having given a full Deſcription of the Deviations in the Mode of performing the Operation, I ſhould, in Proſecution of the propoſed Plan, immediately proceed to the Dreſſings; but will firſt beg Leave to make a few Remarks, which, altho' not new, yet are of the utmoſt Importance, and if not obſerved, may in ſome Degree fruſtrate our Plan of Operating and Dreſſing, by preventing what we have in View thro' the Whole, viz. a Union of the Parts by the firſt Intention.

Now altho' this cannot be effected in a total Degree, yet it will take Place conſiderably; and more ſo, than thoſe who have not practiſed the Method, will perhaps at the firſt View conceive. It is of the utmoſt Conſequence, that the Veſſels ſhould not be taken up with the Needle and Ligature, in the old Method, where the Artery, Veins, Nerves, and ſome of the adjacent Parts, are all included: this muſt ever be productive of larger Inflammation, Tenſion, and conſequent Suppuration, beſides the violent Spaſms, which are the more immediate Conſequence: to which may be added, the firm Hold given to the Ligatures, which frequently renders their Separation very tedious: all theſe are obvious Obſtructions to the deſired Union. When the Arteries are drawn out with the Tenaculum, and tied as naked as poſſible, it will be attended with very little Pain at the Time, and as little ſubſequent Trouble, or Interruption to the ſpeedy union of the Parts. As to the comparative Security from Hæmorrhage, it is almoſt ſuperfluous to add my Teſtimony, after what has been advanced, by ſeveral Modern Writers of the

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firſt Note: however, I ſhall take this Opportunity to obſerve, that the Tenaculum has been uſed in our Hoſpital ſeveral Years, and in my Opinion merits every Recommendation given by its moſt ſanguine Advocates.

PART

PART II.

On the Treatment after the Operation.

WE will firſt take a View of the Directions given, by the beſt Surgical Writers, upon this Subject. "You muſt apply looſe dry Lint to the Wound; or in caſe the ſmall Veſſels bleed plentifully, you may throw a Handful of Flour amongſt the Lint, which will contribute to the more effectual ſtopping up their Orifices: before you lay on the Pledgit, you muſt bind the Stump, and begin to roll from the lower Part of the Thigh, down to the Extremity of the Stump. The Uſe of this Roller is to keep the Skin forwards, which, notwithſtanding the Steps already taken to prevent its falling back, would in ſome Meaſure do ſo, unleſs ſuſtained in this Manner." *Sharpe*, p. 230.

"As Pain is a dreadful Symptom indeed, and productive of much Miſchief even after an Operation is perfectly well performed, the utmoſt Attention is required, to prevent or remove

remove it; and for this Conſideration ſtrait circular Bandage ſhould be avoided, to which, from the Interruption of the Circulation of the Blood, may juſtly be aſcribed not only Pain, but many of the moſt threatening conſequential Symptoms. A very little Reflection will ſufficiently convince us of the Abſurdity of this Practice, and that, inſtead of preventing, it tends directly to increaſe the Hæmorrhage, as has been demonſtrated by Profeſſor *Monro*, one of the greateſt Men of the Age. Soft Lint, evenly applied, a Plaiſter or Pledget ſpread with Unguent. Tripharm. Cerat. alb. or ſomething of this Nature, confined with Strips of common Plaiſter, as has been directed, and a knitted Woollen Cap, will be found Dreſſing and Bandage ſufficient, in whatever Limb Amputation is performed; which readily yielding to the Diſtenſion of the Veſſels, upon the increaſed Power and Velocity of the Blood, will allow a more free and uninterrupted Reflux; conſequently leſs Pain, Fever, and Inflammation will enſue, and a quicker Digeſtion of the Wound, without ſo much offenſive Gleet as

I have obſerved. Hence we may reaſonably infer, that the Patient's Life will be leſs expoſed to Danger, if ſtrait Bandage be omitted in Amputation." *Gooche's Surgery*, Vol. II. p. 335.

Bromfield, in his *Surgery*, Vol. I. p. 172. after having deſcribed the Operation, adds, that to reap the Advantage of the double Inciſion, the Skin ſhould be brought forward by an Aſſiſtant, and retained with a circular Roller; but immediately gives us the following Paſſage, which is a direct Contradiction to the foregoing; and leaves the Reader in doubt, whether the Reſult of the Author's extenſive Experience is in Favor of the immediate Application of the circular Bandage, or not: we are firſt adviſed to uſe it, and then told that People are too ſolicitous in bringing the Skin forwards early, expecting it to fix immediately, but I will give you the whole Paſſage in his own Words. "I think, in general, we are rather too ſolicitous in bringing the Skin forwards early after an Amputation, expecting it is to fix imme-

immediately; but I have frequently ſeen Miſchief done by the tightneſs of the Roller, when applied with this View, and Abſceſſes have been the Conſequence. When the Roller is applied with this Intention below the Knee, ſtill greater Caution is neceſſary, as the Edges of the ſawn End of the Tibia, by the Preſſure of the Bandage, have made their Way through the Integuments; therefore, we ſhould always, in thin People, lay a Compreſs of Tow or Cloth on each Side of the Tibia, ſufficiently thick to prevent the Roller from preſſing too tight on the Bone, when we come to paſs its Circles round the lower Edge of the Stump, and when the Skin is well ſupported by the laſt Circle of the Roller, we ſhould pin the End there."

Hence you ſee, that whether a circular Bandage ſhould be applied immediately after the Operation, or you are to wait, until the inflammatory State of the Parts is abated, by a kindly Digeſtion of the Wound, are Points, which remain very much undecided by Practitioners of the firſt Rank. If you apply a

circular

circular Linen Roller, ſufficiently tight to detain the Skin forwards, as it will not yield to the ſubſequent inflammatory Tenſion of the Parts, it will conſequently often occaſion all the diſagreeable Symptoms related by the foregoing judicious Authors.

