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A DISSERTATION ON THE INUTILITY OF THE Amputation of Limbs.

Written in Latin, by M. BILGUER, Surgeon General to the Armies of the King of Prussia. Augmented with the Notes of Mr. Tissot, Physician at Lusanne.

Now first Translated into English,

By a SURGEON.

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MDCCLXIV.

ADVERTISEMENT

By the English Translator.

It is with particular pleasure I present the English reader with a translation of Mr. Bilguer's celebrated performance: It will meet, I doubt not, with the approbation of those, who have the true honour of surgery at heart, and are at the same time friends to humanity. After what is said by so eminent a judge as Dr. Tissot, as well as many others who are an ornament to the profession, I shall not launch out into any eulogium on the author: there is a spirit of modesty, candour and ingenuity runs through the whole, that to every sensible reader will prove a sufficient recommendation of the work.——If it in the least contributes to check the cruel and precipitate practice of taking off limbs that might be saved, thereby preserving the lives, as well as preventing the mutilation of numbers of our fellow creatures, I shall think myself amply recompenced for the labour I have taken in thus endeavouring to render Mr. Bilguer's beneficent

design more extensively known.

Speedily will be published,

A

Translation of Dr. TISSOT'S last Work,

ENTITLED,

Avis au Peuple sur sa Santé.

By JAMES KIRKPATRICK, M. D.

TO
DR. PRINGLE,

Physician in Ordinary to Her Majesty, Fellow of the Royal Society, &c.

SIR,

Your excellent work on the *Diseases of the Army*, so useful to physicians in general, will always be considered as a standard for the practice of those in particular, who are intrusted with the important office of superintending the health of the soldiery. Mr. Bilguer has performed, on his part, what you have so ably done on yours, in pointing out to his colleagues and successors, the [Pg vi] plan which they ought to follow. It has given me pleasure to translate his Dissertation, and you must derive a peculiar satisfaction from the perusal of it, because, from the extensive and painful experience you have had of the bad consequences resulting from the operation this able Surgeon so warmly opposes, you can more readily perceive the usefulness and value of this little work. It is therefore my duty to address it to you, and I eagerly embrace so favourable an opportunity of thus publicly declaring the sentiments of esteem and particular respect, with which I have the honor to be,

SIR,

Your most humble, and Most obedient Servant,

TISSOT.

Lausanne,
1 April, 1764.

PREFACE,
By DR. TISSOT.

An extract of the Dissertation, of which I now publish a Translation, had given me a very high opinion of it; but on a perusal of the whole, I found it still better than I had imagined: It seemed to me one of the most useful and best executed performances on Surgery, and I hoped it would very soon be translated into French.

Eighteen months having elapsed without any such translation appearing, I thought of procuring one. I then endeavoured to find a translator, but failing in that, I determined to do the office my self. I imagined, that, in thus dedicating a few hours of my time to this work, I should do a considerable service to many unfortunate people. I shall rest well satisfied if, by rendering this [Pg viii] excellent book more common, I prove the means of adding to its influence, and of inducing a great number of surgeons, who may now read it, to quit the cruel and fatal practice of amputation, for the method which Mr. Bilguer proposes, with a degree of sincerity and precision which leaves no room for doubt.

The title of the original is, *Dissertatio inauguralis medico-chirurgica, de membrorum amputatione, rarissime administranda aut quasi abroganda, quam, pro gradu doctoris medecinæ et precipue chirurgiæ rite consequendo, die vigesima una Martii, A. S. 1761. In alma Regia Fridericiana speciminis loco, publicæ eruditorum censuræ submisit*, JOHANNES ULRICUS BILGUER, curia-rhœtus *generalis præfectus chirurgorum exercitûs regii Borussici*.

This work contains a much greater variety of matter than its title implies, for it not only shews the inutility and danger of amputation, by several arguments, to which many others might be added; but not satisfied with levelling a tottering edifice, Mr. Bilguer frames and describes a plan for preventing and curing those accidents, which oblige surgeons to have recourse to amputation; and this is properly the most considerable and most essential part of the [Pg ix] performance, which is, in fact, a treatise on gunshot wounds.

I have scarcely done Mr. Bilguer justice with regard to style: I hope, however, I have given his

meaning, without depriving it of its perspicuity or strength. This work will begin a new æra in Surgery, and will reach posterity. I should have been sorry in any shape to have disfigured it.

It will give me very great pleasure, if the pains I have taken, and the notes I have added, prove agreeable to the author. He may be convinced that, being engaged in business as I am, his performance must have appeared to me extremely well executed, and much wanted, before I undertook to translate it.

I am informed he has lately published a work on Surgery, in the German language; I am persuaded it contains much valuable matter: He seems to me to have a genius for discovering new expedients to lessen the sufferings of human kind. I would have given this book the title of a *Manual for the Surgeons of the Army*, which it deserves to be, were there not already another so [Pg x] called[1], which, although very little known, is by no means contemptible. The author had, even at that time, remarked that wounds of the tendons are not troublesome, owing to their want of sensibility, that the actual cautery is seldom proper; and some other facts, almost forgotten since that time. He describes wounds near the articulations with dislocation and fracture, he points out the accidents attending gunshot wounds, and, what deserves notice, he only admits of amputation in one case; namely, that of an incurable mortification, and mentions it as a cruel and doubtful expedient. I shall here cite his own words; they plainly shew that, if he lived in our time, he would be one of the most zealous encouragers of the new method, since he was so sensible of the defects, and grieved at the barbarity of the old. “If, unfortunately,” says he, “a mortification, from whatever cause it proceeds, gains ground in such a manner as to baffle all our care and applications, there is then no expedient left but that of taking off the limb; the success of which is very uncertain, for if it be dubious in a healthful subject, it must be much more so in one which is [Pg xi] otherwise: It is, however, the only method, dreadful as it is, of putting astop to the ailment, and saving the rest of the body. This nevertheless ought not to be done, except when the consent, age and strength of the patient permit us to try so dangerous an experiment.”

This author's manner of thinking is very far from being established as might be wished, amputations being still too frequent. Mr. Bilguer's work ought at this time to be so much the more favourably received, as a celebrated company, whose decisions ought to have great weight in matters relating to surgery, has formally declared, about seven years ago, *That amputation is absolutely necessary in gunshot wounds, complicated with fracture of the bones*; and have left unfortunate wounded men no other alternative, but that of losing the injured limb on the spot, or a few hours later. That line of Juvenal seems very applicable on the occasion:

Nulla unquam de morte hominis cunctatio longa est.

[Pg xii]

FOOTNOTES:

[1] *Le Manuel du Chirurgien d'Armée*; or, The Art of methodically curing Gunshot Wounds, &c. By L. L. M. C. Printed for Houry, at Paris. My edition is the second, published 1693.

A TABLE OF THE SECTIONS.

FOOTNOTES:

[2] It was rumoured at Paris during the war, that the King of Prussia forbid the mutilation of his soldiers from other motives than those of humanity. Idle people spent their time in declaiming against such barbarity, and thus ignorantly prejudiced the minds of people against Mr. Bilguer's method. I have heard able surgeons hint this objection, when I spoke to them concerning the present work. They acknowledged, nevertheless, that amputations had been too common in the French armies. I hope the publication of this little book will have two effects; the first is, to re-establish the truth, and the second is, to awaken in those surgeons, the feelings of humanity.

[Pg 1]

A DISSERTATION ON THE Inutility of Amputation.

Having resolved some little time since to publish in this learned university a Dissertation which might serve as a specimen of my Medical Acquirements, the subject which appeared the most suitable to my purpose, is one, that may improve the art of surgery, which I practised for several years during the heat of the late bloody wars, and may at the same time wipe away the old aspersion, first broached at Rome against Archagates, and so often repeated since, that surgeons are executioners, who cut and burn without mercy.

[Pg 2]

The cutting off a limb being the severest means employed in surgery for the relief of mankind, an operation which every one beholds with horror, I cannot, I imagine, more effectually accomplish my design, or do a greater service, than by demonstrating, *that the cases wherein amputation is necessary, are much less frequent than has been hitherto supposed, and that it may even be almost totally dispensed with.*

SECT. II.

My first thoughts on this subject arose from observing what passed under my own inspection in the military hospitals.

In the first place I remarked, that in a very great number of cases, where amputation was judged necessary by the physicians and surgeons of the army, and even by the wounded themselves, in order to preserve life, it seldom or almost never answered the end.

In the second place, I saw and had under my immediate care, a great number of patients whose limbs had been carried off by cannon balls, and in such a manner too, that all those who adhere to, and are afraid to deviate from established rules, would have performed a fresh amputation on the remaining stumps, whom I cured, as far as they were capable of being cured, without having [Pg 3] recourse to such disagreeable means.

And lastly; many others, whose limbs were not intirely separated off, but so much detached, wounded, shattered and contused, that the ablest surgeons deemed it necessary to take them wholly off, were nevertheless, by my endeavours, contrary to the general opinion, cured without amputation.

SECT. III.

This success, partly owing to the efforts of nature, and partly to the means employed by art, strongly encouraged me almost never to have recourse to amputation, but to try every kind of remedy, internal as well as external, calculated to preserve the lives as well as the limbs of the unfortunate sufferers. My first attempts, so far from being unfavourable, confirmed me more and more in the opinion, that parts which have sustained the most considerable injuries, will much oftener get well than what is commonly believed: And although this opinion does not seem to be countenanced by many eminent physicians and surgeons; although I do not flatter myself I shall be able to induce them to alter their sentiments, I hope nevertheless, that some others, [Pg 4] encouraged by my example, and this account of my success, will have the courage to follow the same method, and that their authority may afterwards contribute to convince the most incredulous.

SECT. IV.

But supposing, what I do not apprehend can be the case, that all the gentlemen of the profession should agree in declaring my method absolutely useless, the rest of mankind at least, will be obliged to me for my endeavours to mutilate the wounded as little as possible; as most people are shocked at the mention of any amputation, or at the sight of a poor creature who has lost an hand, an arm, a foot or leg, wretchedly crawling along upon crutches or a wooden leg; and consider the total privation of a limb, as a much greater misfortune than when it is preserved, though perhaps unshapely, and uncapable of performing several of its primitive functions. If one reflects how much every body dreads the pain occasioned by the slightest incision, he will easily conceive the degree of horror a person must feel at the thought of amputation, and why many patients chuse rather to die than to submit to it[3]. Hence it is so [Pg 5] uncommon to find men, like count Mansfeld, so famed in the war that lasted thirty years, who caused his wounded arm to be taken off amidst the sound of trumpets and beating of drums; or like the country fellow, whom Dr. Schaarschmid, late an eminent physician at Berlin, mentions in his collection of observations and remarks on physic and surgery, who cut off his own mortified leg with a saw, very unfit for such an operation[4].

[Pg 6]

FOOTNOTES:

[3] I would not chuse to lay much stress on this argument; for if one weighs the circumstances of pain, the amount of what the patient suffers from the treatment necessary for saving the limb, will often be equal to that arising from amputation. But the two strongest reasons for prefering Mr. Bilguer's method is, the saving the limb as well as the life of the patient; the loss of which is often occasioned by amputation, but never by the pain of an incision. It is also true, that pain when slighter, though longer continued, is more easily supported by the patient. TISSOT.

[4] To these instances may be added, that of the son of Thomas Koulichan, a captain in the Austrian service, who, being wounded in the leg, and the bones shattered, in one of the latter battles of the war, held a candle with one hand and extracted the splinters with the other. He exhibited many other proofs, not only of courage in the field, but also of that fortitude in bearing pain which is very different from the other, and much more seldom met with. TISSOT.

SECT. V.

But lest I should be charged with being weakly influenced by the cries of the patient, and with wanting that kind of fortitude which Celsus[5] thinks requisite in a surgeon, in treating of this

operation, I shall take it for granted that the patients are men like those I have just now mentioned, and that an inordinate desire of life, an uncommon strength of mind, religion, and other moral reasons, induce them to consider pain as nothing, when it affords them any hope of preserving life.

It is foreign to my plan to inquire who was the first who attempted this operation, or to trace [Pg 7] the history of it in the works of the ancients. I shall only take notice, that such wounded men as recovered, after having lost a limb by some accident, without doubt, shewed the possibility, and suggested the first hint of trying this operation. Neither shall I dwell upon the various methods of performing it from the infancy of the art to the present time; they are described in other books[6], and I do not purpose giving a compleat treatise on amputation. I shall not even touch upon what is already generally known on this subject, but as little as I possibly can: This is the best way of handling any particular point; and I hope all those who pay more regard than I do to scholastic form, will pardon my inattention to regularity of method and stile, when they are informed how much my time is engaged; others will excuse me, when they call to mind the remark of Celsus, that diseases are cured by proper remedies, not by a display of eloquence.

FOOTNOTES:

[5] *Celsus de re medica*, l. 7. præf. Nevertheless Mr. Dionis, in his course of operations, (*Demonstr. 2, Art. 9.*) acknowleges, that even the most intrepid surgeons tremble at the instant they are going to perform this operation. Of all the operations, says he, that which occasions the greatest horror, is the amputation of a thigh, a leg or an arm. When a surgeon is about to take off a limb, and reflects on the cruel means he must employ, he cannot help feeling a tremour, and pitying the misfortune of the poor patient, who is under a fatal necessity of being deprived, for life, of a part of his body. And in another place he says, This operation ought rather to be performed by a butcher than by a surgeon.

