

Popular surgery: being plain directions offered to the public at large, but particularly to heads of families, captains of ships ... for affording relief in all cases of accident, dangerous disease, poisoning, etc. in the absence of a regular practitioner. From the French / ... With notes and considerable additions by Thomas Cutler.

Contributors

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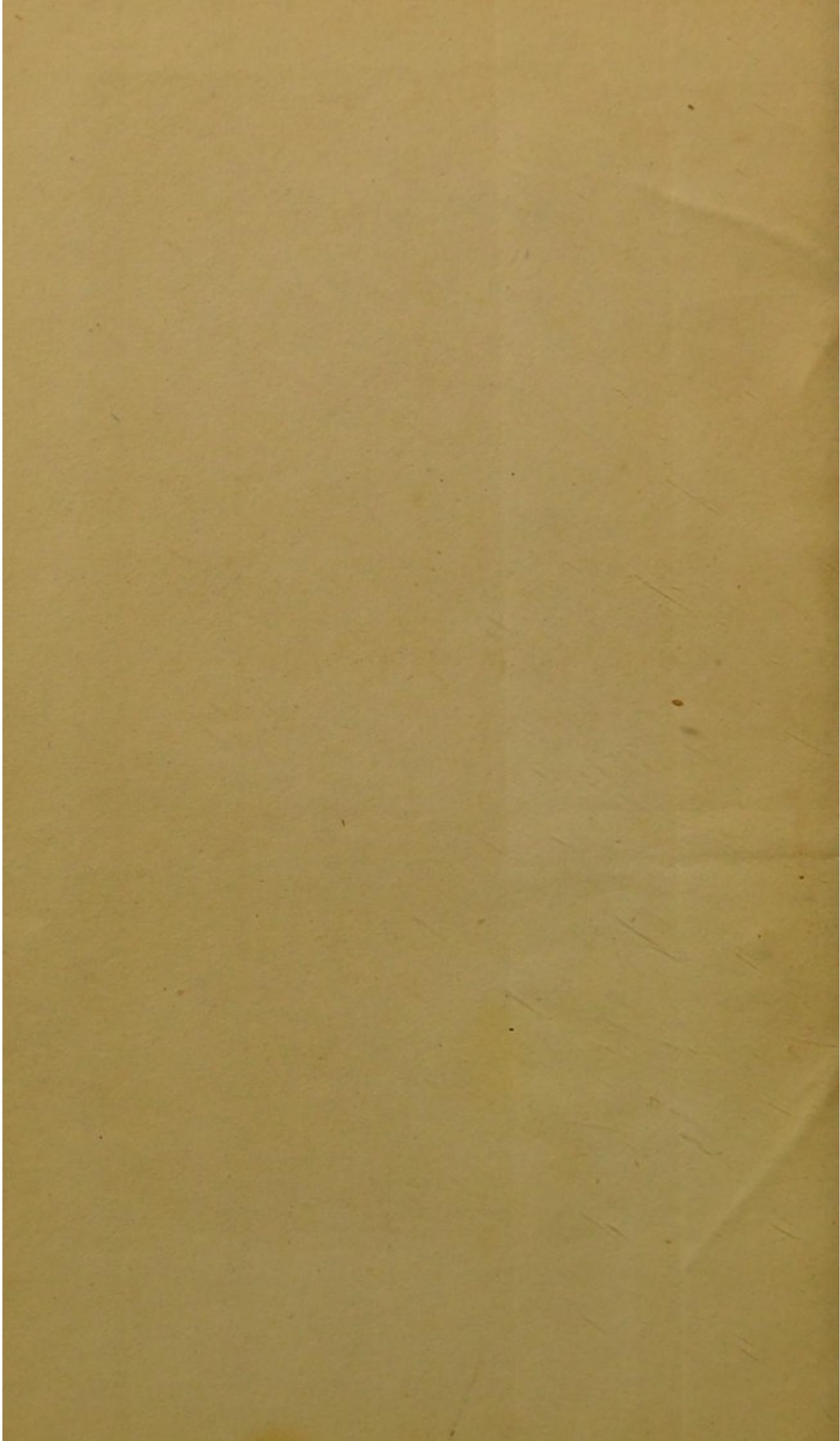
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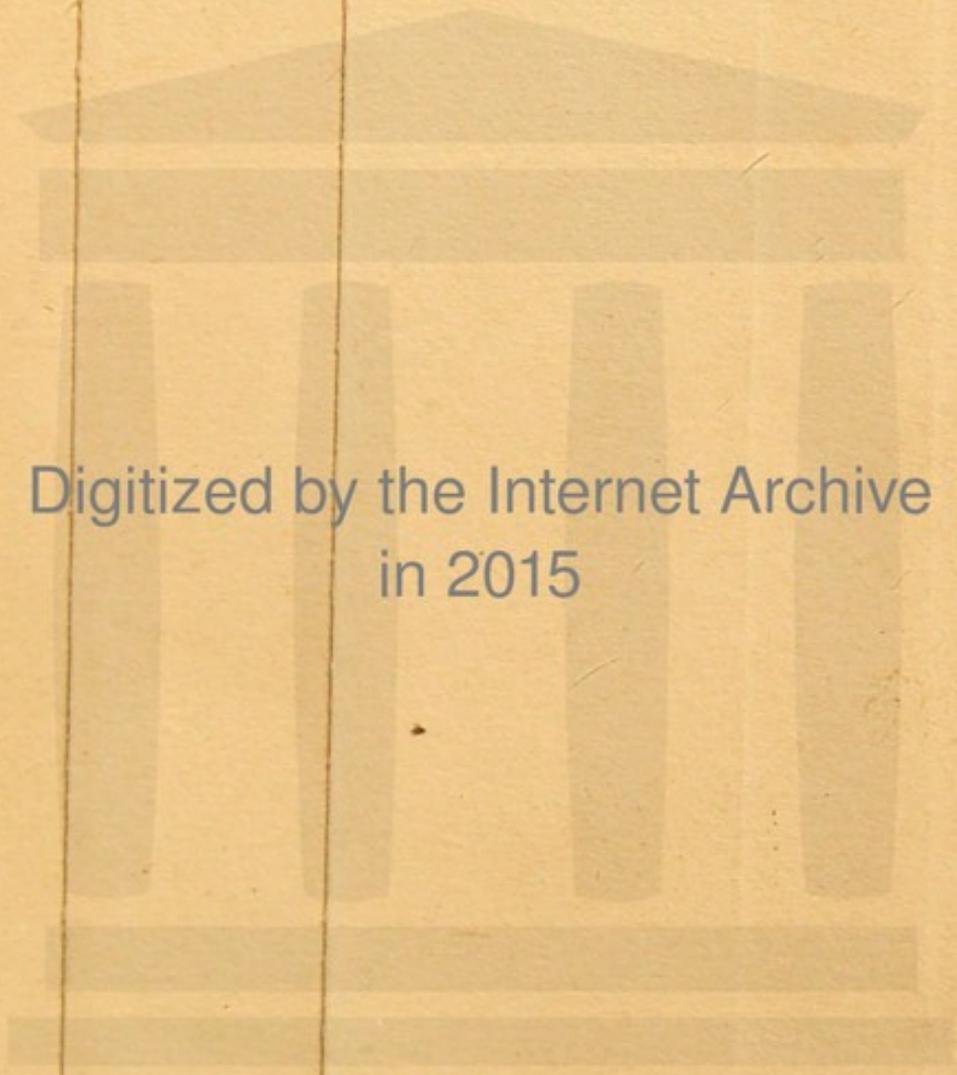
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BEING

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BUT PARTICULARLY TO

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AND PERSONS ENGAGED IN MINES, MANUFACTORIES,
AND PUBLIC WORKS,

FOR AFFORDING RELIEF IN ALL CASES OF

ACCIDENT, DANGEROUS DISEASE, POISONING, ETC.

In the Absence of a regular Practitioner.

FROM THE FRENCH OF

M. MAYOR,

DOCTOR OF MEDICINE AND SURGERY,
PRINCIPAL SURGEON TO THE HOSPITAL OF LAUSANNE.

With Notes and considerable Additions,

BY THOMAS CUTLER, M.D.

AUTHOR OF "THE SURGEON'S PRACTICAL GUIDE IN DRESSING
AND BANDAGING."

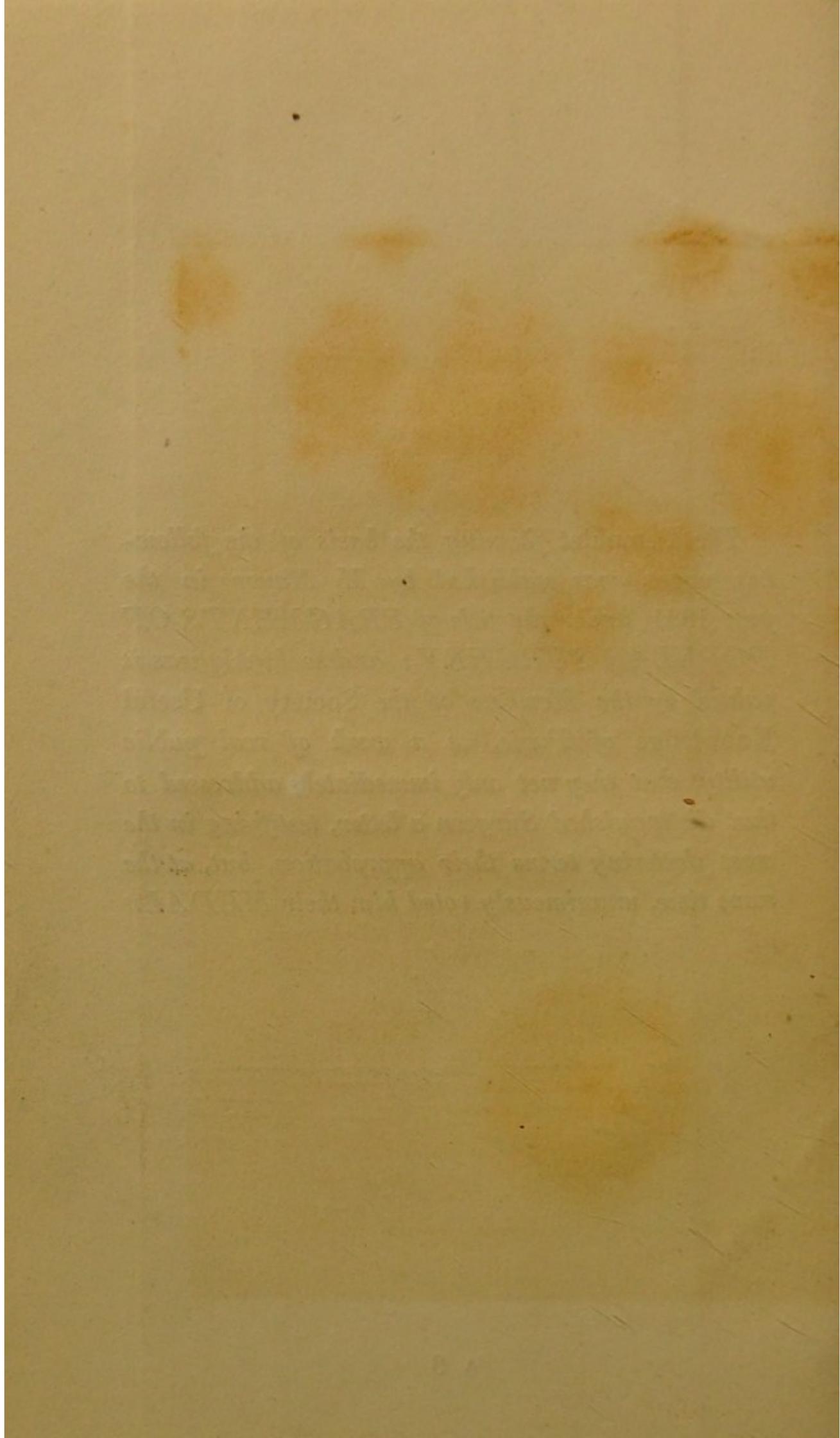
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1836.



The Pamphlet forming the basis of the following pages, was published by M. Mayor in the year 1831, under the title of FRAGMENTS OF POPULAR SURGERY; and so highly was it valued by the Members of the Society of Useful Knowledge of Paris, as a work of real public utility, that they not only immediately addressed to that distinguished Surgeon a letter, testifying in the most flattering terms their approbation, but, at the same time, unanimously voted him their MEDAL.



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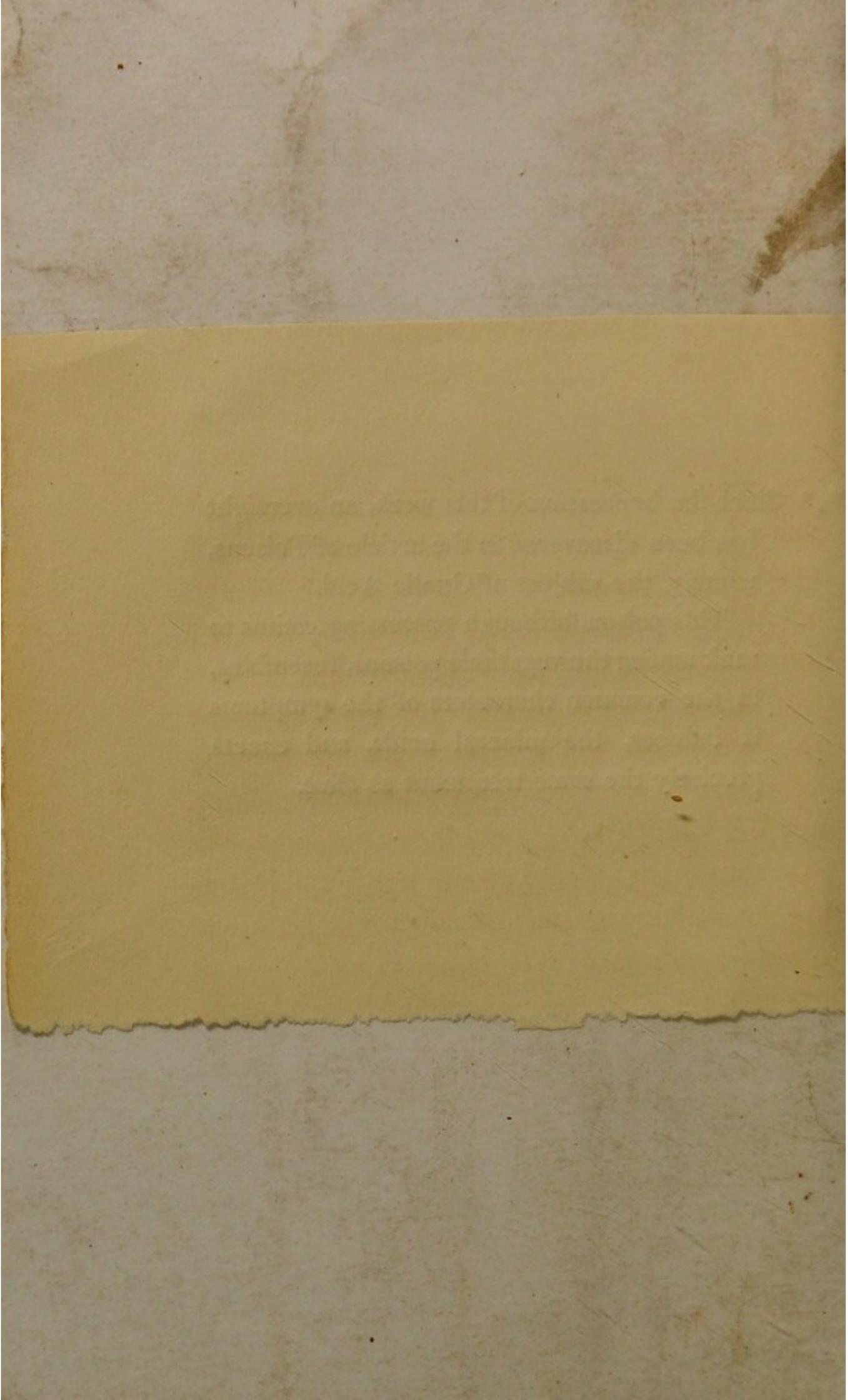
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* * * Since the impression of this work, an oversight has been discovered in the article of Poisons, namely, the subject of Oxalic Acid.