In the Year 1770, I fully and attentively conſidered all I had ſeen and read upon this Subject. I had obſerved, that notwithſtanding the Advantage of the double Inciſion, as uſually practiſed, Exfoliation of the Bone, a tedious Cure, and in the Thigh particularly, Retraction of the Muſcles, and a Sugar-loaf Stump, were too often the Conſequence; and this, even when the Buſineſs was conducted by Men of deſervedly the firſt Eminence in the Kingdom. If we do not apply the Roller until Digeſtion is formed, it clearly appears from Experience, that it comes too late to prevent theſe Evils, or anſwer any important Purpoſe. When the Part, to ſome Diſtance from the Surface of the Stump, have all been in a State of Inflammation, the cellular Membrane, or connecting

necting Medium, which in a State of Health, (that is immediately after the Operation,) is capable of conſiderable Elongation, is now ſo altered, by the Inflammation it has undergone, the Suppuration, and conſequent Diſſolution of its Texture, to which may be added, the new formed Adheſions, to which all membranous Parts in an inflammatory State are peculiarly liable, that it is deprived of its yielding Power. As a Proof of this, attempt to draw the Skin forwards, after the inflammatory Stage, and you will find the cellular Membrane ſcarcely yield at all, and this more particularly near the Extremity of the Stump, where the Inflammation has been the moſt conſiderable; hence at this Part, during your Attempt, the Edge of the Skin tucks in upon the Surface of the Wound, and the cellular Membrane will give Way only gradually, by being firmly retained in this Poſture, with the Aſſiſtance of a firm circular Bandage. Therefore the Surgeon will be much diſappointed, if he expects to bring the Skin forwards in any conſiderable Degree, by applying his Bandage at this

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Period; and the Patient will ſuffer Pain during its Application, and for ſome Time after, occaſioned by the adherent Parts being ſupported upon the Stretch.

The following Inferences are fairly deducible from the foregoing Conſiderations. 1. That the Adheſion, in conſequence of the Inflammation, is a moſt urgent Reaſon, why the Skin ought to be brought forwards immediately after the Operation, that it may become fixed by that Adheſion. 2. That if this could be effected, by Means that would not increaſe the inflammatory Tenſion, and the other diſagreeable conſequent Symptoms, a great Point would be gained. 3. That a Bandage capable of ſupporting the Parts, and eaſily yielding to the ſubſequent inflammatory Tenſion, appears to be the Deſideratum.

I now reflected, that in ſome very painful Caſes of fractured Ribs, the Parts are firmly ſupported by a Flannel Bandage, and that this eaſily adapts itſelf to the alternate Motions

tions of the Cheſt, being of a ſoft, yielding, elaſtic Nature: and hence it appeared fairly deducible, that a Bandage made of the ſame Materials, is the beſt calculated for a uſeful circular one after Amputation. I had at this Time a Patient at the Hoſpital, with a White Swelling in the Knee, who came from the Country to have the Limb amputated. Being a young Operator, and hence more particularly deſirous of Succeſs, I was led to the foregoing Reflections, which ended in a Determination to uſe the Flannel circular Bandage immediately after the Operation, and to watch it attentively, that if it occaſioned more Pain than uſual, it might be immediately removed.

The circular Inciſion was made as near as poſſible to the diſeaſed Parts, thro' the Skin and Membrana Adipoſa, down to the Muſcles, the Parts being firmly retracted, the cellular and membranous Attachments yielded ſo conſiderably, that rather more Skin was ſaved than uſual, the Muſcles were divided

by

by a perpendicular circular Inciſion, and the Bone, as is common, with the Saw.

At this Time I was not aware of the Propriety of ſaving as much Skin as will afterwards cover the whole Surface of the Wound, and conſequently did not divide the cellular and membranous Attachments in that free Manner, which I now ſo urgently recommend. Upon ſlackening the Tourniquet a Number of Veſſels diſcharged, the muſcular Branches appeared uncommonly large, and it was thought neceſſary to tie thirteen Arteries at the Time of the Operation. The Skin being now brought forwards over the Extremity of the Stump, and retained there by an Aſſiſtant, a circular Roller made of the fineſt Swan-ſkin Flannel, was paſſed round the Body, and carried two or three Times round the upper Part of the Thigh, where it formed a ſufficient Baſis for the Support of the Skin and Muſcles; it was then brought forwards in a circular Direction, till it arrived near the Extremity of the Stump. Although the Roller was not drawn tight,

tight, it appeared to ſupport the Parts ſufficiently, and very much to my Satisfaction: I then applied dry Lint upon the Bone, and Surface of the Muſcles, but the Edge of the Wound was dreſſed with Pledgets, ſpread with a ſoft digeſtive Ointment. The Operation was performed at eleven o'Clock in the Morning, and the Patient continued as eaſy as uſual, till five in the Afternoon; the Stump then bled ſo faſt, that it was neceſſary to remove the Dreſſings; two Arteries diſcharged very faſt, which had not appeared before; they were drawn out with the Tenaculum, and tied. I was much hurt with the Sufferings of the poor Patient; when the Lint, which had formed a firm Adheſion with the Surface of the Sore, was ſeparated, he declared that he felt more from this, than any Part of the Amputation. After having tied ſo many Veſſels, I conſidered him as in very little Danger of a returning Hæmorrhage, and therefore re-applied the Bandage, and inſtead of the dry Lint, placed the Skin over the Surface of the Wound, as far as it would

go, and dreſſed the whole with digeſtive Pledgets.

Upon the fourth Day after the Operation, I changed the Dreſſings, which all ſeparated with the moſt perfect Eaſe; the Diſcharge was very ſmall, and the Skin was over the Wound, exactly as I had left it, and the whole in a very kind State reſpecting inflammatory Tenſion. In ſhort, the Skin ſoon formed ſuch Adheſions, as fixed it where it was firſt placed, the Diſcharge was uncommonly moderate thro' the whole Cure, and by continuing the Bandage to ſupport the Parts, with ſoft gentle Dreſſings, the Stump perfectly healed in twenty Days. The Cicatrix was in the Centre of the Stump, and ſo ſmall as to be perfectly covered with a Shilling; and as the old Skin formed ſo conſiderable a Portion of the Extremity of the Stump, and there had been ſo ſmall a Waſte of the adipoſe and cellular Parts, in conſequence of the ſmall Suppuration, the whole looked very plump and full, and formed the beſt Cuſhion to walk upon I had ever ſeen.