[6] Memoirs of the Royal Academy of Sciences, 1732. Art. 7.

SECT. VI.

To prove what I have advanced, I shall begin with enumerating those accidents for which [Pg 8] amputation has been hitherto deemed necessary. I shall reduce them to six.

First, A mortification, which spreads till it reaches the bone.

Secondly, Any limb so greatly hurt, whether by fracture or dilaceration, that there is room to dread the most fatal consequences, a mortification and death.

Thirdly, A violent contusion of the soft parts, which has at the same time shattered the bones.

Fourthly, Wounds of the larger vessels, which convey the blood into the limb, either, as the only means of stopping the hemorrhage, or through the apprehension the limb should perish for want of nourishment.

Fifthly, An incurable caries of the bone.

Sixthly, If any part is either attacked with a cancer, or is in danger of being so, it is customary to take it off.

I shall treat of these different accidents more or less particularly, in proportion to the number of observations I have made on each of them, as no method of cure, however doubtful and [Pg 9] alarming, should be rejected, till a better can be pointed out. Thus, this treatise contains only, in effect, an account of the methods I successfully employed in the military hospitals, for the relief of the above disorders; together with a few observations, and still fewer hypothetical reasonings, which induced me to condemn the use of amputation.

SECT. VII.

I shall begin with an account of the means I make use of, internal as well as external, when a limb is mortified, the effects of which have convinced me, that in such cases amputation is not necessary; and here I shall first gratify the curiosity of those readers who, doubtless, are desirous to know what I have learned from the extensive opportunities I must necessarily have had, with respect to the use of the Peruvian bark.

Experience has taught me, that this admirable medicine is possessed of a singular and specific virtue in mortifications.

I know that several physicians and surgeons only recommend it in those which proceed from [Pg 10] weakness. I have heard it reported by others, that they found it of little service after the famous battle of Dettingen[7]. But perhaps the other circumstances, with regard to the treatment of the patient, did not contribute to promote those good effects which I always observed attended it when judiciously administered. And I make no doubt, but every practitioner who, in prescribing it in cases of mortification, observes the rules laid down by Dr. Pringle, Dickins, Wade, Cheselden, Douglas, Rushworth, Amyand, Shipton and some others, will find it very efficacious. I do not [Pg 11] mean, nevertheless, that it should be considered as the only internal medicine; there are, [Pg 12]

doubtless, other bitters which are sometimes extremely proper on these occasions. I must add, that the bark appears to me to possess that quality which Celsus requires in medicines, whether in a solid or liquid form, adapted to the cure of a mortification, to bind the belly moderately, and brace the whole system. After having treated of the external applications, I shall point out the method in which I administered the bark.

FOOTNOTES:

[7] Mr. Ranby, however, who was one of the surgeons of the British troops at the time of the battle of Dettingen, lays great stress upon the bark: It is true, that in one of his cases, having ordered it to an officer of seventy years of age, whose leg had been amputated, *on account of his ancle, with the neighbouring parts, having been terribly shattered by a cannon ball*, it did not keep the sore from growing worse, or prevent the patient's death. But that we may form a just estimate of the merit of the bark, and the effects of amputation at the same time, it will be necessary to compare this case with the one which precedes it. This comparison will, I imagine, be of use.——I shall quote the author's own words. “An Austrian officer, who had his hand miserably shattered by a cannon ball, was, by some accident, left in a wood near the field of battle, destitute of any manner of help, from Thursday till the Sunday following, when he was brought to Hanau. The next morning I was carried to see him, and to assist in taking off his arm. On viewing it, I found it mortified almost to the elbow, with a great swelling and inflammation quite up to the shoulder. As it was by no means adviseable to attempt an amputation in such circumstances, I proposed giving him the bark; which being no ways objected to, he entered upon immediately. The next day he was rather better: But, on the third, was evidently so. The inflammation was less, the swelling began to subside, and the edges of the mortification were separating. The arm was fomented and wrapped up in the oatmeal and stale beer poultice, with theriaca: And the dreadful symptoms which forbad the operation, were now so much abated, that his surgeons did not at all hesitate to take it off. But this was done to very little purpose; for three or four days after the amputation, being attacked with convulsions, he expired.”

I shall here subjoin five questions.

Would Mr. Bilguer have amputated in these two instances?

Would not his method have saved both these patients, especially the last?

Does not amputation seem to have contributed to their death?

Does it not evidently appear, that in the latter of these two cases, amputation destroyed the good effects of the bark, which seemed to conduct the patient to a speedy cure; and that in the former case, the bark had not power sufficient to repair the mischief occasioned by the amputation?

Does it not follow from these two observations, that however salutary the effects of the bark may be, those of amputation are hurtful in a greater degree? Tissot.

SECT. VIII.

Whenever a mortification attacks any part of the body, whether it be owing to an outward hurt, or proceeds from an internal cause, as often happens in persons afflicted with the scurvy, dropsy, a vitiated state of the blood, phagedenic sores, or very aged people, who begin, as it were, to die in the extremities: Whenever, I say, the mortification begins to appear, it requires immediate help. We must begin by making incisions on the part affected, in order to procure a discharge of the corrupted matter, and to assist the action of the medicines. I make long incisions, not only on [Pg 13] the mortified parts, but on those adjacent, which would soon be so; I make several of them, as nearly as the large trunks of the blood vessels, and more considerable branches of nerves will allow, not above an inch distant from each other. We ought always to cut to the quick; and if the bone be affected, the periosteum must be cut through, and the bone laid bare. These incisions should follow the direction of the greater number of fibres of the muscles that happen to be thus cut upon; but when the gastrocnemii, the glutei or deltoid muscles have been wounded by a ball, they must be cut cross-ways, otherwise convulsions, particularly the spasmus cynicus, will probably ensue. Several aponeuroses, especially that of the biceps, ought likewise to be cut transversally: It is true, if the longitudinal incisions are sufficiently long and numerous, they take off the tension of these membranes so much as to render the transversal ones unnecessary.

Neither ought the tendons to be spared; they must be boldly cut through transversally.

If a wound, or any other ailment, happens near the articulations, I also, without fear, make [Pg 14] large incisions through the ligaments.

It will easily be understood that these incisions must differ from each other in length and depth; they must be longer in those parts of the sore where the disease has spread the widest, and shorter in others. Both must be more superficial at their extremities, and deeper in the middle, in the place where the complaint began, and where the mortification reaches deepest.

The number of incisions, and their distance, must also vary, as they may be found necessary; so that a skilful surgeon may make three, four, six or eight, as the case may require.

It is obvious, that in an operation of this kind, a surgeon should not be too precipitate; and when he does not know the depth of the ailment, he should not go too deep with his incision: he may repeat it if he finds he has not reached the quick.

SECT. IX.

[Pg 15]

After these incisions are made, we must carefully examine how far the part which is absolutely mortified, and which it is impossible to restore to life, may reach. This may be distinguished by the stench which exhales from it, by its change of colour, and want of feeling. These mortified parts ought immediately to be separated from the sound, and removed by means of a bistory in the same manner as one muscle is divided from another in an anatomical dissection. In order to do this, the dead flesh must be cut through cross-ways, which puts the patient to no kind of pain. But care must be taken in this operation, not to separate such parts as may be somewhat affected by the mortification, yet not totally corrupted, as it often happens, after the removal of what is entirely dead, that they recover, by proper assistance, their natural state.

In making these incisions, we should take all imaginable care, as I have already remarked, not to wound the larger blood vessels or more considerable nerves; for this purpose, the gangrened parts which lie near them, should be separated with great caution: It is even better to leave [Pg 16] behind a small portion of the mortified flesh which may adhere to them, and to trust for its separation to the ensuing dressings, which they will not fail to accomplish. The reason for this rule is, that we often see the vessels remain sufficiently sound, while the other parts are very much corrupted. We find for example, in the arm, near the joint of the elbow, near the wrist, and even in the lower extremities, the vessels intire, although the mortification of the parts which surround them be so considerable, as to oblige us to make our incisions to the bone; and it is these vessels, after the extirpation of the dead parts, that must keep up life in those which remain: We ought to preserve the greatest number we can, not only of the larger vessels, but even of the smaller ones: It was with a view to this particular, that I recommended not to make our incisions rashly, but with a good deal of caution, both with respect to the place where they were made, their direction and their distance. In operating with this circumspection, we shall avoid incurring the censure of Platnerus, who remarks, that we ought not to separate the dead from the sound parts with violence, “Because,” says he, “incisions which cause an effusion of blood, often renew the inflammation.” Now in my method, there is neither any violence, nor [Pg 17] incisions attended with blood.

SECT. X.

When the incisions are made, if the neighbouring parts appear somewhat tainted, we must, by gentle compression, squeeze out the corrupted humour which may harbour there, and wipe it off with a bit of soft linnen rag. Afterwards, whether it may have been necessary to extract, either with the fingers, a scalpel, or with the instrument called a myrtle leaf[8], any bony splinters too much detached from the substance of the bone itself to hope for a re-union, a circumstance which often requires a considerable dilatation of the fleshy parts; or whether the bones appear carious, or spoiled in any other shape; or, lastly, whether we may have been obliged to make deep incisions, even to the bone: In all these cases, we must at first employ such external applications as are proper for the bones, and for the soft parts that have a tendency to mortification, although they may have discharged a sufficient quantity of blood during these operations.

The bone, whether the periosteum be sound or destroyed, must be dressed with the following [Pg 18] medicine: *Of frankincense, mastick, sarcocolla and myrrh finely pounded, true balsam of Peru, and genuine essential oil of cloves, of each equal parts; of balsam of Fioraventi, as much as may, in mixing all the ingredients over a very gentle fire, form a thin liniment*; which must be warmed when used, and which must be poured plentifully into the wounds I am speaking of, so that the bone may be well moistened therewith.

This medicine is of service in all cases where the bone is affected. When the bone is covered with it, some dry lint may be laid over it, and the soft parts dressed by sprinkling upon this lint a powder composed of *an ounce of myrrh finely pounded, half an ounce of sal ammoniac, camphor and nitre, each a dram*. After the first layer of lint is thus covered, fresh lint must be applied, and again sprinkled with the powder, till in this manner the cavity of the wound is quite filled up with alternate layers of lint, and this vulnerary powder.

[Pg 19]

FOOTNOTES:

[8] See Dionis's surgery, page 18. 4th edition.

SECT. XI.

If the bone is not affected, or the periosteum laid bare, the balsam or thin liniment may be omitted. And the dressings may only consist of the layers of dry lint and vulnerary powder applied alternately.

SECT. XII.

Besides the dressings I have mentioned (§ X. and § XI.) for these kinds of wounds, we must

likewise make slight scarifications upon the neighbouring parts, and sprinkle them with the powder; after this treatment, embrocate all the sores with oil of turpentine, and then lightly bandage up the whole with plain linnen cloth, which must be kept moistened, night and day, with warm fomentations.

SECT. XIII.

It is in following this method only, (§ X, XI, XII.) that these fomentations, so much recommended both by the antients and moderns, will be found truly serviceable and efficacious. [Pg 20] Mr. Heister has collected a sufficient number of these forms, in treating of mortifications, in his excellent system of surgery, which is in every body's hands. It will be an easy matter for a surgeon, who understands the nature of the ailment and the quality of the medicines, to select such as will be most suitable to the case he happens to treat. Thus, for example, the fomentation consisting of a *pint of lime water, three ounces of camphorated spirit of wine, and an ounce or half an ounce of sal ammoniac*, is very useful in mortifications which are the consequences of high inflammation, as it relieves the inflamed parts that lie round those which are already mortified. The same effect may be obtained from the fomentation made with the *balsam of life*; namely, *soap, salt of tartar, and oil of turpentine, mixed and dissolved in lime-water*; and from the *cataplasm*, composed of the herbs called *species pro cataplasmate*, and *venice soap and saffron* added thereto[9].

If, without any considerable inflammation preceding, a part is found mortified, or a beginning [Pg 21] mortification appears attended with a swelling, which frequently happens to dropsical people, to those afflicted with œdematous tumours, and to aged persons, and whenever the ailment proceeds from a defect rather than an excess of the vital motions; the following fomentations are more proper.

1. *Take of water germander, wormwood, southernwood, rue, of each two handfulls; chamomile flowers, one handfull: Boil them together, and to two pints of the strained liquor add four ounces of treacle spirit, two ounces of venice soap, and half an ounce or even an ounce of sal gem.*

2. *Take of water germander, wormwood, feverfew, of each two handfulls; of mint and southernwood, of each a handfull: Boil them together in oxycrate, so as to have four pints of the strained liquor, to which may be added half an ounce of sal gem, and afterwards from two to four ounces of treacle spirit.*

3. *Take of martial ball*[10] *two ounces, sal ammoniac one ounce; dissolve them in* [Pg 22] *about eight pints of spring water, and add two pints of rectified spirit of wine.*

4. *Take of crude alum, and white vitriol, each two ounces and two drams; lytharge of silver and myrrh, each an ounce; Aleppo galls, two ounces; juniper and bay berries, each an ounce; savin and rue, each two pugils; oak leaves, a handfull and a half; verdegris, half an ounce; camphor, two drams; calamin, six drams*[11]*. After having mixed and reduced all these ingredients to powder, let two ounces of the composition be boiled with four pints of water, or with two of water and two of vinegar.*

The following embrocations applied to parts already mortified, will stop the further progress of [Pg 23] the mortification; where it is just beginning they will prevent it, and will also help nature to separate the dead parts from the sound.