This poison, although possessing claims to rank among the vegetable poisons, resembles, in the common characters of the symptoms it induces, the mineral acids, and exacts precisely the same treatment as *these*.



INTRODUCTION.

A POPULAR Work on Surgery will startle many by the name. What can the people have to do with Surgery, will be their first question — an Art which not only pre-supposes a profound knowledge of anatomy, but the wielding of those fearful instruments, the very sight of which makes the flesh crawl? — Who could bear to think of treating a surgical accident, when a cut finger, if it bleed a little freely, will throw a whole house into consternation, and create a general helter-skelter in running for the doctor? Nothing! certainly nothing! The thing is too ridiculous to entertain a moment's thought! Such will be the premises — such the inference. But, in return, were it asked, — What have the people to do with Medicine? These same persons would gravely and unhesitatingly reply, — Every thing! Has not Buchan, and every succeeding family physician down to the Penny Doctor, mentioned

all the ills which to the human frame is liable? Traced in a clear and manifest style the symptom of each particular malady? And laid down for one and all a comprehensible and rational plan of cure, from which mankind has greatly profited?—That mankind has sometimes profited from their instructions, cannot be denied; that it has *greatly* profited from them, and that too in the unqualified sense of the expression, must be denied by persons of reflection, and more especially when they view the subject in the following manner.

Medicine does presuppose a knowledge of anatomy, and that not a superficial one; for that knowledge extends to the structure of one and every tissue of which the body is composed, and, beyond all things else, to those nervous communications, by means of which, when one part or organ of the human frame is diseased, the malady is obvious in the disordered functions of another situated far away. If, therefore, the rational treatment of disease exacts on the part of the practitioner that he should explore the seat, and direct his remedies to that alone,—a thing so important, but so difficult, that, to do justice to his patient, and honour to his profession, he must have profoundly studied

the one just named, and a number of accessory sciences;—how, let it be asked, are they, to whom such necessary knowledge is as a hidden treasure, — how are they to unveil at once the mystery, or expect to have their unaided search crowned with success? Nor would that be all, were it even thus; the remedies require many, very many fields of science to be explored, in order to know, and administer them advantageously. Their action on the animal economy is so complex, so difficult of conceiving and of rightly valuing, that this second part of the affair is in all respects as truly important as the first. There are diseases, of which if the nature be not accurately known, the remedies employed in their treatment, even though empirically administered, do occasionally succeed; and such diseases may sometimes, especially as they are not of a dangerous character, be treated fearlessly and with a saving of a certain expense, which the calling in of a practitioner would necessarily occasion: but these are very few in number; and as it can only be economy which would or ought to actuate the public to treat their maladies, it cannot be put too much upon its guard against the abuse of a superficial knowledge of this science. Moreover, in the

vast majority of complaints, the patient is not endangered by the delay attending the arrival of the medical practitioner.

But let us examine the sister science, Surgery, and see how far the public is in a fit state to help itself in diseases or accidents peculiar to its province. There is no question in the following pages of scalpels, amputating knives, actual or other cauteries; of little else, in short, than a grain or two of common sense, a bundle of rags, and a few handkerchiefs. *Quid rides?* It is even thus. We will explain: — The object of this little volume is not to induce the public to usurp the province of the regular surgeon, — to plunge it into a labyrinth of doubts, difficulties, and dangers; but merely to put it in possession of a few broad principles, and a certain portion of the *modus operandi*, by which it can calmly face the danger of an accident that involves the question of life or death in a fellow being, grapple with it until the arrival of a surgeon, and, when life *can* be preserved, preserve it! — What family is proof against accidents? May you not, patient reader! be called on, almost at this instant, to listen to the painful intelligence that a calamity of a threatening nature has happened to a mem-

ber of your own household? Suppose such an one to have been engaged in drawing the cork from a bottle; this has broken, cutting through the main artery of the thigh; an accident entailing certain death, unless aid be immediately rendered; and no surgeon within some miles! The blood is gushing out in torrents from the wound, or he is already at the point of exhaustion! Well, if this fearful accident should have occurred subsequently to your reading Chapter I. You would go calmly and scientifically to his relief, (*without instruments!*) quiet the tumultuous grief of his surrounding friends, while dexterously applying a bandage which you would instantly construct of your pocket-handkerchief, and coolly put aside the arm of death!

There are accidents of a very common character, which require surgical assistance, but which do not threaten life: such, for example, are fractures and dislocations. But even here assistance cannot be obtained too soon; for after the utmost and permanent contraction of the surrounding muscles, which generally takes place in about three quarters or even half an hour, the reduction is effected with the extremest difficulty, and with inconceivable suffer-

ing to the patient; while, accomplished in the first moments after the accident, the adjustment of the displaced parts is comparatively easy, and is accompanied with very little pain. In short, the surgical cases of which the present volume treats, are those in which relief may be administered in the first moments, which are the most precious; and that, too, with as much facility, and with as much efficacy in almost every instance, as if a surgeon were actually present.

Can the utility, then, of such a work be any longer doubted? Or rather, ought not every one to be in a position to afford instant relief to a fellow-being the victim of an accident? So different in the hands of the public is this department of Surgery, from Medicine; that while in the latter, the nature of ~~this~~ disease is, to say the least, obscure, and the treatment empirical; in the former, every thing is palpable to the senses, and the means of relief not only always at hand, but capable of being effectually employed by persons of the meanest intellect, and the commonest dexterity. So much in the way of introduction to M. Mayor's work. There remains but little for the translator to say in addition to what he has already done, upon the remaining parts of the volume; these he has

prepared himself, in the sole view of carrying out the useful design of M. Mayor. They are not all strictly surgical, but they are still cases of accident, consequently they require prompt relief; and here also are the means, within the reach of ordinary persons. These superadded kinds of accident are of very common occurrence, and in them all is life imminently in danger.

At the end of the volume will be found directions for vaccination, bleeding, cupping, and the application of leeches; and a description, taken from a most able work by the same author, addressed to the profession, of a number of bandages of the utmost simplicity, constructed of pocket-handkerchiefs or pieces of linen of the same form; a species of bandage which, it is hoped, will ere long be universally employed in preference to the common, and for the most part objectionable, bandages, of the present and bygone days.

present himself in the role of a witness
on the world stage of H. M. ...
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of accident, consequently they require prompt
relief and have also the means within the
reach of ordinary persons. These suspended
states of accident are of very common occur-
rence and in them all is the immensity in
danger.

At the end of the volume will be found
directions for protection, dressing, carrying
and the application of dressings; and a descrip-
tion taken from a most able work by the same
author, and referred to in the text, of a number
of articles of the most simple and con-
venient of first-aid materials or means of
first aid, the same form a species of package
which it is hoped will be found to be universally
applicable in such cases to the common and for
the most part, of the dangers of the
present and future days.

POPULAR SURGERY.

CHAPTER I.

OF THE MEANS OF ARRESTING A FLOW OF BLOOD.

WHENEVER an accident occurs, wherein the loss of blood is liable to expose the wounded person more or less immediately to danger, the hemorrhage * may be always suspended by applying one or more fingers, according to the extent of the injury, upon the place from whence the blood issues; precisely in the same manner as the flowing of a liquid would be arrested from a hole in the vessel in which it is contained; the fingers forming the best plug that can be made use of in the first moments of an accident, and while the other more important means are being got ready.

These consist of any soft substances which are capable of being rolled up or moulded into the form of a plug, and are to be applied di-

* From the Greek *Aima*, blood, *Reo*, I flow.—A flow of blood.

rectly upon the open vessel, so as completely to fill up and cover the wound: for this purpose recourse may be had to sponge, German tinder, puff-ball, spiders' web, moistened paper, tow, lint, old and soft linen, wool, or, if in the country and at a distance from any habitation, even fine moss. But whenever it can be obtained, the preference should be given to sponge, as it can be more easily insinuated into the wound, the interstices of which it fills completely up, by reason of its peculiar structure and its elasticity.

But in order to impart the greatest efficacy to the means just recommended, the clots of blood, if there are any, should be removed, and the wound washed with cold water, in order that the place from which the blood issues may be exposed as completely as possible; the point of the plug ought then to be placed directly upon the vessel, and not upon the clot. The cleansing of the wound alone will often cause the flowing of the blood to cease. The substances thus wedged in should be maintained in their situation by a neck-kerchief or a pocket-handkerchief folded in the form of a cravat, a common band, or even a garter. If the means already pointed out should be in-

sufficient to suspend the flow of blood, the whole application should be removed, and the pressure of the finger alone relied upon, until the surgeon, or a person acquainted with the nature and treatment of such accidents, can be called in: the wounded person could manage this himself, in case of need.

The pressure of the fingers upon the same place during several hours, would suffice to arrest the most considerable hemorrhage; but as this continued pressing, if confided to one person, would become too painful to be long endured, two or three persons should be employed to aid alternately.

If, however, it should be found necessary, from the great depth or extent of the wound, to have the powers of restraining the hemorrhage under still more complete control, a tourniquet should be applied to the limb: when this instrument (which is most likely to be the case) cannot be obtained, it may be readily and efficaciously replaced by the following means; namely, a handkerchief folded in the form of a cravat, to each end of which is to be fastened a band or garter, should be bound tightly round the upper part of the thigh or arm, care being taken to apply previously along the inner side

of the limb*, immediately beneath the bandage, a handkerchief folded several times over, or a piece of linen doubled backwards and forwards of sufficient thickness to flatten, in compressing it, the principal vessel which runs along this part and which may be easily felt by its pulsation or beats.

In the majority of cases, and particularly when the wounded person is not very fleshy, the above method of exerting compression upon the main artery would alone suffice; but otherwise a substitute for the tourniquet, not less simple, more expeditive, and on the whole much better, may be formed from a cravat, in the middle of which is to be made a double knot. This knot is then to be applied upon the course of the main vessel which it is necessary to compress, while the ends of the cravat are carried, one

* There will be no difficulty in finding out the place where the compression of the tourniquet, or its substitute, is to be effected, when it is known that the main artery passes downwards along the inside of the limb, going from the centre of one joint to the centre of the one next beneath it, as, for example, from the centre of the armpit or groin to the centre of the bend of the elbow or knee. It is in the two first mentioned places, where the pulsations of the artery are distinctly felt, that the pressure of the vessel against the bone, either by means of the thumb alone, or with a tight pledget of linen rag beneath it, can arrest the most violent hemorrhage in a limb.

— *Note of Tr.*

before and the other behind the limb, to its outer side, from whence, after crossing, they are to be returned over the knot and effectually secured, either upon the front or back part of the limb by means of pins, or on the opposite side by a knot or bow. A powerful compression may be also effected by applying the ends of the fingers upon the part where the pulsation of the main artery is felt.

The best means, without doubt, is to tie or twist the bleeding vessel itself just above the part which is open, — the course which is in general pursued by surgeons, and which is not a very difficult thing to perform; but if, from timidity or otherwise, this be not practicable, nothing more can be done than to employ the means just pointed out, which will effectually suspend the flow of blood, until a surgeon can be procured. It may not be altogether useless to observe, before proceeding farther, that when, after the common operation of bleeding in the arm, and the surgeon has left the patient, the blood should gush out afresh, — which not unusually happens from either the pledget or the ligature becoming displaced, or from the latter pressing more tightly above than below the

opening in the vein *, which it ought not to do, —the bandage should be removed from the arm, the wound washed, a fresh pledget placed upon the orifice, and the ligature re-applied in a similar manner, —that is to say, in the form of a figure of eight, the inter-crossing of it being of course made to correspond to the pledget; the patient should then be told to keep the arm quite still and in a half-bent position. Sometimes a completely bent position will of itself suffice to arrest the flow of blood.

Leech † bites, especially in children and very delicate individuals, will often give rise to a loss of blood difficult to suppress. If the means ordinarily employed, fail to effect the desired end, recourse may be had to the following methods :—The skin is to be gently pinched up, about the spot where the blood is flowing freely, and the part itself covered with finely powdered charcoal or powdered alum, or, better still, a morsel of sponge or lint soaked with a

* The blood of the veins, unlike that of the arteries, flows from the extremities of the body to the centre, the heart; so that the streams of blood in the vessels of a limb are running in contrary directions: pressure, therefore, of a wounded vein, as after bleeding, should be made below or upon the opening, but never above it. — *Note of Tr.* For the operation of bleeding, see last Chapter.

† For the methods of applying leeches, see last Chapter.

spirituous liquor. Surgeons are occasionally obliged to employ a cupping glass, or lunar caustic, or even the end of a wire heated to whiteness in order to burn the leech bite: sometimes they employ — (and a very excellent method it is) — a small needle, which is run through the cuticle or outer skin immediately above the orifice; this is instantly and effectually closed, and the flow of blood quickly suspended.

A most essential thing to be observed is, to keep the wounded person perfectly quiet, in order that whatever may have been applied, may not become displaced: he should never be lost sight of, in order that if the hemorrhage return, instant assistance may be afforded him; but unless such a circumstance take place, nothing should be touched, for fear of the slightest alteration occasioning the closed vessel to re-open. Attention, however, should be paid to the bandage, so that if it should be found at all loose it may be gently tightened, or on the contrary too tight, so as to occasion pain or swelling of the parts, it may be relaxed. *In no case should any exciting food or drink be given to the patient; he should be allowed but little aliment, and the use for drink of nothing but pure water.*

CHAPTER II.

ON THE FIRST ASSISTANCE TO BE RENDERED IN
CASES OF DANGEROUS ACCIDENTS.

IN the event of a fall, or of a severe blow, or of any considerable violence which may have given rise to accidents of a serious character, or at least to those which are supposed to be so, every thing depends, in most instances, upon the *first attentions* afforded to the injured person; their aim should be to relieve his sufferings, and facilitate his re-establishment. On some occasions they will even recall life and preserve his existence.

But before proceeding upon what ought to be done, a few remarks may be offered upon what is essentially to be avoided.

1st. On no account let beer, wine, ardent spirits, or spirits and water, be given him in the mistaken view of reviving him, of doing him good, or affording him strength. It is exceedingly rare that such means are useful; and in the vast majority of cases they are positively injurious, not to say highly dangerous: pure

water, water alone, if he asks for drink should be offered him, as it is by far the best thing he can take.