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The Linen circular Bandage, as recommended and uſed by many, immediately after the Operation, had been laid aſide in this Hoſpital, till Digeſtion, and an Abatement of the inflammatory Symptoms had taken Place, and this Practice was agreeable to the Opinion of a very experienced Practitioner, for whoſe Judgment I had a great Reſpect: ſo that it was with Difficulty I could reconcile myſelf to a Trial of the Flannel, immediately after the Operation. However, after this Trial, I began to think the Practice of Surgeons erroneou, in not attempting to bring the Skin forwards immediately after the Operation, that Adheſions might take Place: and likewiſe, that the Application of dry Lint opened and dilated the Surface of the Wound, and cauſed great Irritation; and conſequently, firſt, large ſerous Diſcharges, and afterwards, great Suppurations: that this was going contrary to Nature, who is the moſt ſucceſsful in reſtoring diſeaſed Parts, when the leaſt interrupted by Art. Therefore from this Time, I always applied the circular Bandage, and never teized the Wound with dry Lint,

ſeldom applying any Dreſſing, but the digeſtive Pledgets, except when ſmall Veſſels bled, which were not ſo large as to require the Ligature: I commonly reſtrained theſe with light Doſſils of Lint, dipped in Ol. Olivar. et Sp. Tereb. ā. p. æ. which always ſeparated at the firſt Dreſſing.

Meſſrs. *Park* and *Lyon*, my Colleagues at the Infirmary, immediately purſued this Plan, and to their Accuracy and Attention, the Public are indebted for a more extenſive Trial of the Bandage, and ſome of the ſubſequent Hints.

In Mr. *Bromfield*'s Book of Surgery, you will find the following Paſſage, "The proper Dreſſing is dry Lint to the Bone, then a circular Piece of old Holland, to lie within the Skin on the Muſcles, which is of great Service, as the reſt of the Dreſſings will come off eaſily, when this is taken hold of; dry Lint ſhould be applied on this Piece of Linen, to fill up the Cavities in the Stump; and in Caſe the ſmall Veſſels ſhould weep,

a little

a little Flour may be thrown on the Bit of Cloth, on the next Layer of Lint, which may alſo be aſſiſted in its Compreſſion, by applying a ſoft Bolſter of Tow on the Lint. Small Pledgets of the digeſtive Ointment ſpread on Lint, ſhould be made Uſe of to the Edges of the Stump, which will prevent the ſticking of the Dreſſings."

The Interpoſition of a Piece of old Holland, is certainly a rational, and judicious Improvement: but if the Cavities are to be filled up, and Flour, with Compreſſion, added, great Irritation and Dilatation of the Wound, will certainly be the Conſequence.

Dry Lint appears to be a neat and convenient Dreſſing for freſh Wounds, as it has a Power, particularly when aſſiſted with gentle Preſſure, of ſpeedily ſuppreſſing the bleeding from all the ſmall Veſſels; but I ſhall confine myſelf to a few Obſervations upon its Effects as a Dreſſing after Amputation; from which the Reader may draw his own Concluſions, as to the Propriety of applying it in

other

other Caſes, where the Parts have been recently divided.

Whether the Skin is brought forwards, and retained by a circular Bandage or otherwiſe, the Application of dry Lint will always be a conſiderable Hindrance to a ſpeedy Cure; for altho' it does not poſſeſs an innate ſtimulant Quality, yet it acts as ſuch in a great Degree, when conſidered in a mechanical View: It is the moſt proper Application we have to keep the Parts open, for when wet with the Diſcharge from the Wound, it is expanded by the retained Moiſture like a Sponge; and hence, as it adheres to, and is within the Wound, will conſequently occaſion a Dilatation of its whole Surface. Hence you may eaſily judge what will be the Conſequence of this Dilatation when counteracted by an external circular Bandage; and how Pain, Inflammation, and large ſerous Diſcharges are occaſioned by filling the Cavity of an Abſceſs with dry Lint, after you have opened it by Inciſion. As the Lint adheres and then expands when applied to the

the Extremity of a Stump, hence will arife Spaſms, from the Nerves being irritated; and from the ſame Cauſe acting upon the Extremity of the Veſſels, we can account for the large ſerous Diſcharges from the whole Surface, and often a violent Hæmorrhage from the larger Veſſels. That this is the real State of the Matter, I am as well convinced as I poſſibly can be by attentive Obſervation.

We will ſuppoſe all to go on as well as uſual, till the Third or Fourth Day from the Time of the Operation; you will then find the whole Surface of the Wound conſiderably enlarged, the Edge of it thickened and inflamed, and a large ſerous offenſive Diſcharge. You are not able to ſeparate much of the Lint, which has formed ſo firm an Adheſion as a large Suppuration only, continued for ſeveral Days, can eaſily remove: I am well convinced that moſt of the Matter, which forms in Caſes where the Parts are ſo treated, is in Conſequence of the Irritation of theſe Dreſſings, with which the

Wound

Wound is ſo injudiciouſly ſtuffed, and loaded by many Practitioners. As the Matter, which remains in the adherent Lint from Day to Day, muſt conſequently increaſe in Acrimony, hence by its Stimulus, not only the Wound, but the whole Syſtem is diſordered, and often a previous Hectic nouriſhed by what is abſorbed, and its topical Influence upon the Bone is ſuch, as to make Exfoliation no uncommon Conſequence of ſuch Treatment.

Notwithſtanding the Advantage of the double Inciſion, and the Treatment of the Parts, as now uſually practiſed; a great Diſcharge, Exfoliation, a large Cicatrix, and a Sugar-Loaf Stump are often the Conſequence of Amputation.

That this is not an ideal Picture, but a real Deſcription of what the Author has frequently ſeen, during his Attention for ſeveral Years, to Patients treated in this Manner, thoſe who continue ſuch Treatment will readily believe.

I will

I will now bring into one View our eſtabliſhed Mode of performing the Operation of Amputation on the Thigh, and the After-treatment, as practiſed in the *Liverpool Infirmary*.