1. *Spirit of wine, three ounces; myrrh and aloes powdered, of each half an ounce; Ægyptian ointment, three drams*[12]*.*

2. *Vinous decoction of scordium, twelve ounces; vinegar of rue and of roses, of each four ounces; spirit of treacle, three ounces; and one ounce of sal ammoniac.*

3. *Lime water, four pints; treacle spirit, or that of feverfew, two pints; white wine vinegar, one pint; elixir proprietatis, six ounces; Ægyptian ointment, two ounces.*

4. *Decoction of elder flowers, six ounces; wine, eight ounces; vinegar,* [Pg 24] *camphorated spirit of wine, treacle spirit, or that of feverfew, each two ounces; spirit of salt, two drams.*

Lastly, in order to soften the parts, separate the sloughs, and promote suppuration, the following application may be used.

Water germander, two handfulls; mallows and marshmallows, each a handfull; flower of linseed, three ounces; Venice soap and sal ammoniac, of each two ounces; linseed oil, an ounce. Let these ingredients be boiled together, in vinegar and water, to the consistence of a poultice.

It may be in general observed with regard to fomentations, that such as are emollient are serviceable, when hard dry crusts prevent a discharge; those which abound with acid, when there is a considerable degree of putrefaction; and, lastly, those which are spirituous, saline or

strengthening, are most proper when swellings are flabby, and the body abounds with aqueous humours.

[Pg 25]

FOOTNOTES:

[9] These two last applications are not in Heister: The *species pro cataplasmatic*, consists of *yarrow, wormwood, water germander, southernwood, chamomile, sage, hysop, rue, elder, St. John's wort, and red roses*.

It is quite unnecessary to make use of all these ingredients at one time. TISSOT.

[10] As the composition of the martial ball may not be generally known, I shall describe it in this place: *Take of filings of iron one part; white tartar two parts: Let them be reduced to a fine powder, and put into a matrass with as much French brandy as will swim about an inch above the powder; exhale to dryness, either in the heat of the sun or in that of a water bath. Pour fresh brandy upon the remainder, and evaporate them in this manner several times successively, till the mass appears resinous; then form it into balls nearly of the bigness of an egg.*

I do not exactly know what quantity Mr. Bilguer means by *sextarius*; that measure, among the ancients, contained twenty four ounces, but here I believe it denotes somewhat less. If we suppose it to be about a pint, the medicine will be extremely good.

[11] This composition is commonly called *species pro decocto nigro*, or the species for the black decoction.

[12] In using the external vulnerary medicines, in which aloes is an ingredient, it must be remembered, what Mr. Bilguer remarks in another place, that they often prove purgative.

SECT. XIV.

The diligent use of these fomentations will alter, in the space of twelve hours, the condition of gangrened wounds for the better; at the end of which, the lint and vulnerary powder, with which they were filled, may be removed, and at the same time, all the detached pieces of mortified flesh may be extracted, and the same dressings (§ X, XI, XII.) applied, which must be renewed every twelve hours. The third or fourth dressing, the wound will discharge matter of a favourable aspect, so as to afford hopes of a cure: Then it will only be necessary to give the bark internally, and to dress the sore in the manner I shall mention by and bye. § XVI.

SECT. XV.

The bark may be given by itself, in powder, or made into an electuary with rob of elder, or with the syrup of quinces, cinnamon, orange-peel, or any other cordial syrup; if it purges when taken in substance, it must be administered in the infusion or extract. If the fever be strong, the heat [Pg 26] considerable, and the patient thirsty, the bark will be of no service[13]; but recourse must be had to medicines which may abate the fever and allay the heat, such as are commonly called temperants.

If the bark be judged necessary, it may be given in doses of half a dram or two scruples, at first every hour, afterwards every two hours, and at length, once every three or four hours: To each dose may be added a few drops of spirit of sea salt, or of dulcified spirit of vitriol, or a few grains of alum or catechu. If the patient be very weak, a small glass of some acid wine may be ordered with the medicine, such as Rhenish, Neckar or Moselle wine, &c. When it is thought proper to promote perspiration, an infusion of chamomile may be drank, as is recommended by Dr. Pringle. Let the strength be supported by the plain regimen, directed by that physician in the same treatise.

Let the drink be water and vinegar, weak veal and chicken broth, gruels of barley or oatmeal, [Pg 27] acidulated with vinegar or juice of lemons, &c. I have not room, in this place, to enter into a more particular discussion.

FOOTNOTES:

[13] Mr. Bilguer might have even said hurtful; the only true temperants are, repeated bleedings and the acids, which are preferable to nitre, which is not very proper wherever there is reason to apprehend a mortification. Absorbents, which in some parts of the country where Mr. Bilguer writes, are still ranked in the class of temperants, are very hurtful in the present case, and never afford any relief to wounded patients.

SECT. XVI.

I now return to the external treatment. When the dressings described, § X, XI, XII. have begun to procure a discharge of matter, the use of the vulnerary powder and oil of turpentine must be laid aside; but we must continue to assist and promote the suppuration for several days,

sometimes even to the eighth; by dressing with the digestive, I shall hereafter mention, by keeping the parts constantly covered with emollient fomentations, and by avoiding to cleanse the wound too much, either by too strong compression, or by wiping it with too much exactness each time of dressing. We ought to be very much on our guard with respect to these two last points, till there be a sufficient suppuration; afterwards a somewhat stronger compression may be allowed, and the sore may be wiped with more exactness, but still, nevertheless, but very gently. For suppuration is the work of nature, an effort of the sound parts, by which they throw off [Pg 28] whatever is vitiated and noxious; and it is the business of the surgeon to assist this salutary operation, by removing, with his instruments, such parts as are intirely corrupted; but this ought to be done, at least as much as possible, without causing any discharge of blood[14]. He must not, however, confine his attention to the soft parts only, but must have an eye likewise to the bones; and, after having examined them carefully, and even made what dilatations may be necessary for this examination, he must remove, at each dressing, whatever is carious, and all the splinters that can be extracted without violence; after which they may be covered with the balsam for the bones, § X. and the soft parts dressed, as circumstances may indicate, either with dry lint, or with [Pg 29] some digestive ointment, especially that which I shall describe bye and bye, quickened with a little essence of myrrh.

All these dressings should be finished as expeditiously as possible, in order not to leave the sore too long exposed to the air, especially the cold air, which may be avoided by dressing the patient in a room moderately warm, and by holding a few live coals near the part which is dressed.

When there is a large suppuration the wound must be dressed twice a day, beginning always, as I said before, with carefully examining the state of the bone, with removing such shivers as are separable, with rasping and trepanning where there may be occasion; leaving to nature, assisted by the balsam, § X. what cannot be extracted by manual assistance.

The digestive ointment for the fleshy parts, which I commonly use, and which I have already recommended, is the following; *Oil olive, half a pint, and an ounce of red saunders boiled together, till the oil acquire a deep red colour; when it is strained, add a pound of yellow wax, and a pound and a half of turpentine; when the whole is mixed and melted together over a gentle* *[Pg 30]* *fire, a little balsam of Peru may be added.*

This medicine is principally of service in cases where, on account of the proximity of the bones, we would not chuse too plentiful a suppuration.

FOOTNOTES:

[14] This precept, of which the very reverse is but too frequently practised, is of very great consequence: It is founded upon this, that a discharge of blood proves that an incision has reached the quick; now every such incision produces an inflammation, which retards the suppuration already begun, and hence we interrupt this operation of nature which we meant to promote, and, as it is the means of preventing a mortification, whatever interrupts it contributes to the disease: It cannot, therefore, be too often repeated, that in general, incisions which cause a discharge of blood, ought never to be practised after a suppuration is begun. TISSOT.

SECT. XVII.

It was probably by some such application, that S** G**** cured a man whose arm was mortified, and whom the physicians and surgeons had given up; a cure which appears to me much less wonderful than what is imagined. The physicians and surgeons despaired of his recovery, and quitted him, because he would not submit to amputation, at the very time when, doubtless, the separation of the sound and mortified parts began to take place, owing either to the force of nature or the medicines they had administered, and when granulations of new flesh began to shoot. It was easy for S** G****, called in at this instant, to effect a cure, by means of his quieting powders and balsam. What is most astonishing in this case, and deserves at the same time to excite our indignation, is the obstinacy and the cruelty of the physicians; but they were [Pg 31] sufficiently punished for it.

SECT. XVIII.

This is not the only instance of patients in whose cases physicians and surgeons have pronounced amputation to be unavoidable, and who, upon their refusing to submit to it, have afterwards been cured by very simple treatment. This ought to be a lesson for us never to be too precipitate in having recourse to this operation[15].

But what must be done, they will say, when every medicine has failed? Is it not better, in such a situation, to try a doubtful remedy, as Celsus expresses it, than to do nothing?

As what is called a doubtful remedy, is for the most part no remedy at all, I look upon such an argument as very fallacious; I shall explain, what I think on this point. Every mortification is the [Pg 32] consequence either of some internal morbid cause, or an external accident. In the first case, amputation can be of no service while the morbid cause remains; and who can hope, in so short a

time, to remove a consumption, the scurvy, a decay from old age, a dropsy, or cachexy? And if these cannot be removed before amputation, it is to very little purpose to operate on the sound part, as it would only be killing the patient. Is there a physician or surgeon but would conclude he occasioned the death of a dropsical person, were he to cut his mortified leg off above the knee? What is true in a dropsical case, is equally so with respect to others: To amputate, is only to give needless pain, and to accelerate the patient's death. It may be further asked, Must we then in such a situation intirely abandon the patient? I answer, No; but we ought to direct our efforts against the morbid cause, and at the same time, employ the most effectual applications externally, lopping off whatever is absolutely mortified, without cutting to the quick, lest the pain, and other accidents which are the consequence of such incisions, should hasten death. After this treatment, the remainder may be left to nature, assisted with the most efficacious medicines, internal as well as external; and if the patient dies, we may rest satisfied that the disease was beyond the resources of art. [Pg 33]

FOOTNOTES:

[15] I hardly ever knew any old officers who have not been witnesses of some examples of this kind; and I have seen several people who have themselves been in such a situation.

SECT. XIX.

When a mortification in a healthy constitution is the consequence of an external accident, the point is not so easily determined; I will venture, nevertheless, to remove the difficulty.

It must first be inquired into, if the ailment has been properly treated at the begining, and if sufficient care has been taken with respect to the cause. If there appears any default in these points, we must first endeavour to repair it, before we think of amputation. If, on the contrary, the treatment has been judicious, we must examine if the mortification continues to spread, or if it be stopt, and its edges begin to discover themselves.

If it continues to spread, it is improper to amputate, for several reasons. In the first place, because the whole habit is in a bad state, and there must be a fever and general inflammation, which would be greatly increased by an operation which, of itself, is sufficient to bring on the death of the healthiest man. In the second place, amputation cannot be performed on the sound [Pg 34] part, in the manner as is generally imagined, as the infection is very often more deeply seated than it appears to be: We may judge of this by observing what happens very frequently in whitlows of a bad kind, where the matter quickly insinuates itself along the arm, and is pent up there, inflaming sometimes even the axillary glands; as an inflammation of the toes, in a short time, brings on that of the glands in the groin: Thus the disease having taken root in the place where the operation is performed, would of course be increased by the ligatures, which are indispensably necessary in this operation, unless we would suffer the patient to perish by an hemorrhage. In such a case then, amputation is not a dubious remedy, but it is no remedy at all[16]; and if the patient sometimes does escape, it must be acknowledged that nature has effected the cure; that she has got the better both of the disease and of the bad treatment, and [Pg 35] has thus overcome a double enemy.

It is evident, from what I have said, that while the mortification gains ground, the method I have proposed, § VII. XVI. should be followed. When its progress is stopt, it must be considered whether the limb can be preserved or not. We may entertain hopes[17] of its preservation, if all the corrupted parts cast off, and the sound parts, and even the bones, begin to produce granulations of new flesh. I cannot here omit remarking, that Mr. Haller's late experiments, which prove to the satisfaction of many eminent anatomists, the insensibility of the periosteum, render the sign of a mortification derived from such insensibility very doubtful. My experiments on this subject agree with his, excepting in this, that I always found the pericranium extremely sensible[18]. Whatever weight may be laid on these experiments, this consequence may at least [Pg 36] be deduced from them, that we ought not immediately to conclude that the bones and periosteum are affected, because we prick, cut or tear the periosteum without giving pain; nor, in like manner, from this symptom, ought we to neglect the medicines indicated § VII. XVI.

If the rottenness of the bone demonstrates that the limb cannot be saved, which almost always happens, if the patient has been improperly treated, we must amputate, if the strength of the patient be sufficient to support this dreadful expedient, and amputate on the sound parts. It is true, that amputation in this case is a doubtful remedy, but nevertheless as there is no other, and as there is no symptom in the patient that forbids its use, it is a remedy. If the patient be weak, the case is desperate, as he is not able to support the operation on the sound parts, and as nature is not in a condition to effect a separation of the dead from the live flesh, if only the mortified part be cut off.