2d. The patient should not be surrounded by a number of persons, for fear that, in the disorder and confusion inseparable from a crowd, his case may be aggravated, some fatal movement be occasioned, or some misunderstanding arise about what should be done or what given, while the employment of things which are really useful may be neglected or prevented. Two or three persons are quite sufficient to be about him; and more particularly if the chamber be small and close, and the weather warm.

3d. The greatest caution should be used, that he be not shaken or inconsiderately removed before it has been ascertained whether such removal would not be injurious, or, at least, whether it would not be preferable to tender him the cares his situation requires on the spot, in allowing him to remain quiet. When near a person under these circumstances, that is to say, who has received a severe injury, the first thing to be done is to place him in a good position,—one that will enable him to breathe freely; his nose and mouth should be cleared of any dirt or blood that might impede

respiration; his limbs also should be placed in a favourable direction, in order that if there should exist a fracture, this might be less menacing by being less complicated; his dress should be attended to in order that nothing tight should press about his neck, body, or limbs. An examination must be made to ascertain if there is any loss of blood, and from whence this hemorrhage arises, to the end that if it be considerable it may be restrained by the means indicated in the first chapter; if, on the contrary it be not considerable, so far from seeking to suppress it, the flow of blood should be encouraged by the use of a sponge and warm water, for it is well known that bloodletting is generally necessary in cases of this character, as it tends to ward off the most serious consequences of an injury, and that therefore a moderate loss of blood advantageously replaces that which on other occasions must be drawn by leeches or the lancet. When these first cares have been devoted to the sufferer, the good sense of his attendants will teach them not to expose him to the cold, to an undue degree of heat, or to the wet, as also to call in immediately a surgeon. But in very grave cases it would be advisable to send for the two nearest;

for the presence of both would not be too much under such circumstances, while, on the other hand, there would be an extra chance in favour of enlightened aid.

If the protracted absence of the medical men, or the great distance from their dwellings, should give rise to serious apprehensions for the safety of the sufferer, no hesitation should be made in sending for a good nurse, or some one who may have had an opportunity of frequently witnessing cases of accident, and the usual methods of treatment of such cases; and then, perhaps, it would be advisable, after taking off, as well as can be done, the patient's dress, to draw blood from the arm, or apply leeches, fomentations, or emollient poultices, upon the seat of the injury which is generally swollen and painful. But as these means, especially the two first, are not always easy, nor always requisite, it will be enough, in the first instance, to have recourse to cold water constantly applied by means of soft rags upon the cut, lacerated, or contused parts.

Water, simple as it may appear as an application, is, in the opinion of the greatest surgeons of all nations, the very best of remedies, and renders totally superfluous the application of the

balsams, ointments, and other external remedies which are ordinarily employed. Some persons are led to expect a miraculous good from the addition to the water, of Goulard's extract, eau de Cologne, vinegar, salt, &c.; but let them rest assured, that so far from increasing its efficacy, they are far more likely to render it irritating and injurious.

Simplicity, unfortunately, is in such little répute among the people, however much it may be among professional men of talent, that it becomes absolutely necessary to insist in its favour, and to recommend it upon every occasion.

Let attention be paid to the temperature of the chamber, that it be neither too warm nor too cold, and that there be no more persons present than are absolutely necessary to the duties required by the situation of the sufferer. The occasional visit of a friend, which is always better avoided, should be of short duration, and more particularly if it should appear to cause much excitement to the patient, or to trouble him.

On no account should heating liquids be administered; a little lemon whey, or, better still, lemonade or barley water, should be preferred; nothing should be given to the patient to eat; (the strictest abstinence is *rigorously* to be

observed and persisted in for the first few days); the bowels are to be gently opened by means of clysters (an ounce or an ounce and a half of salts in a little thin gruel); and the wet rags frequently changed, attention being paid to those which are saturated with blood, for the reasons already mentioned. A good nurse will always preserve her presence of mind, and that calm which is so necessary to assure the patient: she will endeavour by all means to restrain the sobbings and lamentations of assistants, and, in short, babbling and noise of all kinds, which not only tend to fatigue the patient, but to trouble that repose of body and mind of which he stands so eminently in need.

In circumstances such as these, and when there exists general and very serious contusions, a warm bath is particularly recommendable; and where it is possible to procure one, it is advisable to keep the patient in it an hour or more. But when this is difficult to obtain, or when it would be necessary to wait a considerable time, a sheet, or what is still better, a blanket, soaked in warm water, and frequently renewed, may be advantageously substituted for it.

However, let it not be forgotten upon this

occasion, that if by any chance a case in point should be one of an individual overtaken by the cold, and benumbed or frozen, it would be highly imprudent to attempt an immediate restoration of the natural warmth, by putting him in contact with heated bodies. By this conduct the sufferer would incur the certainty of a speedy termination of his earthly career; or at least the mortification of his frozen limbs, and subsequent amputation, after undergoing the acutest anguish. In such a case, the limbs should be rubbed with snow, or washed with cold water, and he should be only permitted to approach the warmth when they are in some sort thawed, and put into a state which would render them capable of supporting a gentle heat. This heat should be gently and progressively increased so as to bring about insensibly the degree of temperature which may be judged necessary.

It is the same with the human body as it is with fruits when nipped by the frost, and which become almost immediately rotten, if care be not taken to thaw them first in cold water; and experience, moreover, teaches us the suffering we expose ourselves to, when being extremely cold we approach our hands too near

the stove. If the individual's feet who has received an injury are extremely cold, hot flannels may be applied to them, or otherwise a bottle of hot water. A cup of tea may be administered, or a little gruel, to which may be added two or three table-spoonfuls of wine, or a tea-spoonful or two of spirits. If he should have been in liquor, or should have the stomach overcharged with food, vomiting should be excited by tickling the fauces or back part of the mouth with a feather. This operation, or rather the evacuation which results from it, is of the highest utility, and prevents, or at all events calms, many very bad symptoms.

If the individual is insensible, and if the means just pointed out fail to recover him, or if from the exhaustion and debility occasioned by the loss of blood he is in a fainting state, means should be employed to re-animate him, such as are usual in similar states arising from ordinary causes; namely, the application of hot flannels on the pit of the stomach; rubbing the limbs with a brush or a hard towel; strong vinegar or spirits applied to the mouth, to the temples, or introduced into the nostrils by means of a feather; a clyster composed of one half water and the other half vinegar: sudden aspersions

of cold water upon the face or the region of the heart, taking care afterwards to rub the parts dry with hot towels; in short, by currents of fresh air. But the best and the most energetic of all these means is, without contradiction, *boiling water*. To use this conveniently and effectually, it must be brought alongside the patient, and a metallic body plunged into it, which is then to be carried alternately and in the following manner over the different parts about to be pointed out.

The bowl of a spoon or a hammer are as good as any thing for this purpose, and are extremely convenient. The instrument must be plunged into boiling water, and placed with rapidity upon the sole of one of the feet. After some instants it must be applied to the sole of the other foot; then successively upon the neck, the pit of the stomach, the calves, along the spine of the back, and upon various parts of the head; the application being pursued in this manner until the patient returns to himself, or until the surgeon arrives, who will prescribe other remedies.

The application of the hot iron need rarely be continued beyond one second upon each particular part; that is to say, it should be

made to touch the skin but lightly; although in some serious cases it will be found necessary to allow the instrument to remain somewhat longer in contact with the part which it is considered necessary to irritate, in order that a stronger and more lasting impression may be produced.

Should there exist reasons for managing with still more control the delicate susceptibility of the patient, a sheet of paper or a morsel of linen rag may be interposed between the skin and the instrument; but then the latter must be more frequently applied, and allowed to remain longer upon the part.

The very slight and circumscribed burns thus occasioned, of an inch or an inch and a half in extent, are in no respect dangerous, and are unattended with any inconvenience; but, renewed with sufficient frequency, they offer the most powerful agent medicine possesses for awakening sensibility, and reviving the spark of life about to become extinguished.

With this view it is that the method just described is recommended, it being a means so simple and so much within the reach of ordinary persons; it is one which imitates, in short, the happy and salutary effect of mustard poultices,

blisters, and the moxa* ; while it is unattended by the unpleasantness of all those applications.

* The moxa is the application of a burning substance to the surface of the body, to act as a counter-irritant in a variety of diseases. The operation for the moxa is usually performed thus : — A piece of German tinder, of the size of a shilling, is dipped in camphorated spirits of wine, and, after being inflamed at a candle, is held, by means of an instrument, in contact with the skin, which becomes burnt, and afterwards forms an eschar. — *Note of Tr.*

CHAPTER III.

OF THE FIRST ATTENTIONS GENERALLY
REQUIRED BY WOUNDS.

THE first thing to be done is to wash or gently cleanse the wounds which may happen to be covered with earth, clots of blood, or other foreign bodies. If the blood flows abundantly or disagreeably, the hemorrhage may be stopped by the means already mentioned; and in general it suffices to apply upon the injured part a bit of soft linen, moistened with cold water, and maintained in place by a handkerchief. Should the wound be produced by a slug or ball, or should it be lacerated and considerably contused, nothing remains to be done but to sprinkle the dressing from time to time with cold water.

This is all that it would be necessary to do, if it should be a case of burn.

But if it should be a cut or incised wound, whether from a sabre, hatchet, knife, scythe, or other cutting instrument, there is this precaution always to be taken; namely, to bring into

exact contact the edges of the wound, in order that they may unite, and the cure be accelerated. As to the after treatment, it is strictly the affair of a regular surgeon, but every one may be taught to imitate it, by placing the injured limb in such a position that the wound gape as little as possible. The good sense of the attendants, and some little instruction, will suffice to put each in a condition to effect this important object. Thus, the fingers and hand must be closed as when the fist is clenched, if the wound be within, and kept maintained in that position; if, on the contrary, the wound be on the opposite side, the hand must be kept upon the stretch. If the wound be on the bend of the knee or of the elbow, the leg or arm must be bent; or, on the contrary, extended, if it occur upon the knee or elbow themselves.

When the wound is on the neck, the head must be brought to incline toward the side upon which the wound exists.

As a general rule, that position is to be sought for, which will diminish to the greatest degree the extent of the wound, and must be maintained in the best manner possible, after the edges have been brought with great exactitude together.

Such will be the object of the surgeon upon his arrival; but before his presence can be procured, and there is no possibility of constructing the appropriate bandage, the hands of an attendant should be made to supply its deficiency. It is more especially when wounds occur in the neighbourhood of the joints, or when they are accompanied by a division of the bones or sinews (tendons), that the edges of the wound should be immediately brought into contact, and maintained so by the means just recommended.

What has been already said of the regimen to be imposed on the patient, and of those attentions which wounds in general exact, is not less applicable to the injuries lastly spoken of, and must be rigorously observed.

REMARKS OF TRANSLATOR. — Every family ought to be in possession of a large piece of adhesive plaster; as to linen rag, it will in general be readily found. It is a precaution so necessary to guard against accidents, that it is really astonishing people are so careless in this particular. The general directions the author has given above for the first attentions to be bestowed upon a wound, suffice for every case;

as to the application of the dressings, the following rules will be found equally to hold good.

There are circumstances in which (as among emigrants) surgical aid cannot be procured; and therefore it is right that such a class in particular of persons should be able to conduct the after treatment throughout. We will suppose a common incised wound, from a sharp instrument, in which no large vessel is implicated. The first thing to be done is to cleanse it, according to the directions given by the author; the next is to cut a number of strips of adhesive plaster, and prepare some soft linen rag for compresses or pledgets; when these have been got ready, the muscles of the injured parts must be brought into relaxation, the edges of the wound brought into contact, and strips of adhesive plaster, previously warmed, applied so as effectually to maintain them thus: these strips should be placed at distances apart, varying from half an inch to an inch, according to the extent of the wound, so as to allow of the exudation of fluids in the progress of the cure: a light compress or pledget should then be laid over the injury, and a bandage applied to keep the whole in place, and support the action of the sticking plaster. *The bandage may always*

be constructed by means of a handkerchief, or a piece of linen of the same form, folded to suit the nature of the accident, or the part upon which it is to be applied.

At the end of the volume will be seen the description of a variety of these bandages, which are so easy to comprehend and to construct, that, by the most superficial attention to them, a person can never be at a loss, in a case of accident, to find one to suit the purpose.

Well, then, after the wound has been dressed and the bandage applied, which should always be done rather lightly to guard against subsequent inflammation, the sufferer should be compelled to observe perfect repose. The process of healing will then instantly commence; but, should there be too much action in the parts—that is to say, should inflammation arise, and the parts swell,—the bandage should be loosened, and cold water constantly applied, which will soon restore the parts to a healthy state. Under common circumstances, the first dressing should remain on to about the fourth day, when it is to be changed in the following manner:—
1st. The *bandage* is carefully to be lifted off.
2dly. The *compresses*, which generally adhere, and require the application for some time

of warm water to detach them easily. 3dly, The *plasters* : the ends of these should be first lifted up ; and then the person officiating, seizing them with his right hand, (while with the left he presses gently, the thumb on one and the fingers on the other side of the wound, to prevent the uniting edges from being at all disturbed,) raises them perpendicularly, but slowly and gradually, never acting upon more than one plaster at a time. The wound ought then to be gently sponged with warm water, and a fresh dressing applied in the way already stated.

Although strapping be not *rigorously* required in wounds of this character, — the bandage sufficing in a great majority of instances, with a compress on each side of the wound, — yet it is unquestionably the most secure method, and particularly in hands not often accustomed to treat such accidents.

Torn or lacerated wounds exact nearly the same treatment, but the dressings require to be put on with the utmost gentleness, and the bandage applied still more lightly. When inflammation comes on, which it does much more commonly in this than in the former species of wounds, leeches, if they can be ob-

tained, should be applied upon the seat of the injury, or blood taken from a vein to the amount of about a pint. In all cases, of course, the strictest regimen will be observed.

CHAPTER IV.

OF THE IMMEDIATE AID TO BE AFFORDED AN
INDIVIDUAL, WHO HAS HAD A LIMB BROKEN,
IN AWAITING THE ARRIVAL OF A SURGEON.

A FRACTURE is, in general, easy to be recognised; but, whenever it is complicated or of a severe character, no one can be mistaken. Even the sufferer entertains, most usually, no doubt whatever of the extent of the accident. He had heard the bone crack at the moment of the accident, and is unable to move his limb, which is shortened, curved, and twisted: with what care soever he may be attempted to be moved, the most vivid pain is experienced, while a part of the limb is perceived to yield; and about that spot a crackling is heard, produced by the rubbing of the fractured ends of the broken bone.

When these signs, or some only of them, are present, a fracture should be *suspected*; and if doubt exist, *the affair should be treated as if one really existed.*

The first thing to be done in case of a real or *supposed* fracture, is immediately to put the limb in a good position, and so maintain it that it can neither vacillate nor in any other way become disturbed. The good sense of the attendants is sufficient to point out how a broken limb is to be restored to its proper direction; for it suffices to stretch the member, if it be shortened or twisted, and gradually return to their natural state the parts which are evidently displaced.

The displaced parts being reduced, the limb should be made to assume a position calculated in all respects to assure its maintenance in the proper direction. To this effect a pillow should, where possible, be procured, as being in such a case the most convenient: for on it the limb reposes softly, hollowing it to form a sort of groove or gutter, which, in supporting it also on the sides, equally permits it to be examined and attended to when necessary. But as this cushion is not always to be found upon emergency, it may be replaced by whatever seems the most convenient, and can be the most readily procured: leaves, grass, hay, moss, straw, parts of clothing, may then be had recourse to, as being highly commodious. With

such objects, a very good substitution may be made for a pillow, in putting the material in a bag, or enveloping it in one or more handkerchiefs.