Apply the Tourniquet as uſual, and let an Aſſiſtant draw up the Skin and Muſcles, by firmly graſping the Limb with both Hands, the Operator then makes the circular Inciſion as quick as poſſible through the Skin, and Membrana Adipoſa, down to the Muſcles: He next ſeparates the cellular and membranous Attachments with the Edge of his Knife, till as much Skin is drawn back as will afterwards cover the Surface of the Stump with the moſt perfect Eaſe. The Aſſiſtant ſtill firmly ſupporting the Parts as before, apply the Edge of your Knife under the Edge of the retracted Integuments, and cut obliquely through the Muſcles upwards as to the Limb, and down to the Bone; or, in other Words, cut in ſuch a Direction, as to lay the Bone bare about two or three Fingers Breadth higher than is uſually done

by the common perpendicular circular Inciſion, and continue to divide, or dig, out the Muſcles all round the Limb, by guiding the Knife in the ſame Direction. The Part where the Bone is to be laid bare, whether two, three, or four Fingers Breadth higher than the Edge of the retracted Integuments, or in other Words, the Quantity of muſcular Subſtance to be digged out, in making the double Inciſion, muſt be regulated by conſidering the Length of the Limb, and the Quantity of Skin that has been previouſly ſaved, by dividing the membranous Attachments. The Quantity of Skin ſaved, and muſcular Subſtance taken out, muſt be in ſuch an exact Proportion to each other, as that by a Removal of both, the whole Surface of the Wound will afterwards be eaſily covered, and the Length of the Limb not more ſhortened than is neceſſary to obtain this End. The Bone being now bare all round, is to be divided, as uſual, with the Saw, and as high up as poſſible, which will be more eaſily executed, if the Retractor, recommended by *Gooch* and *Bromfield*, is firſt applied,

applied, for the Support and Defence of the ſoft Parts.

After the Removal of the Limb, let each bleeding Artery be gently drawn out with the Tenaculum, and tied with a common Ligature as naked as poſſible. The whole Surface of the Wound is now to be well cleaned with a Sponge and warm Water, as no doubt any Coagula remaining upon its Surface, or about the Interſtices of the Muſcles, would be a conſiderable Obſtruction to that deſired Union, which we have always in view through the whole Plan. Let the Skin and Muſcles be gently brought forwards; then fix the Flannel circular Roller round the Body, and carry it two or three Times round the upper Part of the Thigh, where it will form a ſufficient Baſis, that will greatly add to the Support of the Skin and Muſcles; then carry it forwards in a circular Direction till it arrives ſufficiently near the Extremity of the Stump, where it is to be faſtened as uſual. You are now to place the Skin and Muſcles over the Extremity of the Bone, in ſuch a Direction,

that the Wound ſhall appear only as a Line, drawn down the Face of the Stump, terminating with an Angle, above and below, from the latter of which the Ligatures are to be left out, it being the moſt convenient and dependent part. The Skin is eaſily ſecured in this Poſture, by long Slips of Linen, or Lint, about two Fingers Breadth, ſpread with Cerate, or any ſoft cooling Ointment, theſe are to be brought from Side to Side acroſs the Face of the Stump; then apply over them a little ſoft Lint, with a Tow Pledget, and compreſs of Linen, the whole to be retained with a light Linen Roller *.

It is the uſual Cuſtom, to raiſe the End of the Stump from the Surface of the Bed, with Pillows; which appears to me very injudicious, when done to the Height commonly practiſed, as it draws the Poſterior Muſcles off the Face of the Stump. I find the beſt Direction is to raiſe the Stump about half a Hand's Breadth from the Surface of the Bed.

* Mr. *Lyon* firſt placed the Skin in this Direction, in an Amputation of the Thigh, and dreſſed with a dry Linen croſs Cloth, applied from Side to Side, next the Face of the Stump.

When

When the whole of the Treatment has been agreeable to the foregoing Directions, the Parts are generally ſo free from Spaſms, that the Uſe of Opium is not requiſite; the Symptomatic Fever will likewiſe be equally moderate; and upon the third or fourth Day, when you change the Dreſſings, you will always find that the Diſcharge has been ſo ſmall, as ſcarcely to have run through them: hence it is not often neceſſary to change the circular Bandage, at the firſt or ſecond Dreſſing; I rather wiſh to avoid it, till the Adheſions are more compleat.

By a Continuance of the above ſimple Treatment, varied as Appearances indicate, the Cures have been always compleated in leſs Time than uſual. In the Thigh the Stump has frequently healed in nineteen Days, ſo perfectly as to require no further dreſſing.

My laſt Amputation was on a Man about 44 Years old, in the Middle of the fore Arm, to remove carious carpal, and metacarpal Bones: the Operation was done July 10,

1779,

1779, and on the 24th of the ſame Month the Wound was perfectly healed, and the Patient diſcharged the Hoſpital on the 27th, the Cicatrix only a ſimple Line acroſs the Face of the Stump from Side to Side, and his general Health ſo perfectly reſtored, that he walked Home from the Hoſpital (the Afternoon of the Day of his Diſcharge) which is 13 Miles diſtant.

The earlieſt unfavourable Symptoms ſubſequent to Amputation, are Spaſms, and Hæmorrhage: as I ſhould be highly blameable to arrogate any Merit that is not ſolely due to the Method I have recommended, it is but juſt to obſerve, that the Abatement of violent Spaſms is principally due to the Veſſels being drawn out and tied alone with the Tenaculum, as introduced into Practice by Mr. *Bromfield*, who moſt highly deſerves the Thanks of every Well-wiſher to Surgery for ſo uſeful and important an Improvement. I would rather have the Merit of this ſingle Improvement, than the Vanity of being the Author of all the ſpeculative and theoretical Volumes ever publiſhed.

How-

However, I may fairly obſerve, that the Spaſms are certainly in ſome Degree prevented by an Excluſion of all extraneous Dreſſings.

Further, as ſtuffing the Parts full of, or even dreſſing with dry Lint, promotes Spaſm, and dilates the whole Surface of the Wound, it muſt conſequently conduce to produce Hæmorrhage, and upon this Point I ſpeak ſolely from Experience: I have attended for the Space of ſeven Years to Amputations, where the Parts were treated with Doſſils of dry Lint and Flour, and a ſubſequent Hæmorrhage was frequently the Conſequence: and I can now moſt ſolemnly aver, that for the laſt nine Years I have treated the Parts nearly agreeable to theſe Directions, and that I have not ſeen a ſingle Caſe of Hæmorrhage, ſubſequent to Amputation, neither have I heard of any where the Parts have been ſo treated.