In so dangerous a case, the method I would take, would be, after providing against any hemorrhage of the larger vessels by a proper ligature, to lop off all the gangrened useless mass, [Pg 37] not actually through the quick itself, but very near it; afterwards I would endeavour to stop the progress of the infection by internal medicines and suitable dressings. I would support his strength by a proper regimen; if it increases, we may be sure a separation of the soft parts that are mortified will ensue naturally; after which, it will be easy to saw off the little stump of dead bone that was left. The wound may then be cicatrised, by means of epulotic applications, and

such as we have recommended for bones when laid bare, § X.

This practice is not only conformable to sound reason, but what is more, it is confirmed by repeated experience; since we find among the collectors of observations, but few instances of amputation succeeding, when it was performed while a mortification continued to gain ground, or while the patient was feverish; but a much greater number of successful cases, when amputation was performed late, and when the disease had abated naturally: A variety of examples may be seen in the work of Mr. Schaarschmid[19], which I have already quoted.

It will, perhaps, be objected to me, that I am inconsistent with myself, since I have just proposed one method, and actually follow another; but this objection will vanish, if it be considered in the first place, that if a person has been thus judiciously treated from the beginning, and does not recover, a cure will almost never be effected, after the cruel expedient of amputation. In the second place, that all those who are under a necessity of submitting to this dangerous operation, on account of their having neglected themselves, or having been unskilfully treated, have no reason to complain of the art, or of those who understand it, but of their own negligence, or of the ignorance of those into whose hands they have had the misfortune to fall. And in the third place, that in opposing amputation on the sound parts, and in testifying my abhorrence against the needless pain which accompanies it, I do not at all condemn the amputation of what is absolutely mortified. [Pg 38]

I have however sufficiently expatiated on this point, which ought to be considered before the others, as being more general. I now proceed to examine the accidents that induce surgeons to amputate in order to prevent a mortification. There are some who have carried their precipitation, in this respect, to such a length, as to cut off limbs upon the spot, that have been considerably bruised, before they tried any other remedy: A piece of cruelty I cannot in any shape approve of[20]. [Pg 39]

FOOTNOTES:

[16] Mr. Sharp, to the best of my recollection, was the first who solidly proved the impropriety of operating on the sound part, while the mortification continued to gain ground. This excellent doctrine not being as yet universally acknowledged, it is very much to be wished, that the additional authority of so judicious a surgeon as Mr. Bilguer, may contribute to give it fresh weight, in order to render it general. TISSOT.

[17] I shall transcribe Mr. Bilguer's own words. *Quo quidem loco non possumus, quin observemus, signum illud corruptionis quod a deffectu sensûs desumi solet, per illustris Halleri experimentis, quodam modo incertum redditum esse, quibus quippe evictam periosteorum insensibilitatem esse multi clarioque viri putant. Nostra de his rebus experimenta fere cum Halleri doctrina congruunt, nisi Pericraneum numquam non sensibilissimum deprehendimus.*

[18] See, on this subject, the memoir of M. Haller, on the sensible and irritable parts, T. 1. 4.

[19] Sammlungen, &c. a performance which ought to be generally read.

[20] This practice has also been condemned by others. See the collection of pieces which put in for the prize conferred by the royal academy of surgery. T. 3. p. 490. It is there observed that every amputation performed immediately after the hurt, is generally dangerous in its consequences.

I know that a soldier, who had his arm cut off in the field of battle, after the affair of Prague, died the third or fourth day after the operation.

SECT. XX.

I shall treat at present of large contusions of the limbs, especially of those where the fleshy parts, as well as the bones, are extremely bruised and shattered, as commonly happens, when the hand, the foot, the elbow, the leg, arm or thigh, have been bruised by a large stone, a beam of wood, a cart-wheel, a screw, a press, &c. In such cases, shall the patient get sooner well by amputating or not amputating this shattered limb? I answer, by not amputating; the worst consequences that can be apprehended, is a mortification or an hemorrhage. With regard to the mortification, unless every thing I have hitherto said concerning it be intirely groundless, we ought not to be afraid of it; and it is much easier to prevent than to cure it. With respect to the hemorrhage, it is no doubt to be dreaded, but this dread can be no reason for instantly taking off the limb: To be convinced of this, we need only examine those wounded men who have had an arm or leg carried off by a ball, and the stump so shattered, that the bone has been shivered into several pieces, and the large blood vessels most shockingly torn, who have, notwithstanding, been cured without amputation, and with whom the bleeding has stopt, even without the assistance of a surgeon. Nevertheless, every body knows that contusions of this kind have been hitherto, by most surgeons, accounted a sufficient cause for amputation; and that when the hand or foot have been shattered, they have carried their inhumanity so far, as to take off, not only the leg or fore-arm, but even sometimes above the knee or joint of the elbow. [Pg 40]

Those who follow this method, amputate within a few days of the accident, while the patient is vigorous, and without waiting for the event of any other kind of treatment; for if the patient be weak, old or very ill, even with the consequences of the wound, they do not venture upon the [Pg 41]

operation.

It would however, in my opinion, be much better not only not to take off an arm, a thigh, or a leg, which are unhurt, but even to endeavour to save the foot or hand which are shattered, in obviating, by medicine and diet, as well as by external applications, the accidents that may ensue; and thus prevent a person who has already suffered so severely, from meeting with a treatment still more severe.

It will be asked, if the thing be possible? The following observations will furnish an answer. I publish them with so much the more confidence, as they are known, not only by the patients themselves, but by a great number of the physicians and surgeons of the army. They must be decisive in favour of preserving contused and shattered limbs, in opposition to amputation.

[Pg 42]

SECT. XXI.

When a patient is brought to our military hospitals, who has had his foot, leg, hand or arm shattered by a ball, or any other violent cause, whether the parts are intirely carried off, or adhere by a little flesh and skin, but in such a manner that there is not any hope of a re-union; in this last case, we begin by cutting through these slender attachments which keep the part suspended, and thus intirely separate it from the body. In both cases, when pieces of the extremities of the bones jut out, and may prove hurtful, they must be sawed off with a convenient saw, whether they be moveable or still firmly adhere to the limb: When they are moveable, they must be held by an assistant. I hope no man in this treatment, will pretend to see any thing like what is properly called amputation, which I condemn.

After this first operation, I carefully examine if there be still any small splinters left, and whether they are only held by the fleshy parts, or still adhere to the bone; I remove all those, with the fingers, or with instruments, that can be separated without violence or a fresh effusion of blood. [Pg 43]

After removing as many splinters as I can, I slightly compress the limb between my hands, gently stroking it lengthways, from above downwards, endeavouring, at the same time, to restore, as much as possible, its natural shape; I dress the sore with a digestive, to which I add a little essence of myrrh, or solution of mastic: I cover the whole with dry lint; applying the same bandage as after artificial amputation, sufficiently tight, without, however, running the risque of causing pain or increasing the inflammation: Afterwards I moisten the whole with as much spirit of wine as may penetrate to the parts affected; taking care to keep the limb extended in a right line, and laid soft.

The first days, till the suppuration becomes plentiful, I only dress it once every twenty-four hours, sometimes seldomer; but when the suppuration is begun, I renew the dressings twice a day; and such of them as immediately touch the bone, or fleshy parts of the wound, I cover with lint dipt in solution of mastic, balsam of Fioraventi, or some other balsamic essence, in order, by that means, to prevent too large a suppuration. I likewise remove, each dressing, all the little shivers of bone which do not reunite, and which, though they could not be separated at the first dressing, may in the succeeding ones. [Pg 44]

With respect to the larger fragments, which must form the stump of the bone, I not only take care not to loosen them, but even, as I already remarked, endeavour to promote their coalition, by light compression with the hands, and binding the bandage somewhat tighter than I would otherwise do. If, at the expiration of a month, a fragment of this kind is not coalesced, but on the contrary, is become more loose, without however being intirely so; in that case, by shaking it gently, moving it upwards and downwards, and loosening the fleshy parts that hold it, I endeavour to bring it away intirely. If there are some of them cracked as high as the articulation, I give myself no concern about them, but leave them to nature[21]. But as to the small, short, pointed shivers which do not re-unite with the bone, I take care, as I have already observed, to remove them as soon as possible, commonly in the first seven or eight dressings; and at each dressing, I gently stroke down the muscular flesh towards the end of the stump; I keep the whole firm, by giving a proper degree of tightness to the bandage; moistening it, as long as the dressings are necessary, two or three times a day with spirit of wine. By these means, such kind of patients, at the end of four or five months, are as compleatly cured as the nature of the accidents will admit of. [Pg 45]

[Pg 46]

FOOTNOTES:

[21] Felix Wurz and Gœuey cured, as may be seen in Heister's Surgery, t. 1. p. 183. the longitudinal fissures of the bone, by a suitable dressing, which is mentioned in the same place. If it should happen, what I have never yet had an opportunity of seeing, that the bone was split longitudinally as far as the joint, and that it appeared impossible to procure its coalition by means of proper dressings, I would make, taking care to avoid the blood vessels, two incisions, from the extremity of the stump to the joint, that should go as deep as the bone, and whose distance must depend on the breadth of the splinter to be extracted. I would raise up from the bone the flesh included between the two incisions, with a scalpel or myrtle-leaf, avoiding to hurt the blood vessels as much as possible; then, having detached the splinter, by means of the scalpel, from its adhesion with the ligaments of the joint, I would bring it away.

If the hemorrhage were considerable, before I extracted the bone, I would tie the

vessels of the fleshy part which adhered to it; and after having removed the bone, I would undo the ligatures, restore the flesh to its place, take care of the small wounds made by the needles, and would dress the whole part in the manner already mentioned in this section.

SECT. XXII.

Besides what I have already said, I must further add some other useful remarks.

If the patient, as is generally the case, be weakened by the discharge of blood, his strength must be supported with broths, with herbs boiled in them, and with wine and water. Further, I order him every four hours half a dram of the bark, till the pulse is sufficiently raised, and a laudable suppuration comes on; he may then be allowed some meat, herbs, and food of different kinds of grain; water, acidulated with vinegar or spirit of vitriol, may serve for drink.

When the suppuration is too plentiful, and the wound appears disposed to heal, I purge once or twice with Epsom salt, having previously for a few days administered some absorbent powders. During the day I make him drink a slight decoction of the bark, before and after meals a little strengthening acid elixir; and in the evening, a small dose of bark, mixed with a fourth part of an [Pg 47] absorbent powder[22]. The following is the composition of the strengthening elixir; *Half an ounce of the extract of wormwood; of that of gentian, lesser centaury, green oranges, and buckbean, of each a dram; rectified spirit of wine, four ounces; and spirituous mint water, one ounce: Let the extracts be dissolved in the spirits, over a gentle fire; strain them, then add to the strained liquor, half an ounce of dulcified spirit of nitre, and thirty drops of oil of vitriol*.

FOOTNOTES:

[22] I do not easily comprehend of what service absorbents can be to wounded patients; but it appears obvious to me, that they must impair the efficacy of the acids, which are clearly indicated with respect to the fever, inflammation and gangrene: The only circumstance in which I imagine they can be of use, is, when the stomach, by taking the acids for several days, is a little disordered, which may happen when the patient has been much reduced by the hemorrhage; then a few doses of absorbents would remove this slight inconvenience. Otherwise, I am convinced, by repeated experience, there is no occasion for them, when the bark is joined with acids, as is judiciously done by Mr. Bilguer. TISSOT.

SECT. XXIII.

It sometimes happens that these patients, § XXII. are seized with a fever, it begins with great cold, sometimes even with a chattering of the teeth, which lasts half an hour, an hour, or [Pg 48] sometimes longer, and is succeeded by a gentle heat, which terminates in about three or four hours, in a moderate sweat. The interval lasts two or three hours, at the expiration of which the fit returns; sometimes it is accompanied with a diarrhœa.

The most common causes of these fevers, are either in the first place, a bad digestion when a person has taken too much food, or the food is greasy, indigestible, and subject to putrefaction; or, secondly, a reabsorption of purulent matter, which taints and inflames the blood; or, thirdly, a bad air, such as is very often that of an hospital, notwithstanding all the precautions that can be taken.

It is of consequence immediately to stop this fever, lest it should dissolve and corrupt the blood, and become a putrid fever: If it is not accompanied with a diarrhœa, a vomit of ipecacuan may be given, joined with a few grains of rhubarb: If there is a looseness, the same medicine may be repeated the following morning, and even sometimes the third day. Through the day may be given a little of the strengthening elixir described in the preceding section; and in the evening, [Pg 49] when the patient has had a vomit in the morning, half a dram or two scruples of the following anodyne powder may be administered; *Virginian snakeroot, zedoary, of an eleosaccharum made with the essential oil of fennel, of each two scruples; calcined hartshorn, sixteen grains; cynogloss pills, four and twenty grains*. Afterwards I gave every day some of the strengthening elixir, a compounded powder of the bark, and a strengthening decoction. The powder consists of *two drams of bark, one dram of sal ammoniac, and a dram of an eleosaccharum, made with the essential oil of fennel*. The ingredients for the strengthening decoction are as follow: *The herbs of fluellin, baum and yarrow, of each half an ounce; of that of mint, two drams; chamomile flowers, an ounce; those of red poppy, half an ounce; orange peel, two drams; shavings of sassafras, cassia lignea, carvy seed, of each a dram; bark, four ounces; and Virginian snakeroot, one ounce*. These ingredients must be properly cut small, bruised and mixed together. By the above medicines the fever is commonly relieved[23].