An excellent means also may be made use of for supporting a fractured limb, by stuffing a bag with cotton, hair, tow, wadding, the chaff of grain, bran, or even saw-dust. These various means are pointed out, for two reasons: firstly, because either of them may be found accidentally at hand; and secondly, because they can be employed very usefully in the case in question.

But notwithstanding that these means are more particularly indicated in fractures of the leg and thigh, they may serve for those of the hand and fore-arm, sustained by a sling, and in some severe cases those of the arm itself.

Whatever be the substance employed to constitute this soft plane upon which the limb reposes, it will be always very useful, at least as regards the thigh and leg, to fix it more securely, by gently applying the hand for the purpose of frustrating the starts or other movements of the patient, and avoiding any painful disturbance of the parts.

But although this simple and easy apparatus

suffices for the moment, and until the arrival of the surgeon; and although, as is really so in certain cases, position alone suffices,—and very many highly skilful surgeons will bear testimony upon this, who are themselves accustomed to treat fractures generally upon such principles,—yet there are imperious circumstances, which require that the broken limb should be fixed in a much more solid manner than by the simple means just mentioned. Thus, when the patient is in liquor, or otherwise much agitated, when he shifts about much, has convulsions, or delirium; when there exist violent and painful starts of the broken limb, or a great tendency in the latter to assume a bad conformation; or even when it is necessary, in the conveyance of the sufferer, to prevent more particularly the principal motions and frictions of the broken bones; it will be clearly intelligible how much it imports, in all such cases, to attend punctiliously to the means necessary to fix the broken extremities of the bones, and afford the limb a species of support or prop which may restore to it a part of that solidity which the accident has destroyed.

The following are the means to which recourse may be had, in awaiting better, and which

even very skilful surgeons frequently employ. The most simple is to tie the bag or pillow to the limb with three handkerchiefs folded like a large cravat, and thus make of the two one whole, in arranging them thus, by placing the centre of the first beneath the pillow at the upper part of the limb, the second beneath the same at its lower part, and the third about the middle, bringing forward the tails of each, and securing them upon the fore part of the limb: this will in general suffice. An addition, which gives still more solidity to the preceding means, consists of a flat piece of wood in the form of a stay busk, but proportionately larger, or one, even, of the bark of a tree, placed along the limb beneath the above pillow, and conveniently pressed against the whole in the manner just described.

Another method consists in placing a resisting body, one on each side of the bag and limb, which should be attached in the manner before stated. These solid-bodies, which are applied with the view of better sustaining the limb and preserving in place the ends of the bone, will be the following, which will probably be easily obtained, and will very well substitute what are called, by surgeons, splints.

Thus, two small flat slips or laths of wood, two or three inches broad; two sticks; a few green withes, or even straw or rushes, rolled up into two bundles; bark; strong pasteboard; in short, any thing which is capable of affording a sufficient stay, and will at the same time, prevent displacement of the fractured parts. These are what may be termed provisional splints. Their length should be proportioned to the length of the limb they are required to sustain, and especial care taken that they be not so tightly bound as to contuse the soft parts, or otherwise injure them.

An apparatus of the most easy kind to prepare and apply, and which effects well the object proposed in every case of fracture, consists of a pair of these provisional, splints, which are to be rolled up, each in a handkerchief, and applied thus garnished upon the sides of the limb, to which the due direction is to be given; these are to be fixed upon the limb with gentle pressure, by means of some other handkerchiefs made to encircle the whole.

In an urgent case, and when neither splints nor any of the means just mentioned are to be obtained, there will still remain the following resources.

Should the hand or a fore-arm be fractured, it will suffice to place them in a broad sling, which can be made with a handkerchief.

When the arm is broken, recourse may be equally had to the sling, and the arm then fixed to the side by means of another handkerchief which is made to embrace the body. It will readily be conceived that the ribs of the individual to which the broken arm is bound, fairly represent a splint; and, as they form a good assistance, they form in this case a convenient substitute.

But when a thigh or leg is concerned, and no aid can be afforded but by means of handkerchiefs, the limbs may be bound together in several places; that is to say, the fractured with the sound one, using the latter as a long and solid splint. It will now be readily conceived that, by one or other of the methods just enumerated, one thing of the highest possible importance will be obtained, namely, some solidity and less vacillation in the bone — consequently, less pain and more facility in moving the patient.

It will now be seen of what utility handkerchiefs are in accidents of this nature; how small bags may be constructed of them to sustain and

surround the injured limb, protect it from the hardness and friction of the splints, or whatever may be substituted for them; and how well they are adapted to supply the place of bands in fixing these splints to the affected part, and preserving them in place. In short, handkerchiefs are so much the more precious, as they are to be found every where, whether about the neck of the sufferer, in his pocket, or in that of his neighbours; and it would be extraordinary if enough were not procured to answer all the purposes required. However, they may be very well replaced by napkins, towels, or even, when necessary, the under garments of the individual himself, or of his attendants, which may be cut or torn to the desired size. But in cutting these squares diagonally, two or four triangular pieces may be formed, which, folded in the form of a cravat, will constitute bandages as much more commodious as, from the breadth and thickness which may be given them, these cravats are much more agreeable, when applied, than ordinary bands. Moreover, as they can be solidly and easily attached by their two extremities, pins, or the ordinary ties may be dispensed with, which cannot always be procured.

It would not be altogether unnecessary to

observe here, that these three-cornered bandages are so much the less embarrassing to procure, as nearly any description of material would answer the purpose; as, for instance, cotton, silk, or wool; whence it follows, that not only by means of a large shawl, but even an apron, or any other female garment, as many triangles and other dressing apparatus may be constructed as may be considered useful and desirable.

Whatever dexterity may have been employed in the setting of a fractured bone, it will not be less necessary to use the utmost caution in shifting the patient. Thus, an intelligent person should be charged with lifting the affected limb and sustaining it with both hands placed at convenient distances apart, endeavouring at the same time to avoid imparting to it any sudden motion or shock, or an improper position; and while placing it upon a litter, or on a bed, he should endeavour to get it nicely balanced and uniformly sustained in a good direction. The treatment which a fractured limb requires while awaiting the arrival of the surgeon, differs but little from, and may fairly enter into, the generalities mentioned in Chapter II., in speaking of injuries in general. Bleeding, leeches,

fomentations, poultices, refreshing drinks, strict diet, repose, temperate air, &c. may be employed, but with discernment and patience, according to the exigencies of the case.

Fractures of the head and face—the most dangerous of all—exact those general means of assistance pointed out in the preceding Chapter, and particularly applications of linen rags saturated with cold water and frequently renewed. The head, be it remarked, should be kept elevated, and covered as little as possible.

Fractures of the clavicle, or collar bone, require nothing else than putting the arm into a sling, and then fixing it to the body by means of a handkerchief applied by its middle or broad part upon the elbow, the ends being carried, the one forwards, the other backwards, to the other side of the body, where they are to be united. By such means, all motion of the shoulder will be prevented, which is the most essential thing to be observed in awaiting the arrival of the surgeon, who, probably, will not disturb the bandaging.

Fractures of the ribs occur much more frequently than is generally supposed, because they are often difficult of detection.

This accident may be *supposed*, when, in

consequence of a severe blow or fall upon the side, an acute pain is felt on coughing, on placing the fingers there, or in certain movements of the body.

Let, therefore, in such a case, a handkerchief be folded backwards and forwards several times, so as (when applied over the fractured parts, and by means of a second handkerchief or towel which serves to surround the body) to exert a due degree of compression. All motion of the fractured bone will be thus prevented, and the grand object proposed in every kind of fracture perfectly attained.

The person is usually dressed when an accident occurs, and this circumstance needs some considerations. The dress, in point of fact, offers in general but little impediment to the application of a provisory bandage; and, unless particular motives point out otherwise, the arrival and directions of the surgeon should be awaited before the undressing of the patient be commenced. By employing this precaution, much painful dragging will be avoided, and many dangerous consequences prevented.

But should there exist a wound or hemorrhage, if the garments should be soiled, wet, or in any way embarrassing to the wearer; they should be

removed with the utmost gentleness and every precaution necessary.

The best way to undress a person who has met with a fracture, is to unstitch or cut those garments which would cause too much pain in drawing off. In every case, whether they be cut or not, it will be as well, if the accident occur to a limb, to extend it gently by pulling in a proper direction, so as to avoid inflicting any shock or other dangerous movement. This charge should be always given to the most dexterous and gentle of the attendants.

Fractures complicated with wounds, splinters, an exposed bone, points which have started through the skin, or the presence of slugs or bullets, do not exact any thing in particular. Only that the injured parts should be covered with wet rags or an emollient poultice, or, where hemorrhage exists, the treatment pointed out in the first Chapter; together with especial caution that the splints and bandages be so placed as not to trouble, in any manner that can be avoided, such painful and more or less dangerous injuries.

It will happen sometimes that a fracture is mistaken for a dislocated limb, or, in other words, for a bone *put out*. Dislocations only

take place in the articulations of the bones, or joints: the limb appears shortened and deformed; and there is much greater difficulty in reducing its displacement, than one of fracture.*

In such a case, and when the difficulty of reduction cannot be surmounted, nothing better can be done than to cover the whole joint with a poultice, and to follow the general directions given in Chapter II.

In a doubt, however, as to whether a fracture

* A dislocation happens, and can only happen, when the body is subjected to a violent shock — as, for example, a fall — at the moment when the axis of the bone about to be displaced has taken an oblique direction relatively to *the surface with which it is articulated*, in other words, *the socket*. Now, to reduce this, that portion of the limb or of the body above the joint where the dislocation has taken place, should be maintained in a state of perfect fixation or *resistance*, while the *traction* or pulling of the displaced bone should be made first in the new direction the bone has assumed, and then, by little and little, in its natural direction, until its axis is again in absolute relation to the socket, into which it may be made instantly to drop. The principles of the reduction of a fracture are precisely similar to these.

Now, when the reduction of a dislocation is effected, it will be evident that the means next employed should be to preserve the bone in its natural position in this view; if, for example, it should be the head of the arm bone which has been displaced, the arm should be kept fixed against the ribs, in the manner described by the author, page 40., in speaking of fractures; or should it be the thigh bone, the limbs should be confined together by means of a large towel or some handkerchiefs. —

Note of Tr.

exist or not, the same proceedings should be employed as if such really were the case ; and, under all circumstances, especial care must be taken to put the limb in the position the least painful or inconvenient.

A fracture should be regarded as a wound of the bone ; and as we know that whenever the edges of a wound are brought into contact, and so maintained, they unite, in becoming as it were *soldered* ; so, in like manner, we find that, by preserving the two fractured ends of a bone in perfect contact, their union or consolidation becomes complete ; for if allowed to vacillate, or in any way to become separated, the period of cure will be considerably protracted, and deformity will inevitably result. Such is the end proposed in what has been said in speaking of a perfect state of repose, and the employment of appropriate means of resistance to a disposition on the part of the fractured extremities of the bones to become separated.

The length of time required for the union of a fractured bone varies from four to eight weeks and sometimes more.

CHAPTER V.

PRECAUTIONS AS REGARDS THE TRANSPORT OF
THE SICK, AND PARTICULARLY OF THOSE
WHO HAVE SUFFERED EXTERNAL INJURIES.

AN individual dangerously injured, cannot be carried with more gentleness or management than on the shoulders : it is sometimes, indeed, the only resource at hand.

For this, to act properly, recourse should be had to a sufficient number of men, and to such means as are necessary for the easy application of this assistance, as well as for procuring the best possible position for the sufferer.

A door or shutter furnished with a mattress or palliasse, and, a quilt or covering of some kind answers the purpose as well as any thing ; in which case the patient may be made to repose on it as on a bed ; and when such things cannot be procured, every endeavour should be made to imitate them as nearly as possible with the means which are at hand : thus, a couple of poles, or a couple of branches suffi-

ciently long and thick, united or tied together by means of cords, will very well answer the purpose of a litter; straw, hay, grass, leaves, &c. will frequently replace, and conveniently too, the palliasse, and may be so arranged as to allow the patient to repose comfortably for the necessary length of time.

Or a litter may be constructed thus:—Let two poles or stout branches of trees be procured, about six feet long; and two cross bars of the same kind about two or three feet long: let these be united at their extremities so as to form a strong frame: this may be effected by means of nails, or even of four stout cords, or four handkerchiefs. All that then remains to be done is to furnish the interior: recourse must here be had to some cords or bands, or some pieces of strong cloth, which should be so attached to the frame as to support the patient easily; it may then be furnished as a litter. The following is still more simple, and extremely efficient:—Take, for instance, two poles, to which fasten a sheet, blanket, or tablecloth, in such a way as that they form the bottom of a sort of bed, of which the poles constitute the sides. The sheet or other substitute may be fixed by doubling it and sewing it firmly in the middle,

so that the pole of either side may be introduced between the folds. The sides also may be so rolled up and fixed as to maintain the desired distance apart; and if the framework is required to be still more complete, two cross splints may be attached to them, one at either end.

Whatever be the means of conveyance adopted, the patient must not be placed upon it, until it has been well ascertained that he is in a fit state to undergo the journey, and that the litter will not come to pieces from the weight of his body.

However, when placed, every precaution should be taken that his head be elevated, and that he be neither exposed to wind, rain, snow, or the rays of the sun.

The fractured limbs should be, as has been already observed, the objects of the greatest solicitude. And where there is a wound from which blood escapes, — from whence there may have been, in short, a hemorrhage, — the parts so injured should be placed in such a way as to preclude the possibility of their being rubbed by the furniture, or subjected to any other sort of violence, and to permit a free examination to be made of them from time to time.

The conveyance exacts that the men should arrange, before setting out, about relieving each other, and be especially careful to keep step, in order to avoid any unpleasant jolting. One of them, therefore, should be permitted to direct the march alone, and enact the part of a corporal, in order to oblige the bearers to keep step.

The sedan chair comes next after the litter, for convenience in transporting the patient. This may be sometimes replaced by an easy chair, or a common chair, arranged according to circumstances, and supported on two poles, to be carried either as a sedan chair or a litter.

Wheeled vehicles are also means to be employed, and those should of course be preferred, which are mounted on springs; but directions should be given to the driver to avoid trotting, or in any other way occasioning the shaking of the fractured limb.

But, however great may be the care employed in the conveyance of the sufferer, it would be difficult indeed to prevent some moments of pain when he is being removed from thence to his bed. Here, again, one person (the most experienced and careful) should direct

the whole, never losing sight of the nature of the accident, and endeavouring by all possible means to avoid inflicting useless pain upon an individual already, perhaps, borne down by the weight of frightful sufferings.

When the length of the journey is very great, the carriers or attendants should be provided with an appropriate drink for the patient; which will be always good, if it is not heating. Good water merits the preference of all others; and it may be as well to observe that, so far from the patient requiring food, it will be better even not to give him any at all for the first few days.

It will be sufficiently well seen, from what has been already said, of what consequence it is, when the injuries are of at all a serious character, to call in immediately an experienced practitioner, who not only is more capable of doing what is necessary upon the spot where the accident has occurred, but also can preside over the conveyance, and all that precedes and follows it.