The Hæmorrhage ſubſequent to Amputation, may not improperly be divided into two

different

different Kinds, deduced from the Period of Time at which each occur, and their conſequent Danger. The firſt I would call that which follows the Operation, within the Space of twenty-four Hours, and is, I believe, often occaſioned by dilating the Wound with expanding Dreſſings. This is a very diſtreſſing Symptom both to the humane Operator, and Patient, as it requires a Removal of the Dreſſings, which have now formed a conſiderable Adheſion to the whole Surface of the Wound, and the ſeparating them from the Extremities of the Nerves is more painful than any Part of an Amputation: and likewiſe the neceſſary Ligature upon Parts in the higheſt Degree of Irritation is a very diſagreeable Buſineſs to execute, and moſt painful to ſuffer: however, this Kind of Hæmorrhage is ſeldom fatal, as we are commonly upon the Watch, and prepared to relieve it. The ſecond Kind I would diſtinguiſh to be that which happens after the above Period; and a moſt alarming Symptom it commonly proves, and has frequently ended fatally before it has been diſcovered, and conſequently before any Reme-

dy

dy could be applied. It moſt frequently occurs, many Days after the Operation, when Digeſtion and Granulation are fully formed, and all Danger of this Kind is reaſonably ſuppoſed to be over. In one Caſe where I attended, it happened three Weeks after the Operation. When the Skin is not placed over the Surface of the Wound, but, inſtead of this judicious Practice, the Wound is dilated with dry Lint, Nature ever active to relieve herſelf, forms a conſiderable Digeſtion, and conſequent Granulation upon the whole Surface, by which the Dreſſings are ſeparated and caſt off. In ſome Habits theſe Granulations do not prove a ſufficient Support to the Extremity of an Artery, they are not able to reſiſt the Impetus of the circulating Fluid, which conſequently burſts forth, and frequently exhauſts the Patient before he is either aware of his Situation, or any Help can be obtained. I have known this Hæmorrhage happen when all the Ligatures have been caſt off, and a Month after the Operation, when the Stump was half healed. Vid. two

fatal Caſes of this Hæmorrhage in *Bromfield's Surg. Obſ.* Vol. I. p. 307.

As I have not either ſeen or heard of one of theſe Caſes, where the Parts have been treated as here recommended, I have Reaſon to believe it will prove a very effectual Preventative, and every unprejudiced Judge will be immediately convinced, that the Extremities of the Veſſels are more effectually ſupported by the Skin applied over the whole Surface of the Wound, and the conſequent Union, than by keeping the Parts largely open, and procuring a Digeſtion, and in ſome Habits, a ſoft ſpongy Granulation over their Extremities.

The next train of Symptoms ſubſequent to Amputation, and the uſual Treatment, are a large Diſcharge of Matter, Exfoliation, and Retraction of the Skin and Muſcles, and conſequently, what is called a Sugar-loaf Stump.

The Dilatation and Irritation of the Wound, occaſioned by its being ſtuffed with dry

dry Lint, the high Degree of inflammatory Tenſion, and large ſerous Diſcharge, are always conſequently followed by a proportionably large Diſcharge of Matter, and this is promoted by what is retained in the Lint, ſtill adherent to the Surface of the Wound. Its topical Effect here is not the Whole of the Evil, it becomes more acriminous, and is frequently abſorbed into the Habit, in a State more prejudicial to the whole Syſtem, and theſe Circumſtances make greatly againſt the Patient's recovery, particularly where the general Health has previouſly been greatly reduced, and the Amputation performed, to cut off the Seat of Abſorbtion from Parts diſeaſed by Caries and large Diſcharges, attended with Hectic, Cough, and other Symptoms of diſeaſed Lungs.

The Application of dry Lint upon the Extremity of the Bone, with the conſequent Retention of acrid Matter, and Expoſure to the Influence of the Air, I conſider as the principal Cauſes of Exfoliation, which is no unfrequent Conſequence of ſuch Treat-

ment. Sometimes only ſmall Spiculæ ſeparate, but oftener the Edge or Rim, all round the Extremity of the Bone. I have ſeen very large Portions of the Thigh Bone ſeparate, in one Caſe nearly its whole Subſtance, and four Inches in Length. When the Pieces are ſmall, and the Extremity of the Bone fully covered with Granulations, as they paſs through, they produce pricking Pains in the Part, ſometimes ſo violent as to diſturb the Patient's Reſt, attended with great Soreneſs, Inflammation, and increaſed Diſcharge; in others they paſs without producing the leaſt Inconvenience.

Since I have practiſed the Method of operating and dreſſing here recommended, I have not had the ſmalleſt Exfoliation, nor ever ſeen any Part of the Extremity of the Bone after the Operation; for by dividing the Muſcles as adviſed, and bringing the Whole of the ſoft Parts forwards, the Bone is immediately concealed, and never gives the leaſt Interruption to the Progreſs of the Cure.

Like-

Likewiſe, as the Cicatrix is ſo ſmall, *viz.* only a ſimple Line drawn acroſs the Face of the Stump, the Parts are ſooner capable of bearing the requiſite Preſſure from the Uſe of a wooden Leg, and are not ſo liable to break out again, as in thoſe Caſes where the Operation has been practiſed in the uſual Manner, in which there is a larger Generation of new Fleſh and Skin, which will remain tender for a much longer Space of Time.

PART

PART III.

On the Amputation of the Arm, at the Articulation with the Scapula.

IF you examine the Writings of the beſt Surgical Authors, you will find that but few, even in the greateſt run of Practice, have amputated the Arm at its Articulation with the Scapula; and likewiſe be convinced that but little ſatisfactory Intelligence is to be obtained on this Subject, if we accept Mr. *Bromfield*'s Information, which highly merits an attentive peruſal.

Opportunities muſt have occurred, at all Times, and at all Ages, unfortunate diſeaſed Subjects, with Caries in the Joint, and external Injuries from Gun-ſhot, compound Fractures, and Wounds of the large Blood-veſſels, muſt have rendered the Neceſſity of operating as frequent as at preſent. Hence it may reaſonably be inferred, that either a Dread of the Danger and Difficulty attending the Operation, or a Want of Judgment in ſe-

lecting

lecting thoſe Caſes that required it, may be conſidered as the Cauſes why it was ſo ſeldom performed. And hence we may plainly diſcover why ſo ſmall a Progreſs has been made towards rendering this Operation any thing like compleat: ſo that this Honor ſeems to have been reſerved for Mr. *Bromfield*, a well known Author and Practitioner of the preſent Day. He is the only Author who has reduced the Operation to a regular Plan, and this not from Speculation, but actual Expe-rience, the only true Source of ſolid Improvement.