[Pg 50]

FOOTNOTES:

[23] Mr. Bilguer having seen the good effects of this composition, inserts it according to the form he made use of; and without doubt, it is a very efficacious medicine: But it might be

rendered much more simple without imparing its virtues; and simple medicines, in my opinion, are preferable on every occasion, but particularly so in hospitals. TISSOT.

SECT. XXIV.

I have treated hitherto of limbs intirely divided; I shall now examine what ought to be done, when a ball, or any piece of iron or lead, has so greatly injured the bones of the hand, arm, foot or leg, that, although they are not quite broke through, and the part suspended by a small portion of flesh and skin, as in the former case, § XXI. are nevertheless so much shattered that the part may be moved any way, and seems to hang useless. In these circumstances, we must dilate the aperture made by the ball, or by whatever body has inflicted the wound, and separate the flesh from the bone; in a word, we must make the wound sufficiently large, in order to lay the shattered bones bare, especially where they are broken across, that they may be more easily managed by the fingers; then as many splinters as possible must be extracted, as well as the ball and other extraneous bodies. If there be the apertures of two balls, they must both be treated in the same manner: When it is expedient to make counter openings, they may be made [Pg 51] indifferently, whether there be one or two openings, and these artificial wounds must be made sufficiently large, to admit of the extracting of the splinters and other extraneous matters. In other respects, the dressings must be the same as § XXI. Every time they are renewed, the splinters must be extracted as they become loose and can be easily separated; if there be some large fragments which must be removed, we may begin by dividing them from the fleshy parts, then sawing them through with a very small saw, whose blade is extremely thin and narrow, crooked or straight, in order to push it from above downwards, or from below upwards, or sideways, as may be convenient. This method answered so well with me for the bones of the leg and arm, that I have often, in this manner, separated pieces three or four inches in length, and even longer. As for the smaller bones, such as those of the hands or feet, I have divided and extracted them entire, when they were broken and shattered, and sometimes even when they were not.

If a bullet has penetrated into the cavity of a bone, such bone must be laid bare, either on the side by which the bullet has made its way, or on the opposite one; afterwards it must be pierced [Pg 52] with two or three trepans, and the extraneous body, and the shivers of the bone extracted.

If the bullet has made its way into one side of the joint of the elbow or knee, and by that means shattered several bones at one stroke, I treat it in the same manner, dilating the wound and extracting the splinters as before, and the wounds get well like the others.

I cured a patient who had been wounded by a bullet which entered the cavity of the os humeri; he would not consent to have it extracted, which did not however prevent his recovery, nor has he felt any further inconvenience from it than a small protuberance on the place where the ball is still lodged[24].

It will perhaps be asked, if it be possible that a ball should enter the cavity of a bone without splitting or breaking it, as seems to have happened in the case I have just mentioned? and where that circumstance will appear still less feasible, when I affirm, that the bones of this man were [Pg 53] strong, hard and compact; and that on some occasions, fissures and the other accidents of bones, I have been treating of, are often the consequences of slight wounds, as of more considerable ones. But be that as it may, I treat these kinds of wounds in this manner: I dress the bone partly with dry lint, and partly with balsamic essences, and sometimes I throw in injections: I apply a digestive to the fleshy parts, and moisten all the dressings with spirit of wine, as in § XXI. I check the suppuration a little, preserving, as much as possible, the boney fragments which adhere together, so as to leave room to hope for their coalition, sustaining them in their natural position, and covering them again as much as possible with the flesh and skin: If there be any pointed splinters, I endeavour to promote their separation by proper applications, such as the balsamic essences, and different powders, particularly that mentioned § X.

I fix the limb in its natural position, suspending the arm in a sling, or half-cylinder adapted for the purpose. For the leg, I use Mr. Petit's machine, or splints, made of wooden rods covered with straw, and wrapped up in linnen cloth; and in the dressings, my chief aim is to keep them sufficiently tight above and below the wound, to promote the consolidation of the larger pieces of [Pg 54] bone, by keeping them firm in their places, and preventing the re-absorption of pus. The diet and medicines are the same as in § XXII. By this method a very great number of wounded men have been restored to health, in two, three or four months; and some not before the expiration of eight. My observations confirm those of Horstius, who remarks, that a man who has lost a great portion of the tibia and fibula, may nevertheless, after his cure, walk with ease, and halt but very little[25].

FOOTNOTES:

[24] He was a soldier in the guards, and is doing his duty in the field at the very time I write this.

[25] HORSTII *observationes medicæ*, part ii. 1. 4. obs. 10. Mr. de Frengler, captain lieutenant in the regiment of Anhalt Bernbourg, is an instance of a most successful cure of a wound of the leg of this kind. In the sequel of this dissertation may be seen, several striking cases of an extraordinary loss of substance in the bones being again repaired.

SECT. XXV.

Such kind of wounds, however, are not without danger; the patient is not only very liable to be seized with such a fever as I have spoken of § XXIII. but he also runs a risque from the wound itself. It is true, that these two dangers, that attending the fever, and that from the wound, which I shall mention by and bye, are connected, and generally accompany each other. It sometimes [Pg 55] happens of a sudden, and without the patient, or the physicians and surgeons having any suspicion of it, that the wounds dry up, become corrupted, and exhale an infectious stench; the neighbouring parts are very much inflamed for some days, after which the inflammation goes off, leaving a kind of œdematous tumour, which produces an abscess, with a laudable discharge, or degenerates into a malignant sore, without any abscess. Sometimes these sores are beset with swarms of maggots.

The treatment of the fever is the same I have described § XXIII. that of the wound, in this troublesome situation, ought to be to endeavour intirely to remove the inflammation, which readily terminates in suppuration, and forms large cavities full of matter, which must be opened.

A moderate compression of the neighbouring parts, in this case, as in those I have already mentioned, contributes to prevent the reabsorption of the purulent matter. If the inflammation runs high, and the patient is young, it should be moderated by bleeding, and other medicines calculated to check and resolve the inflammatory denseness of the blood[26]. [Pg 56]

If the cause of the inflammation be obvious, it must be removed; thus every pointed splinter of a bone must be separated with a knife or saw; whatever occasions a compression must be taken away, and if there be any fibrous part causing too great a stricture, it must be cut through, dilating the wound by incisions of a convenient depth.

The dryness and putrefaction of the wound, may be remedied by dressing it with the powder composed of sal ammoniac and camphor, mentioned § X. and by moistening it afterwards with oil of turpentine; or, I cause the wounds, both the original ones, and those made by the surgeon, to [Pg 57] be dressed with pledgets, dipt in a balsam composed of *four ounces spirit of wine, half an ounce spirit of turpentine, and three drams spirit of sal ammoniac*: Afterwards, having first applied the dressings very thin, the parts must be constantly fomented with some of the compositions mentioned § XXI.

The maggots may be destroyed, by frequently shifting the bandages, linnen, cloaths, and coverings of the bed; by the application of the balsams I have already spoken of, which destroy these insects and prevent putrefaction; by constantly keeping on the bed-clothes, a linnen cloth dipt in tincture of aloes or vitriol. But care must be taken that the tincture of aloes does not touch the affected limb, much less the sores themselves, lest part of it should be absorbed, and occasion a diarrhæa; although in other respects aloes powerfully resists putrefaction, and is sometimes a useful vulnerary.

FOOTNOTES:

[26] At present, since we know that pus is only a corruption of the crassamentum of the blood, it is easier, perhaps, than formerly, to explain why an inflammatory denseness of the blood terminates sometimes in an abscess, and at other times in a compleat recovery without one. Dr. Pringle, to whom we are indebted for so many useful discoveries, which have thrown a new light on the theory and practice of physic, was the first who pointed out the true manner in which pus was formed, concerning which so many conjectures had been made; and Mr. Gaber has demonstrated it very particularly by a number of very curious experiments. TISSOT.

SECT. XXVI.

I have had under my care, during the course of this late bloody war, a great number of wounded limbs, torn and shattered by cannon and musket balls, by the bursting of bomb-shells [Pg 58] and grenades, by grape-shot, &c. I cured them without ever performing amputation, by the method described in the two preceding sections, although there were bones broken and shattered, large blood vessels divided, the flesh miserably lacerated, and limbs carried off in the manner I have described § XXI. Others, such as I have described § XXIV. in which the bones were split up as high as the articulation; all which circumstances might make us reasonably apprehend a tedious and difficult cure, too plentiful a suppuration, hemorrhages, violent inflammation, excessive corruption, mortification and death.

It will perhaps be asked me, Of those men so terribly wounded, whom you attempted to cure without the means of amputation, did none die? I shall return an answer by and bye. It will be further objected to me, that I have not taken notice of the os humeri, or the thigh bone being shattered; and it will be asked me, What must be done in cases where either of these bones are fissured as far as their upper extremities, in such a manner that we cannot hope to procure their coalition by means of any bandage? And finally, it will be remarked, I have not mentioned the wounding the brachial or crural arteries, or the large branches of these which pass between the [Pg 59] radius and ulna, or tibia and fibula, called in both parts the inter-osseous arteries, whether these wounds be accompanied with a fracture of the bones, or otherwise. I shall reply to these two last objections, after having answered the first question in the following section.

SECT. XXVII.

I had at one time, during the war, in a military hospital, six thousand six hundred and eighteen wounded patients, who were all treated according to my direction, and part of whom I attended myself; of these, five thousand five hundred and fifty-seven were perfectly cured, and in a condition to support all the fatigues of the service; a hundred and ninety-five were able to do duty in garrison, what they call half-invalides[27], or to work at any trade; two hundred and thirteen remained incapable of any labour, civil or military, what they call grand invalides[28]; and six hundred and fifty-three died.

[Pg 60]

These hundred and ninety-five half-invalides, and the two hundred and thirteen grand invalides, in all, four hundred and eight, were of the number of those who had their bones bruised, broken and shattered; of those, in a word, whose wounds were called complicated and dangerous[29]: For it is well known that with us, a man is not put on the list of invalides for a wound of the head, or of the fleshy parts; if, after wounds of this kind are healed up, there remains any weakness, stiffness, or tension of the part, we employ various medicines, both internal and external, ointments, liniments, fomentations, warm baths, by means of which they are commonly compleatly cured.

Let us at present suppose, that of the six hundred and fifty-three who died, no more than two hundred and forty-five died from the consequences either of a violent concussion, from wounds of the head, thorax, lower belly or spine; from a complicated fracture of the os femoris, or from putrid fevers, fluxes and other inward diseases, which often happen in military hospitals, even in cases of slight wounds, from the bad air which is breathed there; there will remain four hundred and eight, who may have died from the consequences of wounds with shattered bones; and this number is equal to that of those who were cured without amputation, although their wounds had been of the same kind[30]. If, after making these calculations, we compare them with the prodigious number of wounded men, who, at the beginning of the war, had their limbs taken off on account of dangerous wounds, of whom scarce one or two escaped with their lives; we may very safely conclude, that much the greater part of those four hundred and eight men cured and sent to the invalides, would have died if amputation had been performed on them, and this mocking artificial wound added to what they had already received. It would be trifling to pretend that amputation would have saved a great many of those who died, had it been timeously and properly performed[31].

[Pg 61]

Further, if it be considered, that many of those who died, might have recovered, had they been taken care of any where else than in an hospital, where the air is very bad; and if it be called to mind at the same time, what some very eminent surgeons have observed, that two thirds of those die who have their limbs cut off[32], I hope it will be readily acknowledged, that my method of treating wounded limbs, by saving them, is highly preferable to that of amputation.

[Pg 62]

[Pg 63]

FOOTNOTES:

[27] *Halbe Invaliden.*

[28] *Ganze Invaliden.*

[29] *Schwerfracturirte.*

[30] It is obvious that Mr. Bilguer has not made his calculations in so favourable a manner for himself, as he might have done; I am persuaded that in 6618 wounded men, a much greater number than 245 must have died from the consequences of concussion, large flesh wounds, fevers, fluxes, and other diseases, owing to a bad habit, bad air, the season of the year, &c. TISSOT.

[31] Such a pretence would in effect be absurd: The reasoning would amount to this; it is demonstrated that the danger arising from amputation, joined to that attending wounds of themselves curable, has killed a great many patients; therefore the danger arising from this operation, joined to that attending wounds which have proved incurable, would have saved a great many patients: Only the most blinded obstinacy could reason in such a manner. TISSOT.

[32] See the memoirs of the Academy of Surgery, t. 2. p. 256. where Mr. Boucher, in speaking of gunshot wounds, with the bone shattered near the articulation, shews that amputation commonly proves fatal, and that of three patients on whom it is performed, generally two die; whereas out of an hundred and sixty-five who had had the bones shattered, on whom amputation had not been performed, not one died. A degree of success which he ascribes, it must be owned, to the management of the surgeon; who, instead of spirituous applications, only made use of emollients, light digestives and anodynes.

SECT. XXVIII.

Finally, I must add, that the greater number of those who died in our hospitals, in consequence of wounded limbs, were of those who had the os femoris shattered near its upper articulation; and as we are not at present acquainted with any means of relieving that accident; and as it has not as yet been attempted to amputate at that part, if we deduct these cases from the number mentioned in the preceding section who died, we shall see that the number of those whose lives

were saved without amputation, considerably exceeds that of those who died. Since wounds near the superior part of the thigh bone, or shoulder, where the bones are shattered, ought always to be looked on as desperate.