The end of *M. Mayor's* portion of the present work.

CHAPTER VI.

RUPTURES.

RUPTURES are common to both sexes, although, from the peculiar structure of the parts where they most usually occur, they are by far more frequent in males; and are occasioned by a variety of causes which tend to overcome that nice balance of forces, which exists in every individual, between the intestines themselves and the surrounding muscles which contain them: the first, by their elasticity, tending to escape outwards; the second, by their contractile structure, exerting an uniform compression, and opposing their displacement. There are, as every one knows, at the lower part of the belly, corresponding to the bend of the thigh, certain openings, by which vessels, &c. pass out; and it is through these openings that a bowel is protruded, when, by any sudden exertion, the whole mass are forcibly pressed downwards. Among the most common causes, are violent horse exercise, or violent exertion of any other

kind, more particularly when the body is tightly girt by stays, belts, high trowsers, &c. The causes which predispose to this accident, or, in other words, the peculiar state of the individual most favourable to its occurrence, is a laxity of fibre, from constitutional weakness, or from a previous dilatation or extension of the walls of the body from dropsy or child-bearing.

This complaint may exist for a considerable length of time, and cause no inconvenience to the patient, nor in any way affect his health; but notwithstanding this, should he neglect the use of the truss, or abandon it too early, under the impression that he is cured, and that he has no relapse of the accident to apprehend, he is but too frequently lulling himself into a fatal error; for the parts, from a slight cause, will again suddenly protrude, and often become difficult of reduction, or sometimes even incapable of being replaced. This latter state is what is generally termed strangulated rupture, and oftentimes requires operation; for it is in certain cases so dangerous that, without this, the patient's life must infallibly be lost.

Now the use of the truss, be it clearly understood by every one, is to press upon the opening, and supply an artificial strength to the

surrounding fibres, whose power of resistance has been overcome by the violence already spoken of: it is quite evident, therefore, that the first thing to be done, when a rupture has been distinctly recognised, is to return the protruded parts into their natural place, and maintain them by an accurate and well regulated pressure for a considerable period of time. No delay should ever be indulged in, whether the rupture be altogether new, or one which has been already long existing; for strangulation occurs so suddenly, that frequently, before a surgeon can be procured, or arrange for the employment of the means of his art, the danger has become insurmountable.

How, then, is a rupture to be recognised?— There is to be perceived, in the parts in which rupture usually takes place, a swelling, sometimes tense or elastic, at others soft and compressible, without any discoloration of the skin. The causes of the accident should be considered, and will probably reveal at once the fact. However, the more certain signs are, a variation in the size of the swelling from the position of the individual, — being smaller while he is lying down, and larger when he is standing upright and holds in his breath; a disappear-

ance, or at least considerable diminution, when pressure is exercised upon it, and a return to its former dimensions when that pressure is removed. The swelling is usually larger and more tense when the patient coughs, or after he has taken a full meal; but is, on the contrary, smaller and softer in the morning before he has broken his fast. He is often troubled with colic, vomiting, and constipation.

When the rupture is easily reducible, it is sufficient to place the individual in a convenient position, and exert a gentle compression upon the swelling from below upwards, and a peculiar gurgling noise will at once announce that the protruded bowel is restored to its proper place. But when, on the contrary, the rupture is strangulated,—which is known by the great hardness and pain under pressure, or from coughing, sneezing, or any other agitation of the body; by the absolute constipation; the continuance of vomiting; and the general symptoms of fever,—something more is required than a mere attempt at pushing up the intestine: the warm bath should be first employed; and if then the attempt fail, bloodletting must be resorted to, which had better be practised while the patient is in the bath. It is hardly necessary to observe,

that, in all such cases of danger, no time should be lost in procuring the aid of a surgeon; but such is the danger of a strangulated hernia attended with the symptoms last described, that it is highly recommendable, when a considerable delay would take place before his arrival, to employ the means first pointed out, which are not only the best, but by far the most secure, in the hands of others than regularly educated practitioners.

The position of the patient at the time of effecting the reduction is of the highest consequence. He should repose on his back, his head and shoulders raised with pillows, his body bent, to put the muscles of the belly into perfect relaxation, by the knees being brought upwards. The person who officiates should then take hold of the neck of the swelling (for it is of the form of a pear the thick end downwards) with the left hand, while with the right he grasps the larger portion, and gently pushes the protruded parts upwards, which the left hand is intended to direct through the opening. This should be done very gradually, and patiently, and always in the direction in which the parts have protruded. It will sometimes require to be persisted in for a considerable time — even

for an hour — before all hope of reduction can be fairly given up. If violence be employed, the greatest danger is liable to ensue — mortification being almost sure to follow.

While the patient is in the warm bath, and before the reduction is attempted by the hand, he should be placed as directed for the latter attempt, and not unfrequently the parts return of themselves.

When bleeding and the warm bath have been employed without avail, the end has been attained by dashing cold water over the parts; however, this should only be done as a last resource.

CHAPTER VII.

ASPHYXIA *, OR SUSPENDED ANIMATION.

1ST. — FROM DROWNING.

THE mouth and nostrils must be first cleansed, and preserved free and open; the body immediately stripped of the wet clothes, wiped and cleaned, and wrapped in dry clothes or blankets. All this should be done upon the spot, if a convenient place for receiving the body be not near.

In carrying the body (which should be laid upon the litter or cart, upon its back), care should be taken to keep the head and shoulders supported. The same position should be observed when the body has arrived at the house destined to receive it. — The blankets should be warm.

The following means should never be had

* The treatment here mentioned is approved of and recommended by the Royal Humane Society.

recourse to, in the attempt at resuscitation; namely, holding the body up by the heels, rolling it on casks, the employment of frictions with salt or spirits, the use of emetics, snuff, injections of the infusion or smoke of tobacco, the application of volatile salts, &c. to the nostrils.

The proper resuscitative means are artificial respiration, application of heat, friction, stimulants, and, under particular circumstances, bleeding.

1. *Artificial respiration.*—When the proper bellows used on these occasions are not at hand, which are provided with an elastic tube, the common bellows may be substituted, the nozzle being introduced into a wine strainer, or a conical tube made of stout paper or leather: the end of this should then be carefully pushed up one of the nostrils by an assistant, while a second assistant, with one hand closes the open nostril, and with the other presses backwards and a little downwards the projection of the windpipe, situated at the fore-part of the throat, with the view of closing the gullet, and so preventing the entry of air, destined by the use of the bellows for the inflation of the

lungs, into the stomach, which would otherwise become injuriously distended by it. When, therefore, the air is propelled — as, for instance, through the right nostril, the left being closed by the assistant, and the gullet flattened by pressure of the projecting part of the windpipe backwards against the spine, between which it descends — it has no other channel through which it can pass, and must of necessity freely enter and inflate the lungs, as in ordinary respiration. As soon as the chest is inflated, the first assistant should cease to work the bellows; and the second, removing his hands from the left nostril and the prominence of the windpipe, should press upon the chest in order to expel the air.

The inflation should be repeated from fifteen to twenty times per minute, to irritate the natural breathing.

This process should be kept up, if animation does not return, for five or six hours.

Great precaution should be employed in the use of the bellows; for if the air be forcibly injected, the delicate structure of the vesicles of the lungs (the termination of the air tubes) will be torn, and the consequence prove fatal. It is for this reason, that a simpler means has been substituted for the bellows, proposed to, and recog-

nised by, the Royal Humane Society. It is more safe, more simple in its use, and as readily arranged, as the common apparatus just spoken of. It consists merely of a strip of an old blanket, sheet, or cloth of any other kind, six feet in length by a foot and a half broad: this is to be split in the direction of its length into six strips, extending so far towards the middle as to leave an untorn portion of about two feet in length: each strip will thus be two feet long by three inches wide. The unsplit portion is then to be placed under the patient's back, from the armpits to just above the upper part of the hip bones. The strips are then to be brought forwards over the fore-part of the chest and belly, and interlaced with those of the opposite side, just in the same manner as the fingers are interlaced in clasping the hands.

Thus arranged, the strips are gathered up on each side, into a bundle, and drawn by two assistants in opposite directions, by which the edges of the unsplit portion will be made to approach, and a due pressure exerted upon the chest and belly of the patient. The alternate compression and relaxation of the bandage should be at the rate of ordinary respiration — that is to say, twenty-five times per minute.

In the absence of a bandage of this kind, a very fair substitute may be found in a similar interlacement of a few handkerchiefs folded like cravats.

2. *Heat*.—The application of heat must be very various, according to the means at hand: among other processes of affording it, may be cited, sunshine, warm blankets, or blankets wrung out with hot water, a warming-pan wrapped up in flannel, hot bricks, hot bottles, bags of warm grains, sandbags, &c.: the use of boiling water, mentioned at page 24., should be tried, and might be found very useful. But of all other means, where it can be procured, the warm bath is the most efficacious.

The application of heat should be made during the attempts at artificial respiration, and persisted in as long as it.

3. *Friction*.—Frictions of warm flannel, the flesh brush, or, better still, a warm hand suffice: they are used as a means of increasing warmth, and assisting the circulation of the blood.

4. *Stimulants*.—When the body commences to resume its natural warmth, when the vital powers

are capable of being brought again into action, stimulants may be then judiciously employed. Hartshorn and oil, &c. may be rubbed into the palms of the hands, the wrists, the temples, and the neighbourhood of the heart and stomach: vinegar and water, aromatic spirit, hartshorn, &c. may be applied to the nostrils. But stimulating cordials, such as half a pint of wine and water, or spirits and water, not too strong, carefully introduced, by means of a syringe with an elastic tube, through the œsophagus or gullet, into the stomach, may be used earlier. The same may said also of clysters, which may be formed of the same materials, but may be used a little stronger.

5. *Bleeding*.—The only period at which it would be safe for any other than a medical practitioner to employ the lancet, is when the animal heat is restored, and a full pulse and flushed countenance indicate that re-action is established, which threatens inflammation: from six to ten ounces of blood may be then withdrawn; all stimulating treatment should be put an end to; and should the patient complain of thirst, a little water or lemonade administered frequently.

2D. — FROM HANGING.

The ligature should be instantly removed from the neck; artificial respiration employed, as in cases of drowning; and when re-action comes on, or, in other words, when the circulation is restored, recourse should be had to the lancet. If, however, at the moment of taking down the body (the patient having been but a short time suspended) there should exist a turgescence, or, in other words, a swollen state of the vessels of the head and neck, the lancet must be instantly employed; the blood being abstracted from the jugular or the veins of the arm. See Chapter IX.

3D. — FROM EFFLUVIA.

The theory of asphyxia from exposure to deleterious gases, can only be well understood by those who have some knowledge of the structure and physiology of the respiratory apparatus. However, to give a tolerable idea of the reason why persons are suffocated when such gases or effluvia are present, it may suffice to observe, that the object of the function of respiration—that is to say, *breathing*—is to re-convert the refuse of the blood, which flows in the veins, and which is

dark coloured, having already served for the nutrition of the body, into red or nutritious blood, which flows in the arteries. This is effected by the *black blood*, passing through infinitely branching vessels in the lungs, in order to be changed, by the *oxygen* of the inhaled air which penetrates through the delicate coats of those vessels, into the *red blood* above spoken of, which, besides being nutritious, is also stimulating. Life is neither more nor less than this alternate conversion of the *purer particles* of blood into the animal matter or structure that constitutes the frame, and of the *baser particles*, or refuse (continually augmented in quantity by the aliments taken into the stomach, and changed by certain processes into a fluid called chyle), once more into the purer particles, by their absorption of oxygen, as has been already said, in their passage through the lungs. When, therefore, noxious gases, or effluvia, *which are irrespirable**, replace the common or vital air, the great agent of the above conversion, *oxygen*, is absent, or nearly so, from the lungs, and, as a necessary consequence, the red blood is not duly formed. Now this

* They are irrespirable, because of the extreme sensibility of the *glottis*, or valve situated at the entrance of the windpipe, which closes instantaneously upon the application of an irritant. See quotation, page 71.

red blood not only nourishing, but stimulating into action by its presence the heart and circulatory system in general, as well also as the brain and nervous system as a necessary means to effect that nourishment, it evidently follows that when the balance between the black and red blood is overcome, and the black blood predominates, vascular and nervous action cease, and life becomes extinct. This has been proved by many experiments; as when, for example, black or venous blood has been injected into the carotid artery—a red-blooded vessel which supplies the brain—*asphyxia* has been instantly produced, and the vital functions have ceased.

This is the case in drowning; the black blood cannot be oxygenated,—cessation, therefore, of vital action! It is equally so in hanging, unless the patient dies by apoplexy, or the bursting of the vessels in the brain, from their over-distension; and is also thus in smothering.

When persons are suffocated from the presence of deleterious effluvia, artificial respiration should be performed, as in *asphyxia* from hanging or drowning. If the heat of the body should be above the natural standard, it should be placed naked in the open air, with the head and shoulders considerably elevated: cold water

should be then dashed briskly, and continually, over the head and chest.

But should the heat of the body be below the natural standard, it will be necessary to use the means of restoring warmth mentioned under the head Drowning. Bleeding can only be safely recommended, when there is reaction, or great fulness of the vessels. Lemonade or barley water is the only proper drink for the patient when recovering, and total abstinence for a time should be insisted on.

Emetics have been recommended when the patient has been recovered from the state of asphyxia by effluvia: their efficacy, however, may be said to be dubious, if they are not even prejudicial; more especially when it is considered how great a determination of blood to the head usually ensues in such cases. Acidulated drinks, as well as being refreshing, are thought to communicate oxygen to the blood in circulation, and have, therefore, a double advantage in relieving the kind of stupor which remains ordinarily for some time after.

4TH. — FROM BEING SMOTHERED.

The treatment is founded on the same rules as those laid down for *suffocation from effluvia*.

5TH. — IN NEW-BORN CHILDREN.

If the new-born infant has not already breathed, the navel-string, if it still pulsates, should not be tied until the after-birth is about to come away; for the child is still nourished from the mother.

When the child is detached, its mouth and nostrils should be cleansed of any mucosities, and it should be wrapped in warm flannels, or it may be placed in a warm bath. Artificial respiration should be employed, as also frictions, stimulants to the nose, to the temples, and to the pit of the stomach. When there is no pulsation to be felt, either about the heart or at the navel-string; when the skin is pale, discoloured, or livid, the flesh flabby, the limbs pliant and without motion, and it may be to all appearance dead; the means just pointed out should be nevertheless tried, and persisted in for a considerable length of time. But let the child be instantly detached, in order that no time may be lost; for its remaining connected with the mother can be of no avail. — The simplest means of effecting artificial respiration is to push the windpipe gently backwards, to compress the gullet, and then closing the child's nostrils, to blow into its mouth, either

by applying directly on it one's own mouth, or interposing between the two a bit of gauze or muslin: gentle pressure upon the chest and belly should be made turn in turn with the inflation or blowing into the lungs, in order to expel the air and prepare the lungs to receive a new supply: when the breathing commences, but goes on feebly, a little cordial or gentle stimulant should be given; it is frequently of great service: but when the breathing commences freely, appearing, however, slow and laboured, and the child is in a state of stupor, it is in a state bordering on apoplexy; and then the ligature should be loosened from the navel-string, and a teaspoonful or two of blood should be allowed to escape. If the good effects of this are soon perceivable, the ligature should be again applied; but if they are not soon manifest, under these circumstances, also, the ligature should be re-applied, as the too great loss of blood would tend to throw the child into the same state of debility or asphyxia as that from which it has been withdrawn.