However, it muſt be juſtly obſerved, that his Patients were all ſimilar, viz. thoſe whoſe original Diſeaſe was Abſceſs, or Caries, in the Neighbourhood of the Joint. He obſerves, as to the Operation, that he " had but little Encouragement to do it at firſt, from thoſe who had ſeen it performed repeatedly in the Army, where the Joint of the Shoulder had been greatly injured by Gun-ſhot, and Amputation at the Joint was the only Chance for preſerving Life: for though the

Opera-

Operations were ſeemingly well performed, and every thing went on to all Appearance well for near three Weeks, yet I am told the Patients all died," p. 209. It is much to be lamented, that the Mode of operating, and the unfortunate Progreſs of theſe Caſes, have not been particularly noted, and faithfully communicated to the Public, as it is from ſuch a Record of Facts only that any real Improvements can reaſonably be expected. Where the Hiſtory of them is totally loſt Poſterity reap no Improvement, nor are we able to diſtinguiſh whether theſe fatal Events were owing to a Want of Improvement in operating, or depended upon the dangerous Nature of the Injuries abſtractedly.

It has however been my Lot to amputate the Arm at its Articulation with the Scapula, in a very unpromiſing Caſe of Gun-ſhot Wound, with Succeſs: others may have done the ſame, but an accurate Hiſtory of ſuch an Event is not to be found in the Records of ſurgical Facts.

As

As the State of the Parts to be divided in the Operation, were different from thoſe in Mr. *Bromfield*'s Patients, I thought myſelf juſtified in deviating in the Mode of operating.

Dan. Catling, a middle-ſized, ſtrong, healthy Man, is the Subject of the following Hiſtory. On March the 4th, 1774, he was ramming a Cartridge down the Mouth of a Cannon that had been juſt fired; ſome Part of the Wadding yet alive in the Breech of the Gun, let off the new Charge, and having his right Arm oppoſite to the Mouth of the Gun, it blew him from aboard the Veſſel into the River. He was taken out but half alive, and brought to the Infirmary. Upon Examination it appeared, that the right Arm was carried off, high up, juſt below the the inſertion of the deltoid Muſcle, there-maining Bone and muſcular Subſtance were ſo much injured, that in Conſultation it was determined to amputate at the Articulation with the Scapula. The Skin was free from Laceration about the Joint, and even over the

remaining injured Bone and Muſcles; but conſiderable Extravaſation appeared in the cellular Subſtance, upon the Pectoralis Major, Scapula, Clavicle, and adjacent Parts: the Eye-brows and Laſhes were burnt off, and the Integuments upon the whole Face had ſuffered conſiderably: the Eyes were cloſed with the ſwelling of the Lids, the Pulſe and Breathing tolerably good, but the Patient in an urgent State of Stupor, unleſs when conſiderably rouſed: in ſhort he appeared the moſt miſerable Object I had ever ſeen: his Face, the State of the Arm and adjacent Parts, the Stupor, and conſequent Shock upon the whole Habit, rendered him a very unpromiſing Subject to operate upon, and yet there was no Alternative: the Pulſe and Breathing were the only favourable Symptoms. The Operation muſt be done with the Diſadvantage of Candle-light, and I had but little Time to form my Plan. I had read Mr. *Bromfield*'s Account of his Operations very lately, and it then occurred to me, whether (in caſe of Gun-ſhot, or compound Fracture, with a wounded Artery, requiring

this

this Operation, where the Motion of the Joint was free,) you could not reduce the Operation to a more ſimple form, as follows: Cut thro' the Skin and adipoſe Membrane, round the Arm, ſufficiently below the Acromion, then go obliquely upwards, thro' the deltoid and poſterior Muſcles up to the Joint, then go forwards, and after dividing the Tendon of the Pectoralis Major, and adjacent Parts, ſeparate and tie the Artery, which may be kept out of the Way by the Fingers of an Aſſiſtant, and the Head of the Bone taken out: if this cannot be eaſily executed for want of Room, the Parts muſt be divided in Front from the Acromion, but this laſt Step I would make an Act of Neceſſity. If this Scheme is practicable, the Operation will be rendered more ſimple, no Sutures required, and I would have, if poſſible, as much Skin ſaved as will afterwards cover the whole Surface of the Wound, and no Dreſſings applied within the Edges of the Skin, convinced that the Cure would be more ſpeedily compleated by this Mode of Operation: and by leaving the Cure of the Wound more to Nature, and

not obſtructing her Operations by the Intruſion of Dreſſings: in ſhort, I ſhould expect the Progreſs of the Cure would be in ſome Degree ſimilar to our Succeſs in common Amputations, where the Parts are treated in a ſimilar Manner.

The Patient was placed upon a Table of a convenient Height, and the Shoulder brought off the Side, ſufficiently to give Room for the Hand and Knife; and a proper Preſſure made upon the ſubclavian Artery, by the Fingers of a judicious Aſſiſtant; a circular Inciſion was then made about a Hand's Breadth below the Acromion, and carried thro' the Skin and Membrana Adipoſa, round the Arm; the deltoid and poſterior Muſcles were then divided obliquely up to the capſular Ligament; this was much facilitated by an Aſſiſtant drawing up the Skin with his Fingers. I then divided the Tendon of the Biceps and capſular Ligament, upon the anterior and poſterior Part of the Joint: an Artery then diſcharged ſo freely, that we were convinced the Preſſure upon the Subclavian was not effectual, altho' judiciouſly made: there-

therefore I tied this Veſſel, with the Aſſiſtance of the Tenaculum, and determined to finiſh the Operation in the following Manner: To divide the Tendon of the Pectoralis Major, the capſular Ligament all round, and the reſt of the Parts, except the Artery, Veins, Nerves, and cellular Subſtance immediately adjacent; and as it was very difficult to diſtinguiſh theſe Parts ſo accurately, by ſo obſcure a Light, as to be able to tie the Blood Veſſels, and cut the Nerves higher up, I included the Whole in a temporary Ligature, held juſt tight enough to prevent Hæmorrhage: below this the Parts were divided, which finiſhed the Operation, that is, ſeparated the Limb: then the Artery and Veins were drawn out together with the Tenaculum, and included in the ſame Ligature, the temporary one was now removed.