SECT. XXIX.

With respect to the os femoris, I do not know that any person hitherto has attempted to amputate it at its upper extremity with success: The arm has been successfully taken off at the shoulder, though but very rarely[33]. Every body knows that the most able surgeons only allow of [Pg 64] the amputation of the thigh at its lower part, a little above the knee; but even supposing it could be safely taken off in the middle, when the bone is neither shattered, nor fissured higher up, the [Pg 65] operation will prove useless when it is done, as has so often been the case with our wounded men.

The difficulty attending the amputation of the upper parts of the thigh, is so considerable, that surgeons rather chuse to abandon to their fate those wounded men where it appears necessary, than to undertake it; and I own I am of the same opinion with them. If, nevertheless, a case occured, wherein the death of the patient appeared certain if amputation was not performed, and if the operation could afford any hope, I would even prefer taking the limb off at the articulation, rather than at any other place; for although it be extremely difficult, it prevents, at least, the inconveniences and accidents which a stump might occasion[34].

But as there can be no necessity for this operation, but in consequence of the large arteries [Pg 66] being wounded, by following the method I shall point out § XXXV. it will be rendered unnecessary, and disputes concerning it may be laid aside: For it is very certain, that the most dangerous accidents even of this part, may be remedied, like those in other parts, by joining to the method of treatment I have already mentioned, the operation I shall describe § XXXV. providing it be performed in time, before the patient be exhausted, and almost dying, from the effects of the hurt being too long left to itself. But the apprehension which patients have of the pain which deep incisions into the fleshy parts would occasion, prevents extracting the pieces of bone which compress or irritate the parts around; as also from cutting through the membranes that are overstretched, and cause a constriction; from giving a vent to impacted matter, and from conveying the medicines to the parts where they ought to be applied. The consequence of all this is, that the proper remedies are applied too late, and the patient sinks under the pressure of the [Pg 67] accident.

But if nature were even able to get the better of these difficulties, there are others to which our[35] wounded men are subject, lodged together in too great number in military hospitals, where the state of wounds is rendered worse by a concurrence of several causes, and the cure of those of the most simple kind is retarded. The principal of these causes are want of cleanliness, an improper regimen, inconvenient beds, a continual noise, which hinders sleep, bad air, frequent removals from one place to another, and conducted in an inconvenient manner; these circumstances greatly contribute to make the instances of people recovering who are severely wounded near the upper part of the thigh, where the bone is shattered, so uncommon. But if any should pretend to say that there are none cured by the method described § XXXV. I shall only, in answer, produce the invalide soldiers themselves, who are at present, some in the country, others in the hospitals, whose recovery demonstrates the contrary. I acknowledge that this method is [Pg 68] difficult and tedious, and that more die than recover; these, however, are not sufficient reasons for declaiming against, or intirely condemning it, as it is the only expedient left, amputation at the shoulder, or upper part of the thigh, being an operation not only difficult, but highly precarious.

FOOTNOTES:

[33] M. Morand, the father, was the first who took off the arm at the joint of the shoulder. Mr. Le Dran performed it soon after in the presence of the most eminent surgeons of Paris, Messieurs Petit, Marechal, La Peyronie, Arnaud, &c. which number of witnesses, making his operation more extensively known, that of Morand has, as it were, been forgotten, and Mr. Le Dran has passed for having been the inventor. Mr. Bromfield performed it successfully within these few years at London; but notwithstanding a few cases whose event has been favourable, it is a very dangerous operation, and has sometimes miscarried. Dr. Home, an eminent physician at Edinburgh, equally a promoter of agriculture, medicine, and the arts, relates, that in the former war, he saw Mr. Mitchel perform the operation on two soldiers, where the os humeri was fractured as high as the joint, and who both died a few days after: It is true, he remarks that they were both in a bad way when the amputation was performed; but he adds, that this operation appears extremely dangerous, even when performed with every favourable circumstance. *Medical facts and experiments, p. 114*. With respect to the thigh, there is little room to hope that the struggle that is made to determine, when and how it should be taken off at the articulation, can be attended with the success which some people seem to expect from it. If such an operation should take place, it will perhaps very soon be asked, whether it ought not to be publicly condemned? Tissot.

[34] I am of opinion, that if one had the misfortune of being reduced to the necessity of chusing between amputating at the upper part of the thigh, or at the articulation itself, one reason for prefering the latter, would be the greater ease there is in stopping the hemorrhage of the crural artery.

A surgeon and anatomist, who has been in repute, observes, *That an hemorrhage of the crural artery is what is chiefly to be dreaded, but the operation requires too short a time, for such an hemorrhage to be fatal*. It is surprizing to see him mention this operation as one that is very familiar; I make this remark, because, as he is not the only person who may allow himself to talk in this manner, a bold pretender to the art, on reading such a passage, might undertake an operation as easy and common, which has never yet been performed. TISSOT.

[35] What Mr. Bilguer says with respect to the wounded Prussians, is but too applicable to those of every army.

SECT. XXX.

I ought now to say something concerning a contusion, or echymosis; I shall confine my remarks particularly to that kind where there is a great quantity of extravasated fluid diffused under the skin, such as we often see, when a ball, without breaking the skin, injures it to such a degree, that it looks like a mortified eschar, and at the same time dislocates, fractures, or shatters the bones belonging to the part. When a surgeon meets with a contusion of this kind, the treatment is not greatly different from that recommended in a mortification; for the skin must be treated exactly like a mortified slough, must be laid open by several deep incisions, dressed with the powder mentioned § X. covered with a digestive ointment mixed with a little essence of myrrh, and the part affected, as well as all around it, kept constantly bathed with emollient fomentations, without any ingredient, either stimulating or astringent. With regard to the [Pg 69] shattered bones, the same method may be followed as in § XX. If any of them are luxated, they must be reduced, without, however, confining them by the bandages used in ordinary luxations, and which, in this case, would make the necessary incisions uneasy, would prevent the gangrenous sloughs from casting off, and hinder the formation of pus: It is therefore sufficient, after having replaced the bone, to let it remain quite undisturbed; and when the corrupted slough is come off, the sore may be dressed like wounds of the fleshy parts.

SECT. XXXI.

Some imagine that these violent contusions, accompanied with fractures, require amputation, as the properest method of cure[36]. I shall mention, what seems to me strongly against this opinion. In the first place we must reflect, that the danger of dying, in these cases, does not arise solely from the fluids extravasated in the contused part, but from the violent concussion, which [Pg 70] gives a shock, and occasions a general compression of the vessels over all the body, especially the internal ones[37]; and from the vessels being compressed, obstructed or ruptured, proceed [Pg 71] extravasation, inflammation and suppuration.

This commotion of the whole body, depends on the external air, which being compressed, [Pg 72] condensed, and rapidly pushed on by a ball, moving with vast velocity, acts on the body with greater force, and causes a more violent contusion, than any other substance, even the heaviest has ever done. From thence proceed contusions of the viscera, spitting and vomiting of blood, oppression, cough, pains, inflammations and suppurations internally, a fever, and other complaints which happen after contusions, seemingly slight, and confined to some particular part, but which are, in fact, the consequences of this general, and what may be called invisible, [Pg 73] contusion of the whole body[38].

The amputation of the limb does not remedy those accidents; on the contrary, it increases them, by means of the dread the patient feels at the thoughts of amputation, and by the excruciating pain which attends it; thus accelerating that death it was meant to prevent. I therefore boldly affirm, that amputation cannot be of service in those cases, wherein the nature of the parts and the state they are in, forbid it; that in many, it is hurtful, and hastens death; and that in others, even where the patient recovers, it is likewise improper, if he could be cured and the limb preserved; a surgeon is unpardonable who employs it in such a case. [Pg 74]

FOOTNOTES:

[36] Can it be called curing a limb to take it off altogether?

[37] It has been known long since, that this concussion, or what may be called a general contusion, is one of the principal causes of the danger arising from gunshot wounds, and more or less from those of all kinds of fire arms; but at present I do not recollect to have seen the mechanism of this effect so well explained as in this performance. The rapidity with which the air strikes, compensates what it wants in density: Those who love to reduce every thing to calculation, will be able exactly to determine this effect by the rule of proportion: Supposing on one hand, a stream of air, which has acquired, by the motion of the ball, a given velocity, and which acts upon a man with this degree of velocity; supposing on the other hand, a man falling upon a floor, likewise with a given degree of velocity, the effect will be equal, if the velocity of air, is to the man who falls, as the density of the board is to that of the air; or, more briefly, if the contusing bodies be in an inverse ratio of their densities. I am even induced to believe, that when the velocity is augmented to a certain degree, its effect is augmented in a greater proportion than its increase; or, to speak algebraically, that its effects ought to be expressed by some

quality of its degrees; thus the effect of a velocity of 150 degrees, would be to the effect of a velocity of 125, not as 150 : 125 or as 6 : 5 but as the square, or perhaps some other quality of 150, to the square or the correspondent quality of 125.

There are physical reasons that induce us to believe that the case is so, and there are several observations which seem to confirm it. Those who have served in time of war, have all been witnesses of some singular instance or other of the effects of the percussion of the air; there are instances of people killed on the field, without being touched by the ball. I was told by officers, men of veracity, that at the battle of Fontanoy, a ball broke the thigh bone of a soldier in the Dutch army, without touching him; another saw a man who was rendered paralytic on one side, by a ball whizing past him. Curious observers know, that nothing so greatly fatigues an army as a high wind, even the centinels are tired, without marching; the reason is, that a high wind occasions a kind of general contusion, which of course produces weariness. I do not know but some of the effects of lightening may be imputed to the same cause. I shall add nothing to what Mr. Bilguer says concerning the effects of a contusion; he is sufficiently explicit on this head; and as I have already treated the subject pretty largely in my book termed *Advice to the People*, I shall only observe, that in the wounds made by musket-ball, the effect of the general concussion is not very considerable, but the danger, in such cases, proceeds from the topical contusion accompanying the wound, the small quantity of blood commonly discharged from it; and lastly, as Mr. Le Dran remarks, because the instant a man receives a gunshot wound, he is struck with a sudden dread he cannot possibly resist. There seems to me to be three reasons for this dread, of which even the wounded person himself is not altogether conscious; in the first place, the idea that gunshot wounds are dangerous; secondly, because the degree of the hurt is not known; thirdly, the instantaneous effect of the concussion, which renders a man much more susceptible of fear. There is a point of time when courage is useless. I shall beg leave, in this place, to insert a case I had from the eye-witnesses, and which demonstrates the bad effect of apprehension on wounded patients. Two officers, in the service of France, were wounded in the last campaign but one; one of them very dangerously, the other, who had been a prisoner a little time before, and had been extremely ill used, but very slightly; they were carried to the same place, and lodged in the same apartment; the first expected to die, but nevertheless recovered in a short time; the second hoped to be cured very quickly, and his wound, a superficial one in the leg, did not discover the least sign of danger. The place they were in was surprized, and they were informed they were made prisoners; the idea of what he had suffered, made so strong an impression on the latter, that he instantly found himself indisposed; the following dressing the wound appeared mortified, every remedy proved useless, and he died in a few days. TISSOT.

[38] The troublesome symptoms which I have here enumerated, happen seldomer when the limb is entirely carried off by the ball, although the concussion caused by the compression of the air must be greater in this case, than when the ball has only grazed; a circumstance which might induce one to call in question the justness of my remarks in this section. But these doubts will vanish, when we reflect, that in a contusion there is no discharge of blood, whereas it is very considerable in cases where the limb is intirely carried off; and thus, the remedy is here a consequence of the accident itself, since this hemorrhage effects what we would wish to effect by artificial bleeding; in contusions, where there is no discharge of blood, it removes obstructions, and disperses the extravasated humours, which are the consequences of concussion.

SECT. XXXII.

As I object to the amputation of contused limbs, it is reasonable I should point out the method of treating such contusions: I prevent the troublesome symptoms they produce, or disperse them if they have already appeared, by frequent bleedings, and by the exhibition of such medicines as attenuate the blood, resolve what is too gross, remove what is obstructed, and render fit to be reabsorbed what is extravasated. I join with them such as, by gently evacuating by stool, unload the vessels; and I afterwards give such things as brace up the fibres, and restore the natural crasis of the blood.

I have found no medicine more effectual to attenuate the blood, and resist the febrile disposition, than a powder, consisting of nitre, Epsom salt, cream of tartar, and true Armenian bole[39].

[Pg 75]

FOOTNOTES:

[39] I have not experienced a better medicine in such cases, than the plentiful use of oxymel. TISSOT.

SECT. XXXIII.

The external applications for a contused limb should vary, according to circumstances, or according as the contusion has caused a mortified slough, or has not. If it has not, but nevertheless the bone is fractured, the applications should be of a very mild nature. In such a case I make no incisions, but I endeavour to bring the two ends of the bone together, to place them in their natural position, and to keep them in it, by means of compresses and bandages, as in the common simple fractures: I constantly stupe the whole dressings with discutient and

vulnerary fomentations[40], and exactly follow the plan laid down § XIV. by which means I have almost always happily cured contusions of this kind.