The following remarks by Dr. Currey, apropos to this subject, merit attention.—“ Before children are born, and until they have begun to cry, the tongue is drawn back into the throat,

so that a kind of valve, which is attached to its roof, is shut down over the opening into the windpipe, and the entrance of any foreign matter into the lungs thereby prevented. A finger should be therefore introduced into the throat, and the root of the tongue be drawn forward, and the valve raised before proceeding to inflation." The upper part of the windpipe should also be pressed gently backwards and downwards, as noticed in the treatment of drowned persons.

APOPLEXY IN NEW-BORN CHILDREN.

This is known by the absence of all signs of life, the child remaining in a state of lethargy, and immovable; the face is dark, livid, and considerably swollen; the skin also is discoloured; there is an appearance generally of engorgement of the blood-vessels.

In such a case, the treatment is totally different to that employed in asphyxia, the navel string must be cut so as to allow the blood to flow, the head must be elevated, and the chest and stomach rubbed with warm cloths: if there are leeches at hand, one may be placed behind each ear. The warm bath should be employed.

TREATMENT OF PERSONS STRUCK WITH
LIGHTNING.*

“ When persons happen to be overtaken by a thunder storm, although they may not be terrified by lightning, yet they naturally wish for shelter from the rain which usually attends it, and therefore, if no house be at hand, generally take refuge under the nearest tree they can find. But in doing this, they unknowingly expose themselves to a double danger: first, because, their clothes being thus kept dry, their bodies are rendered more liable to injury, the lightning often passing harmlessly over a body whose surface is wet; and secondly, because a tree or any elevated object, instead of warding off, serves to attract and conduct the lightning, which, in its passage, frequently rends the trunks or branches, and kills any person or animal who happens to be close to it at the time. Instead of seeking protection, then, by retiring under the shelter of a tree, hay-rick, pillar,

* Sixteenth Annual Report of the Royal Humane Society, 1834.

wall or hedge, the person should either pursue his way to the nearest house, or get to a part of the road or field, which has no object that can draw lightning towards it, and remain there until the storm has subsided.

“ It is particularly dangerous to stand near leaden spouts, iron gates or palisadoes, at such times ; metals of all kinds have so strong a conducting power for lightning, as frequently to lead it out of the course which it would otherwise have taken.

“ When in the house, avoid standing near the window, or door, or walls, during a thunder-gust: the nearer you are placed to the middle of a room the better.

“ When a person is struck by lightning, strip the body and throw bucketsful of cold water over it for ten or fifteen minutes ; let continued frictions and inflations of the lungs be also practiced ; let gentle shocks of electricity be made to pass through the chest, when a skilful person can be procured to administer them ; and apply blisters to the chest.”

TREATMENT OF APPARENT DEATH FROM THE
EFFECTS OF COLD.

The body should be brought into a room in which there is no fire, and rubbed with snow or cloths dipped in cold water (see page 22.). The frictions should be directed from the stomach towards the extremities. In a few minutes after, the temperature of the water should be very gradually increased, so as not to heat the body suddenly. Stimulants may be applied to the lips and nostrils.

The lungs must be inflated as in the treatment of the drowned: when the natural warmth of the body is returning, the patient should be put into a bed, wrapped in dry blankets, and be well rubbed with a flesh-brush; a little weak wine and water may be given, or a clyster administered containing a little wine or something slightly stimulative.

Strict diet should be adhered to for some time after recovery.

When the limbs only are frozen, the application of snow or wet cloths is to be confined to the affected parts; half a teaspoonful of harts-

horn, in a glass of water, may be advantageously administered, or a little weak spirit and water.

CONVULSIONS IN CHILDREN.

In children, there are two remarkable kinds of convulsion, namely, what are called inward fits, and the common violent convulsion. The inward fits occur generally during sleep, and are known by the corners of the mouth being drawn up into a sort of smile; the eyelids are open; and the eyes are usually turned up, so as to show the whites. There is a fluttering in the breathing, and the child frequently starts. Fits of this kind are generally relieved by a warm cordial medicine, such as a little aniseed or syrup of rue; appearing as they do to depend on wind and flatulence of the intestines.

As to the more violent convulsions, they depend on disorders of the nervous system, most usually brought about by the irritation dependent on teething. The symptoms by which such convulsions may be known, are these:—There is spasm throughout the muscular system, the arms and legs are drawn up and agitated, the body drawn back, the eyes

are either fixed in their sockets, or are rolled to and fro, the child grinds its teeth, and the countenance is distorted. Sometimes there is a sort of breathing, which resembles greatly the breathing in croup. The first thing to be done, is to place the child in a warm bath, to which a handful of mustard or salt may be advantageously added; and while in the bath, to sprinkle cold water upon the head: a clyster should also be administered. After remaining some time in the bath, and the violence of the symptoms is but little mitigated, the child should be removed, and after being wiped dry, the spine should be rubbed with spirits, or hartshorn and oil, and mustard poultices applied to the feet. When, together with these symptoms, the face is flushed and the pulsation about the neck strongly increased, leeches should be applied to the temples if they can be obtained; or if there is any one who is provided with a lancet, and could draw blood from the arm, a portion should be instantly taken away: but whenever there is reason to believe that the convulsions are from teething, the gums should be immediately and freely lanced: a sharp pen-knife will serve perfectly well in this operation, which any one would be able to perform. At

times, however, the child is weak and pale, and then, instead of applying leeches or bleeding, a little stimulant medicine should be given, containing two or three drops of laudanum.

When the child has recovered from the fit, it is usual to give a dose of calomel with a little rhubarb, in quantity proportioned to the age.

CHAPTER VIII.

POISONING.

IT is not necessary, in a treatise like the present, to enter into particulars relatively to the modes of action of the numerous descriptions of poisons, to which the unfortunate who resolve on suicide have recourse, or to which such as are the victims of their own carelessness or that of others, or even of circumstances purely accidental, are but too often exposed. They are for the most part extremely doubtful, and can serve only, when understood, the members of the profession. Happily, however, the antidotes to the greatest number of poisons are perfectly well known, and it is to their skilful administration that it is the most necessary to attend.

In this Chapter, then, will be exposed, as clearly and as fully as the nature of the work will admit of, the means of distinguishing the kind of poison swallowed (where there is doubt

upon the subject), deduced from the symptoms which invariably ensue, in order that the administration of the antidote may be proceeded with at once, to arrest its ravages.

Poisons are so numerous, that it would be more than absurd to attempt to describe them all; it would be attended with danger, resulting from the confusion in which a person would be thrown from the examination of so much detail. Those only will be mentioned, which are the most commonly made use of; and they will be arranged in such a manner, that each respective group will embrace those which have a common train of symptoms, and require similar modes of treatment to counteract their effects.

It must not be supposed, that the descriptions here given of the symptoms of each respective class of poisons, are to be all met with at the same time; for it is with poisoning as with other disordered states of the system, the symptoms are by no means constant; yet, herein, the symptoms, as they will be found grouped, are sufficiently characteristic to lead to the detection of the nature of the poison, when the judgment is not aided by the light of more favourable circumstances.

For the sake, then, of simplicity and of real

utility, they will be arranged in the following classes, namely —

I. CONCENTRATED MINERAL ACIDS.

The most common concentrated mineral acids are, Sulphuric Acid, or *Vitriol*; Nitric Acid, or *Aqua fortis*; and Muriatic Acid, or *Spirits of Salts*.

Common Characters of Symptoms.

Astringent taste, with burning heat; acute pain at the entrance and along the course of the gullet, and also at the stomach; an insupportable stench from the breath, nausea, and the abundant vomiting of a liquid, sometimes black, at others reddened with blood, and which effervesces when it falls upon the pavement or upon chalk or whitening; hiccup; sometimes constipation, at others stools tinged with blood; acute pain in the belly, extending to the chest; difficulty of breathing; coldness of the feet and hands, and cold sweats; the desire but impossibility of urinating; the voice altered, and sometimes resembling the sound observable in children who suffer from the croup; the lips and inside of the mouth covered with black or white gangrenous spots.

The following are the more distinctive characters of each of the above poisons: —

The *first* is remarkable for reducing to a black pulp the parts it touches.

The *second* produces, on the parts it touches, lemon or orange coloured spots.

The *third* disengages thick white fumes of a very penetrating smell.

Treatment.—The patient should be made to drink freely of liquids containing in suspension a quantity of calcined magnesia, or, when the latter cannot be procured, water in which soap is abundantly dissolved; after which may be given linseed or marshmallow tea, or barley water. These same remedies should also be administered in the form of glysters.

When it is presumed that the acid has been neutralised, and that it has been ejected from the inside, and it is perceived that inflammation has set in, let leeches be applied to the pit of the stomach and to the throat; let warm fomentations be constantly applied to the belly, or very large warm poultices: should there be cramps or convulsions present, they ought to be treated by antispasmodics.

2. ALKALIES.

These are usually Potash, Soda, Ammonia (generally in the liquid state, as in the form of hartshorn), and Lime.

Common Characters of Symptoms.

The symptoms much resemble those present in cases of poisoning by the mineral acids, but they more particularly affect the throat. The vomited matters, however, do not effervesce upon the pavement, or upon chalk or whitening. The action of ammonia is by far the most powerful, giving rise to horrible convulsions.

Treatment. — The patient should be made to swallow, from time to time, a glass of water containing the juice of a lemon or a table spoonful of vinegar; if neither of these are at hand, warm water should be given abundantly, and vomiting excited by tickling the throat.

If olive oil can be readily obtained, it might be advantageously administered, as it would form a soap, which would be easily got rid of by the last means above described.

3. METALLIC POISONS.

Arsenic *, Copper †, Lead ‡, Antimony §,
Silver ||, Mercury ¶, Iron **, Zinc ††, and
Tin. ‡‡

Common Characters of Symptoms.

The patient experiences an acrid and metallic taste in the mouth, with a sense of constriction at the throat; pains, at first slight, afterwards most severe, along every part of the digestive canal; nausea, and vomiting of matters which do not effervesce; a continual and ardent thirst; difficulty of urinating; hiccup, difficulty of breathing, and a sensation approaching to that of suffocation; cramps and convulsions; and lastly, the limbs become cold, indicative of approaching dissolution.

ORDINARY PREPARATIONS.

* *Arsenic.* White arsenic—yellow arsenic—the *Ague-drop*.

† *Copper.* Blue vitriol — Verdigris — The peculiar poison found where copper coins are put into the pot in which greens are boiling, to give them a bright green colour, or when the latter are boiled in copper vessels.

‡ *Lead.* White lead — Ceruss powder — Goulard's extract or Goulard water — Litharge — Red lead — Sugar of lead.

§ *Antimony.* Tartar emetic,— Antimony wine, — James's powders.

|| *Silver.* Lunar caustic.

¶ *Mercury.* Corrosive sublimate—Vermilion.

** *Iron.* Green vitriol.

†† *Zinc.* White vitriol.

‡‡ *Tin.* Salts of tin, used by dyers.

Treatment. — In all these cases, vomiting is the first thing to be attended to, and should invariably be produced, but before giving fluids to the patient; for these, by dissolving more completely the particles, and spreading them over a wider surface, increase the liability of absorption. There are, however, some of these poisons which require in addition other means; as, for instance, *Antimonial preparations*, which require the administration of an infusion of Peruvian bark, or other astringent barks, or even of common tea, which is a good antidote: if the pains still continue very violent, a grain of opium, or twenty drops of laudanum, may be administered every three hours till they abate; or a tablespoonful of syrup of poppies at the same intervals, mixed with a glass of water.

Lunar caustic requires the frequent administration of a teaspoonful of table salt in solution.

Arsenical preparations should be treated with linseed or marshmallow tea, or barley water.

For *salts of tin*, the best antidote is milk.

For *corrosive sublimate*, the whites of a dozen eggs should be mixed with two pints of cold water, and a glassful given every two minutes.

For the *preparations of lead*, Epsom or Glauber's salts, dissolved in water in the pro-

portion of a dessert-spoonful to a quart, administered frequently by glassfuls. If plaster of Paris is at hand, it should be given, in the absence of salts, mixed with water.

When, however, inflammation has set in, as it most often does, the then *after-treatment* requires the same measures to be employed as those which have been pointed out for the after-treatment of poisoning by mineral acids.

4. VEGETABLE POISONS.

1. Opium or Laudanum, Prussic Acid, Laurel-water, Henbane.

General Character of Symptoms.

Numbness all over the body, with weight and swimming in the head; nausea, vomiting, state of intoxication; swelling of the eyes; slight convulsive movements. The pupil of the eye afterwards becomes greatly dilated, and the patient falls into a torpid state resembling apoplexy.

Treatment. — For prussic acid and laurel water, tickling the throat or an emetic, to excite vomiting; afterwards, strong coffee, or coffee with a little brandy or turpentine, or hartshorn and water.

For opium or laudanum, and henbane, emetics to excite vomiting, but administered in very small quantities of water; an active purgative clyster, when it is supposed that the poison has reached the bowels.

After the poison has been evacuated, drinks should be given freely acidulated with lemon juice or vinegar, and then strong coffee. To overcome the numbness of the limbs they should be vigorously rubbed with a flesh-brush or a piece of flannel; and the patient should be constantly moved about, and spoken to, to prevent his sleeping.

2. Monkshood, Hellebore, Tobacco, Fox-glove, Meadow-saffron, Hemlock, Deadly Night-shade.

General Character of Symptoms.

Excited state of the nerves; the patient is greatly agitated and convulsed; there is delirium; the pupil of the eye becomes dilated, and sometimes violently contracts; vomiting, looseness of the bowels, with extreme pain all over the belly. Occasionally there is a great prostration of strength, insensibility, trembling, desire and incapability of vomiting.

Treatment. — The same as in poisoning by opium, &c.

3. Nux Vomica or Ratsbane.

General Character of Symptoms.

After the poison has been swallowed, the patient undergoes alternately, a state of calm, and one of horrible spasmodic contraction of all the muscles of the body. These attacks rarely extend beyond the fifth or sixth, and terminate by death the patient's sufferings.

Treatment. — A vomit; afterwards the following mixture: — A teaspoonful of ether, one of spirits of turpentine, and half a tumblerful of water sweetened with sugar: give a table-spoonful every seven or eight minutes.

4. Poisonous Mushrooms.

General Character of Symptoms.

Weight and pain at the pit of the stomach; then nausea, violent pains in the stomach and bowels, with vomiting and looseness; cramps and convulsions; unquenchable thirst; sometimes delirium, at others, stupor; lastly, faintings and cold sweats.

The symptoms only come on from seven to fourteen hours after the swallowing of the poison.

Treatment. — Active emetics and purgative clysters; afterwards, antispasmodics (the mixture prescribed for poisoning by ratsbane), and water acidulated by vinegar.

5. Ergot of Rye (Blighted rye, Spurred rye).

This is a peculiar excrescence which appears upon the ear, in the form of a long grain, very slightly curved, three-sided, and pointed at each extremity, of a dark violet colour; it is a disease of the corn which appears in wet seasons.