The muſcular and cellular Subſtance, when divided, thro' the whole Operation had a very unfavourable Appearance, being loaded with extravaſated Blood; therefore, I took out as much

much of the Whole as I could, and the ſame Indiſpoſition about the Clavicle will perhaps account for the Preſſure upon the Artery not being ſufficient to reſtrain the Hæmorrhage: indeed, the Parts divided in the Operation appeared ſo bruiſed, that I thought a Gangrene would almoſt certainly follow.

A conſiderable Quantity of Skin was ſaved, ſo that when it was placed over the Muſcles, and Acetabulum Scapulæ, the Wound had the Appearance of little more than a Line drawn from Side to Side, acroſs the Face of the Stump, and the Ligatures were left out at the Angle next the Cheſt: long, narrow Slips of Lint, ſpread with a ſoft cooling Ointment, were applied longitudinally, from below upwards, ſo as to approximate the Lips of the Wound, and aſſiſted by two long Pieces of ſticking Plaiſter, the Whole ſupported with a Tow Pledget, Compreſs, and a light Flannel Roller. Directions were given that the Patient ſhould take Broth, gentle Cordials, and Anodynes occaſionally.

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The next Day I was ſurpriſed to find the Patient ſo well: he was reſtored to his Senſes, the ſymptomatic Fever moderate, but complained greatly of the Soreneſs upon the Face, eaſy about the Shoulder, had taken Drinks freely, and what appeared very ſurpriſing, he had not the leaſt Recollection of the Accident that had happened, nor of his having undergone an Operation. Ordered to have the Face conſtantly Moiſt with Linen-compreſſes dipped in the ſaturnine Water, that Stools ſhould be procured by Clyſters, that an antiphlogiſtic Plan of Diet and Medicine be rigidly uſed, and Anodynes occaſionally.

It would be tedious and unintereſting, to recite the minute Appearance of each Dreſſing: therefore, let it ſuffice to obſerve, than on the ninth Day, he was in every Reſpect as well as I could reaſonably expect: the Wound had a favourable Appearance, the Skin remained fixed, nearly in the State it was placed after the Operation; and the Diſcharge was a ſmall Quantity of Matter, mixed with a thin ſynovial Fluid: the extravaſated Blood

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in the neighbouring Parts was abſorbed daily, and the Face recovered likewiſe; the Patient was able to ſit up moſt Part of the Day, and the Ligatures ſeparated as ſoon as in a common Amputation. On the tenth Day he complained of Cold and Heat alternately, ſaid he was ill, altho' he could not well tell what to complain of, his Indiſpoſition was ſo ſlight. On the eleventh he appeared languid, the Countenance ſunk, the Skin moiſt, cold, and clammy, the Wound pale and flabby, more diſpoſed to open, and had gleeted largely. Whether theſe diſagreeable Changes were owing to his living in the Air of the Infirmary, which at this Time was tainted by offenſive Diſcharges from ſeveral ſpreading putrid Sores, and a full Houſe, or to a Want of a more generous Regimen than he had as yet been allowed, I was rather at a Loſs to determime. It had been often obſerved in this Houſe, that our Sailors, and induſtrious Mechanics, whoſe Stations habit them to hard Labour, and the conſtant Uſe of ſtrong Liquors, if they become the Subjects of compound Fractures, Amputation, or any important

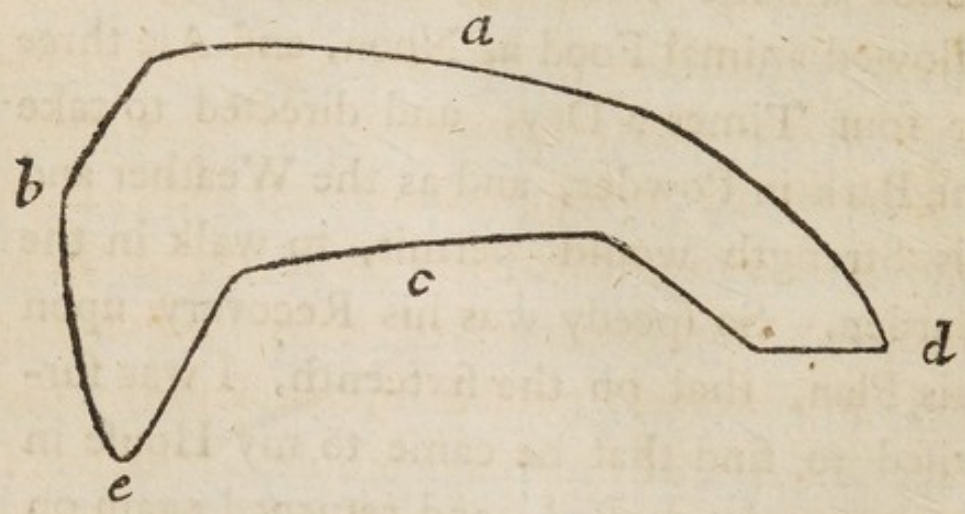
ſurgical

ſurgical Injury, attended with large Sores, they will not long be healthy under an antiphlogiſtic Plan. Their Sores will certainly grow worſe, and ſo will the State of their general Health, and theſe Evils are only to be remedied by an Indulgence in their former Habits. Free Air, Wine, Rum and Water mixed, Ale, animal Food in moderate Quantities, with the Bark, and Cordials, are the only Remedies.

To obviate the Cauſe of foul Air, or the Want of a more tonic Regimen, I removed my Patient the next Day to the Park Coffee-houſe, an elevated, open, airy Situation, about a Mile from the Town; and he was allowed animal Food at Noon, and Ale three or four Times a Day, and directed to take the Bark in Powder, and as the Weather and his Strength would permit, to walk in the Garden. So ſpeedy was his Recovery upon this Plan, that on the ſixteenth, I was ſurpriſed to find that he came to my Houſe in Town, to be dreſſed, and returned again on Foot, which was in all about four Miles.

Both his general Health, and the Wound, improved daily: at the end of a Month from the Day of operating, the Wound was healed, except a ſmall Opening, that would admit only the Head of a Probe, which paſſed up towards the Acetabulum Scapulæ, and diſcharged a ſynovial Fluid in ſmall Quantities, and did not totally cloſe for the Space of a Month longer, ſince which Time it has remained totally healed.