If the contusion has caused a mortified slough, and has at the same time shattered the bone, we must begin by separating the dead slough from the sound parts, with a scalpel; we must make deep incisions, and neglect no means proper for promoting the discussion or suppuration; and [Pg 76] the fracture of the bone must be treated agreeably to the method recommended § XXIV. This case requires great vigilance in the care of it, and we find ourselves amply recompensed for our labour, by the pleasure of accomplishing the cure of these unfortunate patients, either compleat, or at least as much so, as can possibly be obtained in their situation.

There is at present at the hospital at Torgau, a soldier who had been grievously wounded; the shoulder and arm were very bad, from the extravasation the contusion had occasioned; the scapula and clavicle were entirely shattered; the head of the os humeri dislodged from the glenoid cavity, and pushed downwards; the ligaments having been too violently stretched, now hung loose; and the neighbouring parts, deeply bruised, were covered with a black slough, like a mortification. The contusion and double fracture of the shoulder blade and clavicle are compleatly cured, the head of the os humeri never could be kept in its articulation, on account of the relaxation of the ligaments; the other symptoms are happily removed, but he has a cough, and almost constant fever, with its concomitant symptoms; whence we may conclude that matter [Pg 77] is formed in some bowel, probably in the lungs, a consequence resulting from the contusion of the internal parts.

FOOTNOTES:

[40] An infusion of water-germander, and yarrow in water, with the addition of about a sixth or eighth of vinegar, is one of the most proper fomentations in such cases. TISSOT.

SECT. XXXIV.

Every one will easily conceive, that this method of curing limbs that are wounded, fractured and shattered by gun-shot, such as I have been hitherto describing, is accompanied with a great deal of pain, and with murmurs and impatience on the part of the sick; that it requires a very judicious surgeon, and gives him abundance of trouble, care and anxiety; besides, I do not pretend that every patient was saved by it: The following lines are applicable on the occasion:

Non est in medico semper relevetur ut æger,
Interdum docta plus valet arte malum.

But as they are oftener applicable with respect to amputation, the expediency of the method I have recommended, stands nevertheless on a solid foundation. To alleviate the pains and sooth the murmurs of the sick, we must flatter them with hope; as for the wounds made by the incisions, they are commonly necessary at a time when they do not think of complaining or [Pg 78] opposing them, and they are much less severe than the horrible gash made by amputation. The objections arising from the difficulty attending this method are happily removed in our hospitals, by the care and humane vigilance which Frederick the Great has exerted to provide his victorious armies with surgeons capable of putting it in practice.

SECT. XXXV.

I shall here add that with regard to those who have had the thigh or arm carried off by a cannon ball, I do not recollect that any of the first have been brought to our hospital; they doubtless died instantly in the field of battle, in consequence of the hemorrhage. Several of those who had the arm carried off were brought, but the camp surgeons had previously stopt the bleeding, and applied the dressings commonly used after amputation, and we cured them afterwards by the method mentioned in § XXXI. The men wounded in this manner afford me an opportunity of inserting in this place, what I had to say with respect to the necessity of amputation in consequence of an hemorrhage; but I shall be very brief, as in these times, when surgery makes such progress, there is no artist but knows, and is familiarly acquainted with the [Pg 79] different methods of stopping a bleeding. Therefore, although the interosseous, the brachial and crural arteries, near the articulations of the elbow or knee, or any other branches of arteries when divided, may give the surgeon a good deal of trouble, he is not obliged on that account to take off the limb; for in whatever situation we suppose the artery to be injured, the surgeon may always, by proper dilations, come at the wound, and stop the bleeding by the application of astringents, among which agaric and spirit of turpentine has, with us, very often succeeded, or by compression or ligatures, or lastly by all these means united; thus amputation ought never to be performed on account of an hemorrhage. It is even astonishing to conceive how surgeons should think of such an expedient, as frequently the difficulty of stopping the bleeding after amputation is greater than on any other occasion, especially if it be performed below the knee[41]. I therefore persist in my opinion, whether the wound of the arteries be only accompanied with one in the soft parts, or whether at the same time the bone be fractured or shattered: In this last case, I should join the treatment mentioned in this section to that of § XXIV.

It will here perhaps be objected, that all these means would be to no purpose, if the brachial or [Pg 80]

crural arteries are wounded at a certain height, because, in such a case, the limb must waste away for want of nourishment. I shall return an answer in a few words, with respect to the crural artery at the upper part of the thigh, which is, that whether my method can, or cannot be adopted in this case, there is no alternative; no surgeon as far as I know having ventured to perform amputation at this part, because every body would dread the patient's expiring during the operation[42]: Neither would the wounds of the brachial artery induce me to take off the arm at its upper part, although it be practicable, because I think every expedient is to be tried before we have recourse to this; and as from several cases we learn, that after the operation for the [Pg 81] aneurism the member has recovered its heat, motion, and strength[43], even when the trunk of the brachial artery has been cut through; I think when it is wounded, we ought to tie it without fear, and afterwards provide for the preservation of the limb, by aperient spirituous fomentations and by gentle frictions, which contribute to open and enlarge the small vessels, and by that means to restore heat and life to the parts[44]. [Pg 82] If we observe, the first or second day after the operation, a little swelling or heat below the wound, we may conceive great hopes that the whole limb will revive: If, on the contrary, whatever is below the wound shrivels, grows cold and dry, then we may think of amputation, without, however, being precipitate; as a mortification in this case is always slow, and sometimes the limb recovers heat and motion very late. But I am convinced this case will very rarely require amputation. [Pg 83] In conformity to the plan I have proposed, I should now mention the two last circumstances wherein amputation is deemed necessary, a caries of the bone, and a cancerous disposition of the part; but I imagine it will be better first to relate some instances of cures effected without amputation, wherein this operation to many surgeons would have appeared indispensable.

[Pg 84] The first case I shall relate is very remarkable, of a soldier in his royal highness prince Henry's regiment, whom my friend M. Kretchmer, an able artist, and principal surgeon of the hospital, and Mr. Sterneman one of the ordinary surgeons, had the care of under my direction, and cured compleatly to the surprize of every body. The left arm was terribly shattered by four different pieces of iron shot, the os humeri was broke through the middle, and the arm pierced with eight holes, and at the joint of the elbow there was a true aneurism, of the bigness of a large fist. Mr. Kretchmer began by applying the tourniquet at the armpit in order to stop the bleeding; then of the eight wounds or apertures, he chose two nearest to the fracture, and dilated them in such a manner as to lay the bone bare; he likewise dilated a little the six others; after these dilatations he extracted several large splinters, he then brought the two ends of the bone together, placed them in their proper position, in which he made them be kept by assistants, while he moistened all the wounds with equal parts of spirit of wine and arquebusade water, and covered them with lint; he wrapped up the whole arm in linnen cloth, and fastened the bandage moderately tight: he next applied gradual compresses to the aneurism, and bound it up with a roller by itself; after which he moistened the whole with the same mixture of spirit of wine and arquebusade water, and as much martial ball as he could dissolve in it, and applied over the bandage for the [Pg 85] aneurism the fomentation which I have already mentioned, made with the species for the black decoction[45]. He slackened the tourniquet every two hours, drawing it tight again immediately; he removed it altogether at the end of a few days, contenting himself with compressing the artery under the armpit with bolsters and a bandage which did not hinder the dressing of the wounds. He dressed them every day, but the bandage for the aneurism he renewed only every other day, although two of the openings lay under it. In this manner he persevered with great assiduity for a considerable time. All this while he made the hand and fore arm be secured in a cylinder of strong pasteboard, and suspended in a sling. He bled the patient frequently, gave him vinegar and water for his drink, and made him take from time to time the powders which I mentioned before, consisting of nitre, Epsom salt, cream of tartar, and true Armenian bole[46]. By these means only, he restored this arm, which was so bad that it could not even be taken off, to such a [Pg 86] state, that in the course of three months, after having removed some splinters, the aneurism was dispersed, and the fracture and wounds were perfectly cured.

We cured another soldier belonging to the regiment of Brandenburgh Bareith, whose elbow was miserably torn by five pieces of iron shot, some of which stuck fast in the part, and where both bones of the fore arm were shattered.

After having dilated the wounds, we extracted some splinters, sawed off a piece of the cubital bone about four inches long, and in dressing the wounds endeavoured to avoid too large a suppuration.

[Pg 87] In the ordinary method amputation would certainly have been performed, as the fore-arm was shattered, and the upper arm which was untouched could admit of the operation, but we saved the arm and made a perfect cure without having recourse to such an expedient, which are so many evidences that give their testimony in favour of our method, which we can produce to the partisans of amputation.

M. de Sass, colonel commandant of a regiment belonging to the garrison of Lattorf, and who is at present commandant at Brieg, received at the battle fought near Czeslau, a musket shot in the leg, which shivered the two bones into several fragments, of which some of four or five inches in length were extracted. The surgeons thought amputation necessary, and pressed him to submit to it; he refused however and recovered; although the limb is bent outwards he can walk and go about his business with ease.

A soldier of the regiment of Cuirassiers of Gessler, called Lukrafka, was wounded in the going through the exercise with the regiment, in such a manner that the two bones were fractured in the middle, with several fissures lengthways. After having laid the fissures of the bone bare, I

sawed through a piece of the tibia about five inches in length, which I removed together with the marrow; I separated with a pair of forceps the useless parts of the fibula which jutted out, then I placed the bones in their natural position, and at the expiration of four months the patient was cured. This limb was somewhat shorter than the other, he could nevertheless walk and leap with ease. [Pg 88]

M. de Franckenberg, a captain in Hulsen's regiment of foot, was terribly wounded by a musket ball at the battle of Loboschitz; all the bones of the tarsus were broke and shattered in such a manner that it seemed almost necessary to take away the whole number; which being done, and the parts of the foot brought close together, it recovered so far that this gallant officer, with the help of a double heel, can walk conveniently, and is able to do duty along with his regiment in garrison at Alt-Sydow.

M. de Alvensleben, ensign in the guards, received at Torgau a wound above the foot which shattered the tibia and fibula, and the splinters forced by the violence of the shot formed three distinct layers; I was obliged to make a great many deep incisions, and in a little time he was so much better, that I could venture to entrust the remainder of the cure to the surgeon of the regiment. A soldier of Sybourg's regiment of foot, named Mieke, seventy years of age, received near Miessen in 1759, a musket shot which shattered the shoulder bone two fingers breadth below the articulation; a splinter was taken out five inches long; he was nevertheless perfectly cured at the end of nine months, and left Wittemberg to go to the hospital of Invalids at Berlin. [Pg 89]

M. de Stabenwol, captain lieutenant of Grabow's regiment of foot, at the battle of Kunnersdorf, received a musket shot which shattered the head of the os humeri close to its articulation with the scapula; he was perfectly cured in the space of eight months, and went from Stettin to Berlin[47].

M. de Rottkirk, commandant of the margrave Charles's regiment, and M. de Krockow, captain in Schlabrendorf's regiment of Cuirassiers, received each of them a wound through the joint of the shoulder, and were both compleatly cured at the expiration of about ten months. [Pg 90]

M. de Britzke, commandant of Knobloch's regiment of foot, was wounded, near Dresden, by a musket ball which pierced the articulation at the elbow, and shattered the three bones which join at that place. Several splinters were extracted; this officer nevertheless in about two years was compleatly cured, and at present does his duty gloriously at the head of his regiment.

I shall finish the account of these cases with that of a prince wounded at the battle of Kunnersdorf. A musket ball wounded him very badly, passing through his foot at the articulation of the tarsus and metatarsus in such a manner, that all the metatarsal bones excepting one were shattered. Proper incisions and the other remedies already mentioned effected his cure, and restored him to the nation and the army to their great joy, although the wound was of that kind, for which surgeons were accustomed to amputate not above fifty years ago[48]. [Pg 91]

FOOTNOTES:

[41] Memoirs of the Academy of Sciences at Paris, for the year 1732.

[42] I have not yet read the Dissertation on this subject, which obtained the prize from the royal Academy of Surgery; but by persons arrived from Paris, I have been informed, that the author carried a dog with him to the Academy, whose thigh he had cut off at the articulation.

Note by Tissot. There must be a mistake in this place, since the writers of these pieces for the prize never make themselves known. Not that I make any doubt of the possibility of taking off the thigh of a dog, but I don't apprehend that such a fact can be at all conclusive with respect to the same operation on the human species.

[43] See Heister's Surgery, t. i. part i. ch. 13. Edinburgh Medical Essays, vol. ii. art. 15. vol. v. art. 17. The Promptuar. Hamburg. and the Collections of Breslau, in several places.

[44] Anatomy, observations in surgery, and the opening of dead bodies, concur to establish Mr. Bilguer's opinion.

The anatomical proofs are drawn from the inspection of the arteries. I am persuaded, that unless the crural artery is wounded almost at its egress from the arch formed by the tendons of the abdominal muscles, where it loses the name of iliac, its being destroyed will very seldom occasion the loss of the limb; besides three small branches which it sends off almost at its egress, and on which, I own, should have no great reliance, for the nourishment of so large a limb, both on account of their smallness and their distribution, at about two or three inches distance from the artery, it sends off other branches much more considerable, among others, two called the muscular arteries, especially the external one, descends pretty large down the thigh, and very evidently contributes to the nourishment of the muscular parts; although their trunks have not been traced so far as the leg, I make no doubt but it may be discovered that their branches reach that part, and which, though scarcely visible in their natural state, would not fail to become larger, when the blood was thrown into them in greater abundance; besides, the anastomosis of any considerable branch with the trunk of the crural artery, conveys so much blood to it, that it may again become useful: Experience demonstrates that this happens in the arm, and it is highly probable that the same thing may take place in the thigh; the number of branches which spring from the brachial artery, almost from its beginning, and their distribution being very analogous to what we see in the crural artery.