General Character of Symptoms.

An unpleasant tickling or creeping sensation at the palms of the hands and the soles of the feet; heaviness in the head; occasional blindness, delirium, and intoxication; spasmodic contraction of the muscles, violent convulsions, and foaming at the mouth; afterwards, violet-coloured spots appearing all over the body.

Treatment. — No emetics! Alternate doses of an antispasmodic mixture and water acidulated

with vinegar. If gangrene or mortification ensues, the medical practitioner alone can treat it properly.

5. ANIMAL POISONS.

1. Poisonous Muscles.

General Character of Symptoms.

About three or four hours after eating poisonous muscles, an uneasiness is felt all over the body, succeeded by numbness, and afterwards by intense pain at the pit of the stomach, excessive thirst, and continual nausea.

If vomiting do not take place, the belly becomes considerably swollen, the symptoms increase altogether in intensity, and very often a rash appears on the face, which sometimes extends itself over the rest of the body. Lastly, delirium sets in, convulsions, and cold sweats.

Treatment. — Emetics, or the tickling of the throat to induce vomiting; afterwards, cordials, ether, and drinks acidulated with vegetable acids.

2. Spanish flies.

General Character of Symptoms.

These are very remarkable, the poison affecting to a horrible degree the urinary organs and the organs of generation.

Treatment. — Linseed tea, or other emollient drinks; from 12 to 20 drops of laudanum every four hours; frictions of spirits of camphor all over the body; bleeding and leeches.

CHAPTER IX.

COMMON OPERATIONS.

I. BLEEDING.

General Remarks.

NOT to know how to bleed, may at one or more periods of a man's existence prove a most severe misfortune. The circumstances in which such an operation may be called for, must be far too palpable to a reflecting mind to need the smallest notice here, and as it is an operation by no means difficult in its performance, let it be hoped that an accomplishment so useful will become less rare: the sum of human happiness will assuredly be in no small measure increased by it, were it only from the conviction that a man would possess, of being enabled at the hour of danger to render to a fellow being *a service so all-important.*

Bleeding is most usually performed upon the veins, and therefore it is to the operation of this

class of vessels only that the following remarks are intended to apply.

The parts of the body at which this operation is usually performed, are — 1st, The bend of the arm; 2d, The back of the wrist; 3d, The ankle, 4th, The neck.

Before commencing the operation, there are several things which should be got in readiness, so that there may be no hurry or confusion during its progress. These are, — 1. One or two compresses or pledgets, made by folding up bits of soft linen rag to the size of two inches in length and about one inch and half in breadth. 2. A couple of bands about a yard long by an inch broad; the first for suspending the circulation in the veins before the operation, and the second for maintaining in its place the pledget. 3. A vessel to receive the blood; and a couple of towels—the one for protecting the patient's dress, the other for wiping the parts after the operation. 4. Some warm water for cleansing the parts; a little cold water for the patient to drink, or, if necessary, to sprinkle on the face in case he should faint; together with some hartshorn, smelling-salts, or vinegar, if they can be obtained. 5. A clean sharp lancet, of the description called by the profession, and in the

instrument trade, *broad-shouldered*, as being safer to operate with.

The position of the patient should be also attended to: he should be made to sit upright in a chair, more particularly if it should be required to reduce his strength suddenly, by inducing fainting; but if, on the other hand, this be not necessary, or there would be reason to apprehend unpleasant results from the liability of the person to faint, together with the probability of a long and disagreeable continuance in this state, then he should be operated on while lying down.

The first band, or *ligature*, should be always applied at about an inch and half or two inches from the point at which the lancet is to be inserted, and between this point and the heart, so as to interrupt the return of the venous blood, and cause the vessel from its accumulation there to enlarge, but never sufficiently tight to suspend the passage of blood through the arteries.

When the ligature is applied, the operator should with his right hand employ gentle friction in the direction of the veins, so as to accumulate the blood near the ligature, while with the pulp of the thumb of the left hand he should press upon the vein so as to fix it. He

then takes hold of the blade of the lancet between the thumb and fore-finger, and makes the incision into the vein in the following manner:— The middle finger, the ring-finger, and little finger repose, by their pulp, at some distance from the vein, so as to afford as it were a fulcrum for the two others: these are then gently bent, so as to present the point of the lancet at the place of insertion, and cause it, by a slow movement of extension, to penetrate into the vein. The direction in which the blade is carried, is in general oblique, with respect to the direction of the vein; but whenever the vessel is inclined to roll under the skin, it should move in the absolute direction of the vein; or cross-wise, when the vein is small and it is required to draw it with rapidity.

We will suppose the point of the lancet introduced into the vein, to the proper depth, which is known by the sensation of resistance having ceased, and by the appearance of a drop of blood running up along the side of the blade; the wrist should now be lowered and the point of the lancet elevated, so that it cut, in issuing from the vein, quite through the skin above it; otherwise the incisions of the vein and of the skin not being parallel, the consequence

would be that the blood, not finding a ready exit, would occasion a swelling from its collection under the latter tissue, and give rise to more or less serious results.

When the incision is effected and the instrument withdrawn, the thumb of the left hand is still kept pressed upon the vein, until the vessel destined to receive the blood is held before the orifice; but, at this period of the operation, great care should be taken not to shift the thumb about, for fear of disturbing the relative position of the two openings—namely, that of the skin and that of the vein—which should remain parallel, for the reasons already assigned.

The lancet should be immediately *closed* after being withdrawn, and handed over to an assistant, who should plunge it in this state into a basin of water, to prevent the blood from drying before the operator is able to attend to it himself; and the operator should in the meanwhile attend to the flowing of the blood, the stream of which he should be careful to direct in such a way as not to allow of its soiling any persons who may happen to be present, the patient himself, or the apartment.

Sometimes the veins are very small, and then some very necessary means are to be put into

effect to insure the abstraction of the quantity of blood desired: these are, to plunge the limb into hot water during a few minutes, to tighten the ligature, or to cause the patient to contract those muscles among which the veins and their branches pass; all of which tend to accumulate the blood in these vessels. When, notwithstanding the measures just pointed out, it is still impossible to procure the proper quantity, a second vein had better be opened.

But there is a certain class of persons in whom, from their general plumpness, the veins, particularly those of the arm, cannot, notwithstanding the employment of the above means, be rendered visible: with such it is advisable to forbear attempting the opening of the vein first proposed, rather than run any risk of missing it, and apply the ligature elsewhere, as at the wrist or ankles. An experienced practitioner can seldom err, even in such difficult cases; but it would be unsafe to attempt to instruct the public in the signs by which the course or position of the vessel may be perceived; and, in point of fact, it is of little importance, when bleeding from the general system, from what part the blood is abstracted, provided the proper quantity be obtained.

The quantity of blood to be withdrawn is variable—depending altogether upon circumstances—but it may be estimated, upon the average, at about twelve fluid ounces. When enough has been obtained, the ligature must be taken off, and the bleeding generally stops of itself: but should this not be the case, the thumb of one hand is to be applied as was done for fixing the vein, while, with the other, the parts surrounding the orifice are to be wiped clean; and the lips of the wound are to be brought together by means of a bit of sticking plaster, or, if necessary, the application of the pledget and a bandage.

A. *Bleeding in the Arm.*

At the bend of the arm there are five veins in which bleeding is performed: these are—1st. The Cephalic, *a*; 2d. The Basilic, *b*; 3d. The Median, *c*; 4th. The Median Cephalic, *d*; 5th. The Median Basilic, *e*, *fig. 8.*: but of this number there are only two, namely, the cephalic (*a*) and median cephalic (*d*), in which a non-professional person can safely entrust himself with the performance of the operation of bleeding: there is danger in bleeding in the basilic and the

median, because of the great number of nervous twigs which surround them, and the wounding of which would expose the patient to unpleasant consequences ; while in bleeding at the median basilic, there is the risk of wounding the artery which generally crosses it underneath at the part corresponding to the greatest prominence of that vein, but which sometimes even runs along below it, in a direction almost if not quite parallel.

Operation. — The operator stands before the patient, at the side corresponding to the limb on which he is about to act, (which we will suppose the right,) stretches out the patient's arm, and places the hand against the left side of his chest ; then taking one of the bands or ligatures, he places its middle portion upon the arm, about an inch and a half or two inches above the bend, crosses the extremities at the back part, returns them in front, and fixes them on the outer side by means of a single bow, drawing them first of all to the necessary degree of tightness. When this is done, he allows the arm to hang down to facilitate the swelling of the veins, and to prepare his lancet ; after which, returning the limb to the position it occupied

while he was applying the ligature, and embracing it on the back part with the left hand, to sustain it, he endeavours to discover the vein he intends to puncture. Having done so, he puts the skin upon the stretch by pulling it with the four last fingers of the hand which sustains the limb, while with the back of the right hand he propels the blood towards the ligature, by making gentle frictions upon the face of the fore-arm from below upwards till the vein is sufficiently distended; this he fixes with his left thumb, and proceeds to introduce the lancet according to the rules laid down at page 94.*

The bleeding ended, he relaxes the ligature by pulling one of the ends: the compression ceasing, the bleeding generally stops; but if, however, it should still continue, the thumb which was placed below the opening of the vein is applied immediately upon it; the arm is then to be carefully wiped; the compress or pledget, or two, if necessary, placed upon the orifice in

* The best mode to *try* the lancet, as well also as to *practise* the introduction of the instrument, is to stretch a piece of soft kid-leather (an old glove for example) over the thumb and finger of the left hand, kept wide apart, and make the incision according to the rules already mentioned.

substitution of and under the thumb; and the remaining band applied in the following manner:— One end of the band (that is to say, about five inches) is placed just above the outside of the joint, from which it is allowed to hang down; the other portion is conducted obliquely downwards and inwards over the bend of the elbow, and fixed upon the compress by means of the left thumb; from thence it is conducted under the elbow to embrace that portion of the forearm, and carried obliquely upwards and inwards to just above the inner side of the joint, crossing in its passage the descending portion of the band immediately upon the compress; from this part it is made to pass behind the arm, immediately above the joint, to the place from whence it first departed. These turns are once or twice more repeated, in the form just described, namely, of a figure of 8; and an end sufficiently long of this portion of the bandage left to unite with the other loose end, and form a double bow (see *fig. 9.*). A cravat or cravat-formed handkerchief would replace advantageously in its absence the first band, while in lieu of the second a cravat having in its centre a loose knot (*fig. 2.*) may be thus arranged;— the

thick or knotted portion is to be placed upon the compress, and the ends directed obliquely, the one upwards to just above the inner side of the joint, the other downwards to just below the outer side: the first is then carried round the back part of the arm to just above the outer side of the elbow, where it is to be kept in place by the fingers of the left hand; and the second round the back part of the fore-arm to just below the inner side of the joint, from whence it is made to pass obliquely upwards and outwards over the compress to meet its fellow and be tied in a knot or bow.

When the opening is small, and the blood has permanently discontinued to flow, the mere application, as has been before stated, of a bit of sticking plaster will suffice.

B. *Bleeding at the Wrist.*

Bleeding at the wrist will often be found advantageous, when the veins at the bend of the arm are too small, or otherwise difficult to operate upon.

The more preferable vein for operation will be found on the back and outer side of the wrist, running upwards from the thumb and

following its direction; it is the cephalic of the thumb. The proceeding will be the same as in the former case: the ligature is applied at about two inches above the place where the vein is the most prominent; the hand is plunged into warm water for some minutes; the vein is to be fixed and punctured according to the rules already laid down; a compress is then to be placed upon the orifice, and maintained in its position by means of one or other of the bandages just described, in the form of a figure of 8, passed about the wrist and hand.

C. *Bleeding at the Ankle.*

The most prominent vein of the foot and ankle is the *internal saphenic*, which will be seen, as represented in *fig. 7. (a)*, running from the great toe, in front of the inner ankle, and along the internal border of the leg; the *external saphenic (b)* which runs for some distance parallel to the first, may be opened, if it should appear the largest of the two, and otherwise the most convenient, which is rarely, however, the case.

The same materials are required for this operation, as have been pointed out for bleed-

ings in general, with the addition, however, of a vessel of warm water to serve as a bath to the foot and the lower half of the leg, and a sheet folded up to about fifteen or eighteen inches square.

To proceed upon the operation, the patient is to be seated, the legs immersed in the warm water for some minutes.

The operator, sitting opposite on a low chair, or kneeling on the right leg, places on his left knee, upon which the folded sheet has been previously laid to protect it from the wet, the sole of the patient's right foot; taking a ligature, he applies it, in the manner and with the precautions already pointed out, at about two or three inches above the ankle. The foot is then to be re-introduced into the water in order to cause the veins to swell, and after a few moments withdrawn, wiped dry, and placed as before upon his (the operator's) left knee.

With the left hand the operator next proceeds to lay hold of the lower and back part of the leg, in order to put the skin on the fore part on the stretch, and place his thumb upon the vein to fix it, while with the right he effects the puncture according to the rules laid down

at page 94. After this, the leg is again returned to the bath; and when it is presumed, by the discolouration of the water, the state of the patient's pulse, and his own feelings, that sufficient blood has been abstracted, the ligature is to be taken off, the parts wiped, the compress placed upon the wound, and the second band applied in the form of a figure of 8 about the foot and ankle, the inter-crossing of which should be made to correspond to the compress, in order to maintain this in place, or, more simply still, a cravat. But in this, as in other bleedings, a bandage is not always necessary; a bit of sticking plaster being often all that is requisite.

This operation is easily performed, and, like bleeding at the wrist, extremely safe; there being neither fear of wounding nerves of any importance, or an artery.

D. *Bleeding at the Neck.*

The external jugular vein at either side of the neck is the only one distinct, and therefore the only one upon which the operation can be performed.

It is seen running in an oblique direction, as represented in *fig.* 10. The operation should be performed at the lower part of the neck; first, because the vein is there more prominent, and, secondly, because higher up it is surrounded by a network of nerves which it would be highly dangerous to wound.

For the operation, the usual materials are required, and, in addition, a card to form a channel for the blood.

To commence, two or three pledgets are placed one upon the other upon the jugular vein at its lowest part, that is to say, just over the collar bone; these are maintained in place by a ligature, the centre of which is applied immediately upon them, while the two ends are carried down, the one forwards, the other backwards, to the opposite arm-pit, where they are tied in a single bow. The vein will now be found to swell, and must be fixed by two fingers of the left hand. To effect the incision, there is this to be first of all observed, namely, that beneath the skin, lying upon the jugular vein, there is a muscle, as thin as paper, the fibres of which run in an oblique direction from the border of the lower jaw to the collar bone,

that is to say, in the direction of the vein itself; the incision must, in consequence, be made at a right angle with respect to the direction of these fibres, in other words, *cross-wise*, in order that they may contract, and thus form no impediment to the issue of the blood.

The incision, also, should be rather wide, a very necessary precaution to insure the free issue of the blood.

The blood will be found to trickle down; therefore the card must be made use of to direct it into the vessel destined for its reception. To encourage the bleeding, the patient should be told to keep his mouth in action as in mastication, and frequently to take a deep breath.

When the bleeding is ended, a bit of sticking plaster should be *instantly* applied to the orifice, and a pledget placed upon it, which should be maintained in place by the second ligature, wound gently round the neck and fixed with a pin.