The Dreſſings were always applied as at the firſt, all external, and with a View to approximate the Edges of the Wound, which when healed, the Cicatrix was exactly the Size here repreſented.



a The Part next the Acromion, *b* next the Cheſt, *c* the Axilla, *d* the Angle next the Back, *e* the Angle where the Ligatures were left out.

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I do not mean to caſt the leaſt diſreſpectful Reflection upon Mr. *Bromfield*'s Plan of operating and dreſſing: on the contrary, I think myſelf greatly obliged to him, for the Information I have received from his uſeful Publication upon this Subject: my Patient's Caſe, and thoſe that he operated upon, differed materially, and conſequently each may, with Propriety, admit of a different Treatment.

It would be miſleading the Public, not to confeſs, that altho' I accompliſhed my Point, with only a circular Inciſion, yet it was executed with ſome Difficulty; for the Diviſion of the capſular Ligament would have been greatly facilitated, by the more eaſy Acceſs to the Part, which would have been produced by a longitudinal Inciſion, from the Acromion, thro' the Skin and deltoid Muſcle. On the contrary, when we conſider the Advantages gained by excluding the external Air, as much as poſſible, in many of the moſt important ſurgical Caſes, for Inſtance in compound Fractures, in opening large

deep ſeated Abſceſſes by a Seton, the radical Cure of the Hydrocele by Seton, the ſpeedy Cures made by placing the Skin over the whole Surface of the Wound after Amputation, and the favourable Termination of *Dan. Catling*'s Caſe; theſe Reflections will make us anxious to finiſh the Operation, where it can be done with tolerable Eaſe, without the longitudinal Inciſion along the deltoid, by which the Air would find more eaſy Acceſs into the Cavity of the Wound, and Acetabulum Scapulæ. Perhaps the free Acceſs of Air into the Joint, may reaſonably be conſidered as one Cauſe of the Exfoliation of the Cartilage, but a more powerful one is the Application of dry Lint within the Acetabulum Scapulæ; which, by forming an Adheſion, and conſequently a Retention of Matter upon the Part from Day to Day, will, I am of Opinion, more certainly occaſion an Exfoliation of the Cartilage, in this Inſtance, than it does of the Bone after Amputation.

Mr. *Bromfield* lays it down as a general Rule, that the Cartilage will exfoliate in eve-

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ry Inſtance: Pag. 244, ſpeaking of *Heiſter's* Advice, to attempt a Union by the firſt Intention; he adds, "but he has forgot, that in Caſe the Head of the Scapula is found, that the Cartilage will prevent the Union, till it is exfoliated:" and from this Opinion he regulates his Practice: and p. 254, directs you to "pare off the Cartilage, and apply dry Lint to the Bone, and let it remain till it drops off; and probably the Granulations will then ſhew themſelves ſprouting from the Bone." This may be a neceſſary and judicious Practice, where Matter has previouſly lodged in the Joint, and occaſioned ſuch an Alteration in the Texture of the Parts, that Exfoliation of Bone or Cartilage will conſequently follow: But that in recent Injuries, the Cartilage will not always exfoliate, my Patient's Caſe furniſhes a Proof, and if inſtead of dreſſing the Wound to the Bottom with dry Lint, the Skin is placed as I have directed, and the Dreſſings all applied exterior to the Wound, the Exfoliation of Bone or Cartilage will be frequently prevented; and Nature, not teized and interrupted by Art, will do Wonders in

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ſpeedily filling up and contracting the Wound. As I was neceſſitated to operate by Candle-light, I could not diſtinguiſh the minute Parts ſo exactly as would have rendered the Progreſs thro' the Operation more pleaſing to me; therefore, altho' the Artery was left long, agreeable to Mr. *Bromfield*'s Direction, I durſt not divide the Nerves higher: yet the Evils which ſuch Treatment is intended to obviate, was effectually prevented, by the Plan of dreſſing the Wound, the Nerves being covered by the old Skin.

The Patient is now in the moſt perfect Health, which he has enjoyed ever ſince the Wound healed; he is employed at the Cuſtom Houſe in this Town, and capable of going thro' the neceſſary Fatigue of his Station, by which he earns a comfortable Livelihood.

POST-

POSTSCRIPT.

SINCE the foregoing Sheets were finiſhed, I have heard of one Inſtance, where Hæmorrhage followed our Treatment; but it was from the whole Surface of the Stump: and I am now in Conſultation upon a ſimilar Caſe, after an Amputation in the fore Arm, occaſioned by a compleat Sphacelus of the Hand after a compound Fracture above the Wriſt: as this Kind of Hæmorrhage is a conſequence of a peculiarly diſeaſed State of the whole Syſtem, it cannot be certainly prevented by a topical Treatment of the Wound.

I am now of Opinion, that, in general, it is the moſt judicious, to place the Skin ſo as to form the Line acroſs the Face of the Stump, from Side to Side, the Diſcharge is ſo ſmall, that a depending Drain is not a neceſſary Object: the Ligatures are the moſt conveniently left out at the inner Angle, in the Arm and Thigh, on account of the Vicinity of the great Artery, in the fore Arm and Leg, they may be left out at either Angle. The Patient ſhould be directed to keep out of Bed every Day after the firſt Dreſſing, as long as his Strength will permit, which will conſiderably reſtore and preſerve his general

neral Health; the uſual Mode of confining the Patient to Bed will ſometimes produce or continue hectic Fever, Debility, Diarrhœa, *&c.*

Thoſe who have had this Plan of Treatment deſcribed to them, object to it, upon a Suppoſition that the Ligatures will be troubleſome, and get fixed in the Part; however, Experience is the beſt Guide in theſe Matters; the Ligatures, when made as here directed, have always ſufficiently ſecured the Veſſels, ſeparated eaſily and ſpeedily, nor have I ſeen one Inſtance, where the Cures have been protracted by them.

I am far from thinking that the Operation and After-treatment, will not yet admit of further Improvements, in the Hands of the judicious and candid Practitioner; however, if he has the Succeſs, upon a Trial of the Means here recommended, that has attended their Uſe under my Obſervation, I hope it will appear, that I have not either miſapplied my Time, or miſlead the Public.

THE END.