The surgical observations which demonstrate the recovery of heat in the parts after the operation for the aneurism, although the brachial artery has been tied very high, are

common, and may be found among other observators besides those quoted by Mr. Bilguer, and there are doubtless few physicians or surgeons who have not had opportunities of seeing such cases themselves.

It is a sight extremely interesting, to observe the gradual return of heat, strength and colour, to an arm on which the operation for the aneurism has been performed. I do not know that this operation was ever performed in the thigh, the artery being so guarded in this part, that an aneurism rarely forms here. I have seen the operation succeed very well in the inferior part of the leg, on the tibialis anterior, and the foot suffered but very little for a few days; it is true it is supplied with several other branches.

Some curious dissections of dead bodies afford a third argument, as the crural artery has been found quite obliterated in the upper part of the thigh, in consequence of a morbid cause, without the leg having been deprived of its nourishment, though supplied perhaps more imperfectly.

Warm water baths, in these cases where the circulation is to be promoted through the smaller vessels, and their diameters enlarged, are among the most efficacious remedies. TISSOT.

[45] See § XIII.

[46] § XXXII. It is long since the bolar earths have had the reputation of being useful in contusions, but this I am afraid is founded on a mistake; I have never, in any case, experienced the least effect from them that could induce me to think they possessed the virtues ascribed to them. True bole armenic might prove somewhat astringent in the first passages, but could not do any service in this way; or might suffer perhaps a small portion of the vitriolic acid it contains, to disengage itself; but four or five drops of the spirit of sulphur, would be more useful in this respect than a dose of the bole: Thus I am almost convinced it is of very little benefit in this composition, and if of any, it must be by blunting the action of the neutral salts, and preventing the uneasiness they sometimes occasion to persons of delicate stomachs. TISSOT.

[47] I have seen an officer, a captain in the French service, who received a musket shot, with the muzzle of the piece close to the part; the ball shattered the humeral bone near its head, close to the articulation: had the wound been somewhat lower, that is less dangerous, his arm would have been taken off; the impossibility, or the difficulty of the operation prevented it; he suffered all the inconveniencies that a wound can occasion, for a considerable time several splinters were extracted, at length at the end of five months he was cured. This case appears to me of consequence, because here we see a very bad wound of that kind for which amputation is performed every day, and the danger aggravated by the nature of the part where it is inflicted, where they do not amputate, because it cannot be done, yet it was cured. If this officer had been so fortunate as to be wounded a few inches lower, he would have had the misfortune of having his arm taken off. TISSOT.

[48] *Fifty years*, a compliment which Mr. Bilguer pays surgeons of a more modern date.

M. le Conte de B... a general officer in the Austrian service, received a wound much of the same kind, at Hochirken, and had the good fortune to be compleatly cured by M. Brunet, without amputation, which appeared indispensably necessary. He only continued a little weak, which in a man of his age and constitution generally goes off of itself: He was advised to go to the baths at Baden in Austria, and on his return was seized with an inflammatory fever, which proved mortal. TISSOT.

SECT. XXXVII.

I might enumerate the cases of a great number of wounded men cured in this way, but the instances I have mentioned may suffice to make it known; I shall only add, that even while I am writing, there are a great many patients in the hospitals at Torgau, whose bones were so broken and shattered, that hitherto surgeons would not have conceived that it was possible to cure them without amputation, and who are all nevertheless in the way of recovery, by the method I have recommended. There are very few surgeons of the army, who have not seen instances in our [Pg 92] hospitals of patients whose limbs were to have been cut off, where to their great dread, every thing was ready, and they placed in order to undergo the operation, when, either from their fainting or their resistance, it has been put off, and recourse has been had to the method I have just pointed out, by which, contrary to the general opinion, they have been cured, have saved their limb, and used it afterwards with convenience. If we compare this with what has been said, § XXVII. it will readily appear, that for the most part it is extremely wrong to amputate the limbs.

SECT. XXXVIII.

I have treated hitherto of accidents which quickly carry off the patients; I come now to consider those where the danger is not so pressing, and which terminate in death by slow degrees, a caries of the bone, and a cancerous state of the parts; for it is well known, that in these circumstances amputation is often deemed necessary.

A caries of the bone is either superficial or deep seated, recent or inveterate, occasioned by a [Pg 93] vicious state of the fluids, or the consequence of some external hurt.

When it is recent and inconsiderable, whatever be the cause, there is no room to think of amputation at all, but the bone must be laid bare according to the extent of the caries, and scraped with a scalpel, or perforated in sundry places with the spike of a trepan; when the caries

has gained the opposite part of the bone, we must then use the crown of the trepan, in order to take out the entire piece. I do not however propose entering into a detail of the manner of performing these operations.

With respect to the medicines proper in a caries of the bone, without the application of instruments, or which finish what the instruments have begun, we are furnished with a great many, of which it would be too tedious to give a list: I must only give a caution not to employ the mineral acids, even the anodyne mineral liquor of Hoffman, so much boasted of by some practitioners in diseases of the bones; for they all do hurt. It is well known that when these acids are used for the teeth, they whiten them, but at the same time destroy their substance, rendering them crumbly and friable like limestone; now the other bones being less solid and hard than the [Pg 94] teeth, there is so much the more reason to apprehend the same effect, by their penetrating from the affected part of the bone, where they are applied, to that which is sound. In consequence of this, the bones which appear mended after the use of these liquors, are, in a short time, worse than before[49].

The real method of doing service to bones consumed by a caries, is like what happens to boards joined together with nails, if you make them excessively dry, the nails fall out of themselves; and doubtless it is this notion that has given rise to the practice of employing hot irons, and acid liquors, as driers, to promote the exfoliation of bones. But both these methods are attended with the inconvenience I have already mentioned, with respect to acids, of acting with so much violence on the diseased parts, that they extend their action in a dangerous manner, to those that [Pg 95] are sound. We may nevertheless employ hot irons with success in constitutions abounding with moisture, or when it is of consequence immediately to stop the progress of the disease. The following medicines act efficaciously, but with less violence, frankincense, mastich, myrrh, balsam of Peru, and essential oil of cloves; but this oil should be used with moderation, since when it is employed for carious teeth, they become friable, and crumble away by degrees in a short time[50].

When the caries is removed, in order to compleat the cure, we ought to prescribe a nourishing diet, but not too oily; broth, in which viper flesh is boiled, is very useful[51]. The dressing should then only consist of dry lint, taking all imaginable care to hinder the contact of the external air. [Pg 96] When the caries is accompanied with a vitiated state of the blood, the external treatment is the same, and succeeds equally, provided internal medicines, suitable to the nature of the ailment, be joined with it; with this precaution, a caries from a venereal cause, may be cured like any other.

FOOTNOTES:

[49] I saw two patients who had each of them a troublesome caries, the one on the tibia, the other on the external protuberance of the fibula; their complaints, they told me, were of long standing, and that they were cured by a travelling quack, the one in six weeks, the other in a somewhat longer time. What I learned of the colour of the medicine, its properties, and of its effects on the ailment, induced me to think it was an acid spirit. This incident confirms what I was told by others, and what Mr. Bilguer now remarks. TISSOT.

[50] I have seen several times, as well as Mr. Bilguer, the teeth crumble away by degrees, after using the oil of cloves; I have seen the same thing happen without the use either of it or of acids; I have, at other times, employed it without any such effect, and although I am convinced that it does hurt sometimes, it is only, I imagine, when the caries is very considerable, and the tooth much wasted: This is not, however, sufficient reason to give up, entirely, a medicine often very serviceable in many cases of carious teeth. TISSOT.

[51] The indiscriminate use of viper broth is not proper at all times, or in all cases of carious bones.

SECT. XXXIX.

It will certainly be asked, What must be done when the best applications fail, and must we not amputate when the caries is very extensive? I answer, that amputation is to no purpose if the caries be attended with a bad habit of body, and while the morbid cause remains; when this is removed, we ought not to despair of a cure, although the greater part of the bone be carious, as the cases I have already related plainly demonstrate[52]. We ought therefore to try other means, and trepan the bone in several places, till whatever is rotten be taken away. There are many [Pg 97] bones, whereon amputation, even if it were of use, is not practicable; if, for instance, the caries has attacked the upper parts of the humeral, or thigh-bone, the jaw-bone, &c. The method of treating the diseases of the bones, may be learned from the cases of so many soldiers wounded at the articulations of the elbow, knee, &c. and who, by the care bestowed on them in our hospitals, had their limbs saved, notwithstanding they lost very large pieces of bone; some of which were separated by nature, and some by the help of the surgeon: And as no person will deny that the wounds made by a surgeon, with an exceeding sharp instrument, and with much circumspection, in order to remove the pieces of corrupted bone, are more easily cured than wounds that are lacerated and contused, by means of a ball, grape-shot, or splinters, &c. If the habit of body allows of any hope of curing the caries, the method I have pointed out § XX. may also be practiced in this case. It is true, the limb often remains deformed after it, but this does not always happen; and frequently the callus fills up the whole vacuity left by the part of the bone

which is taken out, however considerable it may have been. We read of successful cures, where even the loss of the entire bone has been supplied by means of a callus[53]; besides, the deformity of the limb does not take away the total use of it[54]. [Pg 98]

FOOTNOTES:

[52] The observations of M. Muzel, p. 83. confirm my opinion, where he says, that all those on whom amputation was performed on account of carious bones, died in consequence of it.

[53] Such is that mentioned by Scultetus, *Armentar. Chirurgicum, obs.* 81. in which we see a callus supply the place, not only of the tibia, but also of a part of the fibula, which he had extracted, and at the close of the cure, the patient walked without the help of a staff. —— See also the Medical Essays of Edinburgh, vol i. p. 312.—— *Ubersatzt durch D. Carl. Cristian Krausen, p. 51*. And the same Essays, vol. v. p. 371. mention one much more surprizing, "for the whole tibia of one leg came out, and the tibia of the other leg separated in small pieces. Nevertheless the patient, who was a boy of 10 or 11 years of age, in four months was able to walk without crutches, with his legs straight, and continued well afterwards, and fit for country work." These cases are so much the more decisive in favour of the method I employ, as the callus much more easily repairs the fragments of bone taken away by the surgeon after an external hurt, and where there is no morbid cause, which was very considerable in the case I have cited.

[54] See § XXXVI.

SECT. XL.

It now remains, that I should say something concerning cancers; on which subject I shall be brief, as it has been treated of by very able hands[55]. If the complaint be recent, the constitution good, if internal medicines and outward applications have produced no effect, the vitiated part must be extirpated before the disease takes root, and communicates the infection farther. But the greater number of those who have the misfortune to be attacked with this disease, putting off the amputation from time to time, it happens when they do resolve on it, either that it accelerates their death, or the humour falls upon another part: For this reason, the operation for extirpating it, should be performed much more seldom than it is[56]; and it were greatly to be wished, that physicians would endeavour to find out some remedy for this horrid disease, without having recourse to amputation; but it is not my intention to dwell on this topic. [Pg 99]

[Pg 100]

FOOTNOTES:

[55] See the Dissertation of M. Kattschmied, on this subject.

[56] When the cancer is evidently the consequence of an external accident, neglected or injudiciously treated, amputation performed in time, may effect a cure; but when the disease has come on gradually, without being able to assign any external cause for it, I have almost constantly observed, although it be performed in time, it accelerates the patient's death; and sometimes after having been made undergo a degree of torture more painful than that of the cancer itself. It is hoped, that the virtues of hemlock will make the frequency of amputation in these cases be discontinued: It appears, however, by the conclusion of the section, that Mr. Bilguer had not seen Dr. Stork's pamphlet.

SECT. XLI.

I have now finished what I had most material to say, against the practice which still prevails, of too precipitately taking off the limbs when they are contused or shattered.

Are my reasons well-founded, or does the method I propose deserve to be adopted? This I leave to be determined by the judicious reader; for my own part, I shall never experience any sensation more agreeable, than the recollection of having saved the lives and preserved the limbs of so many unfortunate men in our hospitals, whose wounds were of the kind for which practitioners hitherto have had recourse to amputation; and it were to be wished, that so many cures happily effected, might repress that kind of folly, by which, in some countries, surgeons are excited, and even encouraged by public rewards, to perform frequent amputations. Another advantage will accrue from this publication, which is, that all those who judged unfavourably of the surgeons of our hospitals, on hearing they never employed amputation, will, I hope, lay aside their prejudices on this score, and may even derive benefit from our example.

FINIS.

Transcriber's Note

Original spellings, punctuation, inconsistencies and all apparent printers' errors are retained, with two exceptions:

- In section 6 (page 8), "hat" has been changed to "that"

(“...that there is room to dread...”).
- In section 24 (page 53), “endeavovour“” has been changed to “endeavour”
(“If there be any pointed splinters, I endeavour to...”).

The heading for Section 36 is missing from this translation. In Tissot's translation the missing Section 36 heading is at the top of page 83, before the sentence: “In conformity to the plan I have proposed...”.

*** END OF THE PROJECT GUTENBERG EBOOK A DISSERTATION ON THE INUTILITY OF THE AMPUTATION OF LIMBS ***

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