This is an operation neither difficult nor dangerous, and may be performed in all those cases where there is a congestion of blood in the head, as in apoplexy, hanging, &c.

2. CUPPING.

This appears at first sight a very formidable operation, but, like every other, is readily performed when clearly understood. The principal use of cupping will be found in its being a substitute for leeches, when the topical abstraction of blood becomes requisite, and these animals are not at hand: on board ships, in colonies or in remote places, this will often be the case; and therefore cupping ought to be resorted to without delay, more particularly as the operation can at all times be performed without the paraphernalia in general use. Military, naval, and colonial surgeons are frequently unprovided with the usual instruments, and they resort in such cases to the following means.

They provide themselves with three or four wine-glasses, (those which have the stems broken off are the most commodious,) or the same number of *small* beer-glasses*, a lancet, a little strong spirits, a sponge or some pieces of soft rag, two towels, or a sheet and towel, and a basin of warm water.

* Whatever glasses be employed, they should be quite level at the edges, in order that they may lie perfectly flat.

To commence the operation, the patient must be bared about the part to be acted on, below which one of the towels or a sheet is to be placed to protect his clothes or the bed-linen. The position to be given him must depend upon circumstances, that is to say, upon the parts themselves on which the operation is to be performed. The operator must at all times be guided by his own convenience, and that of the patient.

Every thing being in readiness, he takes one of the glasses and introduces therein a few drops of the ardent spirits, which he allows to spread over the sides; and then holding it for an instant to the flame of a candle or bit of lighted paper, applies it, whilst the spirit is still inflamed, with the utmost rapidity, and with the mouth of the vessel downwards, flat upon the skin. In a few seconds, in consequence of the vacuum formed in the glass, the parts become engorged with blood and greatly swollen, the glass remaining firmly fixed by the atmosphere, which presses on it at the rate of 15 lbs. to the square inch of surface which it covers.

The effect of this application may be favoured by dashing cold water over the surface of the glass, while it is still hot, which causes the

little air remaining therein to become more speedily condensed.

As soon as one glass has been applied, the rest should be applied in succession, and in the same manner; and after they have remained on, from four to six minutes, or more, to give time for the afflux of blood into the parts, the first glass is to be lifted off, which is readily done by putting the nail under the edge and allowing the entry of the air. The operator then takes the lancet, which he opens to its full extent, places the thumb against one of the rivets, and the pulps of the fingers along the blade and handle of the opposite side, (the point directed before him,) and makes a number of rapid incisions *into* the skin, but *not quite through* it if this can be avoided, drawing the lancet from the shoulders to the point. During this part of the operation, an assistant should wipe the glass quite dry; and the operator, introducing into it a few more drops of spirits, applies it as before, first to the flame, and then with rapidity upon the skin: he then proceeds to take off the second glass, scarifies the parts, and re-applies it as before directed; doing the same with the remainder, one only at a time. When the last has been re-applied, the first will be found suffi-

ciently full of blood; this should be emptied of its contents, plunged into warm water to cleanse it, and then wiped and again applied; but the scarifications should be well sponged or cleansed by means of the soft rag, with warm water, to remove the clots. The others are to be treated in succession, in the same way; but if, after the removal once or twice of the glasses, enough blood has not been obtained, the parts should be again scarified.

The great secret of good cupping, is rapidity in the application of the glasses, and dexterity in placing them quite flat upon the parts; and as regards the scarification, the cutting *into* and *not quite through* the skin, otherwise the fatty tissue beneath enters into the incisions and blocks them up.

When sufficient blood has been obtained, the patient is to be wiped clean, and the scarified parts covered with square pieces of sticking plaster, snipped along the edges to make them lie flat, in number corresponding to the glasses.

3. VACCINATION.

This is an operation which many would find it advantageous to perform, when in distant parts, as a preventative to small-pox. Emigrants should be strongly recommended to provide themselves, before setting out, with the vaccine matter, which they may obtain upon application, and free of expense, at *any Vaccine Institution*, where it will be given them hermetically sealed, in order that it may remain for a long period of time uninjured.

Surgeons of ships, and also captains of ships which do not carry surgeons, should be provided with vaccine matter, in case the small-pox should break out among the crew after leaving ports where the disorder rages; or rather for the purpose of vaccinating those who have not already been so, as a precautionary measure. Even in families, as the operation is perfectly simple, and the disorder which ensues so slight as scarcely to merit attention, it might be advantageously performed, in order to avoid the expense of calling in a practitioner. The same reasons ought to operate still more powerfully with the Principals of Schools.

It will be better that the vaccine matter be taken from the human subject. It is generally obtained from the pustule from six to nine days after the operation; it should be transparent, colourless, or of a very light yellowish tinge. It suffices merely to introduce into the pustule the point of the lancet, upon which it will remain for some time without its qualities being at all impaired. But in the Vaccine Institutions it is kept between little square bits of glass, or in a fine glass tube hermetically closed at both ends; and when it is destined to be used at a distant period, it is better preserved by these means. However, when about to be employed, it should be rubbed down with the point of a lancet upon a bit of glass, the point being previously dipped in cold water.

The operation is usually performed upon the upper and outer part of the arm. The operator should lay hold of the back and inner part with the left hand, in order to stretch the skin at the place where he intends to operate; then, the lancet being properly furnished at its point with the matter, and straight open, he takes it between the thumb and fingers of the right hand—the thumb reposing on one border, at the part corresponding to the rivet, and the

pulp of the fingers along the opposite border, so as to be able to introduce it flat. With the point, then, of the lancet directed forwards, he inserts it flatwise under the cuticle to the extent of about the eighth of an inch, allowing it to remain there for some instants. Three or four other punctures are to be made in the same manner, with this precaution — that they are to be far enough apart to prevent the red circular patches, which ought to surround them when the matter has taken effect, from touching each other. This precaution is so much the more necessary to be observed in infants, as erysipelas not unfrequently arises from this cause.

It is not necessary, and is sometimes dangerous, to vaccinate infants before the age of six weeks or two months.

4. APPLICATION OF LEECHES.

It is an observation not more trite than true, that there are two ways of doing every thing, namely, a right way and a wrong way; and notwithstanding the apparent simplicity of applying leeches, few persons set about this the right way. The truth of the above remark is obvious every

day; and there are few practitioners who have not reason to regret their not having given full and clear directions to their patients with respect to their application, before sending them in. Besides, the application is often attended with great inconvenience, and for want of method in its management, there is often an extensive and of course useless soiling of linen.

The best leeches are those of a moderate size, which have never been before applied, which have been but recently taken out of water, and which are vigorous and brisk in their movements.

In setting about their application, the first thing to be done is to shave off any hairs that may be present on the parts, washing and sponging these parts well with warm water, and moistening them with a little milk or sugar and water.

In disorders of the eyes, they should not be applied immediately upon the lids, but just below the ridge or border which forms the lower part of the orbit; and never, as a general rule, upon the redness of inflamed parts, but as near, however, toward the verge of this as prudently may be.

When they are to be applied over some extent

of surface, they should be thrown into a basin of warm water, and then put into a dry square piece of linen, the angles of which are to be drawn up together, so as to form a sort of bag; the warmth thus communicated to them tends to excite them, and render them more apt to bite. Having acquired sufficient energy, which will be seen by the briskness of their movements, the corners of the rag, which rests upon the palm of the hand, are to be thrown back, and the whole reversed upon the part where it is intended they should take: they should be kept in place either by means of a glass applied over rag and all, or merely the hand, which should be stretched out so as only to rest upon the borders.

But when they are to be applied upon those parts where they can only be directed one by one, the best plan is to procure a small card, and roll it up so as to leave two openings, the one large enough to admit the whole body, the other very small, just large enough, in short, to give passage to the head; the animal being then introduced, the head downwards, the small end is to be applied to the proper spot, and the other closed by means of the pulp of one of the fingers; when it has adhered, this fun-

nel-shaped card may be loosened and withdrawn, and reconstructed for the rest.

There are three ways of encouraging the bleeding: the first is, by the application of a cupping-glass, a method only employed by practitioners; the second, by bathing the bleeding orifices, left by the leeches, with warm water; the third, by the application of poultices, which are best made of linseed meal.

When leeches are to be applied to the chest, stomach, or bowels, it is advisable to fold a sheet three or four times long-wise, and lay it across the bed under the patient, before commencing the application of the leeches; during which time a second person should be engaged in preparing a large linseed-meal poultice, to be applied as soon as the leeches have fallen or been taken off: the ends of the folded sheet should then be lifted up, lapped over the whole, and secured with pins; and, in this way, the soiling of the patient's dress and bed-linen will be totally prevented.

With regard to the means employed for stopping the bleeding of leech-bites, when too copious, one more only need be pointed out in addition to those mentioned at page 14., namely, the application of a knife or the handle of a

spoon, sufficiently heated* not to burn the surrounding parts, upon the orifices, for the purpose of producing clots of blood, which upon becoming hard effectually stop them up.

* The instrument may be heated in the manner described page 24.

APPENDIX.

SOME USEFUL DOMESTIC BANDAGES,

IN ADDITION TO THOSE DESCRIBED IN THE BODY OF
THE WORK.

1. *For retaining an Application, such as a Poul-
tice, upon one of the Eyes.*

TAKE a soft handkerchief (say cambric), and fold it diagonally so as to form a triangle.

Lay the triangle upon the head obliquely, base covering the eye affected, point directed to the back part of the head; carry the tails* backwards, one below the ear of the affected side, the other above the ear of the sound one. Let them cross each other behind, so as to include the point of the triangle, and pin them.

2. *For retaining Applications on both Eyes.*

Similar triangle.

* By tails is to be understood the angles corresponding to the base.

Place the base straight across the face, point towards the back of the head; carry the tails backwards, let them include the point, where they intercross, and then pin them.

This same bandage will serve to maintain applications on the head: its position will of course vary according to circumstances; its tails, however, should always be made to embrace, in intercrossing, the point of the triangle.

3. *For retaining Applications at the Arm-pit.*

Soft cravat, or handkerchief folded in that form.

If the application rests against that part of the arm-pit formed by the chest, place the centre of the cravat upon it, and carry the tails upwards to the base of the neck of the opposite side.

If, on the contrary, the application rests against the upper part of the arm-pit, place still the centre of the cravat upon it, but cross the tails on the corresponding shoulder, and then carry them down to the arm-pit of the opposite side.

This latter modification will serve also for retaining applications on the shoulder.

4. *For severe Cuts on the Lip (from Blows for example), when no medical Assistance is likely to be obtained.*

The lip is generally split downwards: bring together the divided edges, keep them in contact by long narrow strips of sticking plaster, and, if necessary, put through the skin near the borders of the wound a couple of stitches of silk or fine thread; lay over this a thin soft pledget, and then apply the following bandage.

The soft linen or cambric triangle: apply the base straight across the forehead, the point being directed to the back of the head; carry the tails backwards, cross them upon the nape of the neck, letting them, of course, include the point of the triangle; then bring them forwards, over-lap them upon the cut lip, and fix them with a stitch or two, or with pins.

5. *For Wounds at the Side of the Neck.*

This and the two following are not to confine the dressing, but to bring the muscles of the affected parts into a necessary state of relaxation.

Place the base of the triangular-folded handkerchief upon the side of the head opposite to

the wound, the point being directed across the head to the side corresponding to the wound; bring down the tails, after giving the head its due degree of inclination, and fix them under the corresponding arm-pit.

6. *For Wounds at the Fore-part of the Neck.*

First wrap a folded towel round the chest*, and fasten it with pins or stitches; then, after inclining the head sufficiently forwards, take the triangular-folded handkerchief, apply the base to the upper and back part of the head, directing the point toward the forehead; bring down the tails along the sides of the head to the body bandage, and fasten them to it by strong stitches.

7. *For Wounds on the Back-part of the Neck.*

Same body bandage.

Take the triangular-folded handkerchief, place the base across the forehead, the point directed towards the back of the head; give the head the due inclination, bring down the tails

* The folded towel, thus applied, will serve conveniently for containing blisters, dressings, or poultices upon any part of the *body*.

along its sides, and fix them by strong stitches to the back part of the body bandage.

8. *For Fracture of the Collar Bone.*

Place the centre of a small cravat at the nape of the neck, bring round the tails in front, and tie them together. Then get a large triangular-shaped handkerchief; form a sling, the base towards the elbow, the point towards the hand, attaching the tails to the cravat ring above described. Next apply the middle of a broad cravat to the arm of the affected side, and fasten the tails at the opposite side of the body: the arm will be thus bound closely to the chest, and all motion prevented.

It is better to fasten the tails of the sling to a cravat ring, than to knot them, as is ordinarily done, upon the opposite shoulder, a proceeding which greatly fatigues and harasses the patient.

9. *For Wounds of the Limbs which run cross-wise.*

(*Fig. 5.*)

Cut two long and broad slips of sticking plaster; through these run bits of narrow tape, from four to six inches long, in the manner

represented in the figure. Wind these slips round the limb, one above the other, below the wound, and tie the extremities of the tapes together; by these means the edges of the wound will be brought into contact, and perfectly sustained.

10. *For Wounds of the Limbs which run long-wise.*
(Same fig.)

Take a cravat or cravat-shaped piece of linen, apply the centre to that part of the limb which is directly opposite to the wound; lay a couple of pledgets one on each side of this; bring forwards the tails, through one of which has been made a slit; through the slit of this tail pass the other just over the wound itself, draw the tails in opposite directions, and fasten them at the opposite side of the limb: if the wound be very long, a second bandage may be employed.

11. *For Rupture of the Tendon inserted into the Heel, called the Tendon of Achilles; an Accident that sometimes occurs in jumping. (Fig. 1.)*

Pass a cravat round the lower part of the thigh, just above the knee, to serve as a sort of belt; then take a long cravat, place the centre

upon the instep, bring the tails round to the sole of the foot, cross them there just before the heel, and carry them upwards to the bend of the knee, where they are to be attached to the cravat belt.

12. *For Wounds across the Back of the Hand or Wrist. (Fig. 3.)*

Pass a small cravat belt round the lower part of the arm, just above the elbow; leave one end of the cravat free. Take a triangular-folded handkerchief, place the base across the fore part of the wrist, about which the tails are to be carried, over-lapped, and pinned. Next bring forwards the point of the triangle, and to force the hand backwards, let it pass over the extremities of the fingers, in order to meet with and be attached to the free end of the cravat belt as represented in the drawing.

13. *For Wounds across the Fore-part of the Hand or Wrist.*

Apply the base of a triangular-folded handkerchief across the back of the wrist, about which the tails are to be carried, over-lapped, and pinned. Next, for the purpose of bending the hand, bring forwards the point of the tri-

angle over the fingers, and pin it to the circular part in front of the wrist.

The same description of bandages as the two latter may be applied to wounds of the foot and instep.

14. *For supporting the Purse if the Testes are swelled in consequence of a Fall, a Blow, or any other Cause. (Fig. 6.)*

Fasten a cravat round the hips to serve as a belt.

Apply the base of a triangular-folded handkerchief to the under and back part of the purse; carry up the tails along-side of this to the cravat belt, pass them round it from before backwards, as represented in the drawing, bring the extremities forwards and tie them in a single bow. Then take the point of the triangle, carry it up in front, introduce it under the extremities of the tails and fore part of the belt, and, reversing it in front of the apparatus, secure it with a pin.

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