Instruments of Reduction

Hippocrates

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Translated by Francis Adams

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PART 1

With regard to the construction of bones, the bones and joints of the fingers are simple, the bones of the hand and foot are numerous, and articulated in various ways; the uppermost are the largest; the heel consists of one bone which is seen to project outward, and the back tendons are attached to it. The leg consists of two bones, united together above and below, but slightly separated in the middle; the external bone (fibula), where it comes into proximity with the little toe, is but slightly smaller than the other, more so where they are separated, and at the knee, the outer hamstring arises from it; these bones have a common epiphysis below, with which the foot is moved, and another epiphys is above,* in which is moved the articular extremity of the femur, which is simple and light in proportion to its length, in the form of a condyle, and having the patella (connected with it?), the femur itself bends outward and forward; its head is a round epiphysis which gives origin to ligament inserted in the acetabulum of the hip−joint. This bone is articulated somewhat obliquely, but less so than the humerus. The ischium is united to the great vertebra contiguous to the os sacrum by a cartilaginous ligament. The spine, from the os sacrum to the great vertebra, is curved backward; in this quarter are situated the bladder, the organs of generation, and the inclined portion of the rectum; from this to the diaphragm it proceeds in a straight line inclining forward, and the psoae are situated there; from this point, to the great vertebra above the tops of the shoulders, it rises in a line that is curved backward, and the curvature appears greater than it is in reality, for the posterior processes of the spine are there highest; the articulation of the neck inclines forward. The vertebrae on the inside are regularly placed upon one another, but behind they are connected by a cartilaginous ligament; they are articulated in the form of synarthrosis at the back part of the spinal marrow; behind they have a sharp process having a cartilaginous epiphysis, whence proceeds the roots of nerves running downward, as also muscles extending from the neck to the loins, and filling the space between the ribs and the spine. The ribs are connected to all the intervertebral spaces on the inside, from the neck to the lumbar region, by a small ligament, and before to the sternum, their extremities being spongy and soft; their form is the most arched in man of all animals; for in this part, man is, of all animals, the narrowest in proportion to his bulk. The ribs are united to each vertebra by a small ligament at the place from which the short and broad lateral processes (transverse processes?) arise. The sternum is one continuous bone, having lateral pits for the insertion of the ribs; it is of a spongy and cartilaginous structure. The clavicles are rounded in front, having some slight movements at the sternum, but more free at the acromion. The acromion, in man, arises from the scapula differently from most other animals. The scapula is cartilaginous toward the spine, and spongy elsewhere, having an irregular figure externally; its neck and articular cavity cartilaginous; it does not interfere with the movements of the ribs, and is free of all connection with the other bones, except the humerus. The head of the humerus is articulated with its (glenoid?) cavity, by means of a small ligament, and it consists of a rounded epiphysis composed of spongy cartilage, the humerus itself is bent outward and forward, and it is articulated with its (glenoid?) cavity by its side, and not in a straight line. At the elbow it is broad, and has condyles and cavities, and is of a solid consistence; behind it is a cavity in which the coronoid process (olecranon?) of the ulna is lodged, when the arm is extended; here, too, is inserted the benumbling nerve, which arises from between the two bones of the forearm at their junction, and terminates there.

* Epiphysis means a close union of the two bones by means of a ligament.

PART 2

When the nose is fractured, the parts should be modeled instantly, if possible. If the fracture be in its cartilaginous part, introduce into the nostrils a tent formed of caddis, inclosed in the outer skin of a Carthaginian hide, or anything else which does not irritate; the skin is to be glued to the parts displaced, which are to be thus rectified. Bandaging in this case does mischief. The treatment is to consist of flour with manna, or of sulphur with cerate. You will immediately adjust the fragments, and afterward retain them in place with your fingers introduced into the nostrils, and turning the parts into place; then the Carthaginian skin is to be used. Callius forms even when there is a wound; and the same things are to be done, even when there is to be exfoliation of the bones, for this is not of a serious nature.

PART 3

In fractures of the ears, neither bandages nor cataplasms should be used; or, if any bandage be used, it should be put on very tight; the cerate and sulphur should be applied to agglutinate the bandages. When matter forms in the ears, it is found to be more deeply seated than might be supposed, for all parts that are pulpy, and consist of juicy flesh, prove deceptious in such a case. But no harm will result from making an opening, for the parts are lean, watery, and full of mucus. No mention is here made of the places and circumstances which render it fatal to make an opening. The cure is soonest effected by transfixing the ear with a cautery; but the ear is maimed and diminished in size, if burned across. If opened, one of the gentle medicines for flesh wounds should be used as a dressing.

PART 4

The jaw−bone is often slightly displaced (subluxated?), and is restored again; it is dislocated but rarely, especially in gaping; in fact, the bone is never dislocated unless it slips while the mouth is opened wide. It slips, however, the more readily from its ligaments being oblique, supple, and of a yielding nature. The symptoms are: the lower jaw protrudes, it is distorted to the side opposite the dislocation, and the patient cannot shut his mouth; when both sides are dislocated, the jaw projects more, the mouth can be less shut, but there is no distortion; this is shown by the rows of the teeth in the upper and lower jaw corresponding with one another. If, then, both sides be dislocated, and not immediately reduced, the patient for the most part dies on the tenth day, with symptoms of continued fever, stupor, and coma, for the muscles there induce such effects; there is disorder of the bowels attended with scanty and unmixed dejection; and the vomitings, if any, are of the same character. The other variety is less troublesome. The method of reduction is the same in both:−The patient being laid down or seated, the physician is to take hold of his head, and grasping both sides of the jaw−bone with both hands, within and without, he must perform three manoeuvres at once,−rectify the position of the jaw, push it backward, and shut the mouth. The treatment should consist of soothing applications, position, and applying a suitable bandage to support the jaw−bone, so as to cooperate with the reduction.

PART 5

The bone of the shoulder is dislocated downward. I have never heard of any other mode. The parts put on the appearance of dislocation forward, when the flesh about the joint is wasted during consumption, as also seems to be the case with cattle when in a state of leanness after winter. Those persons are most liable to dislocations who are thin, slender, and have humidities about their joints without inflammation, for it knits the joints. Those who attempt to reduce and rectify dislocations in oxen, commit a blunder, as forgetting that the symptoms arise from the manner in which the ox uses the limb, and that the appearance is the same in a man who is in a similar condition, and forgetting also that Homer has said, that oxen are most lean at that season. In this dislocation, then, when not reduced, the patient cannot perform any of those acts which others do, by raising the arm from the side. I have thus stated who are the persons most subject to this dislocation, and how they are affected. In congenital dislocations the nearest bones are most shortened, as is the case with persons who are weasel−armed; the fore−arm less so, and the hand still less; the bones above are not affected. And the parts (near the seat of the injury) are most wasted in flesh; and this happens more especially on the side of the arm opposite the dislocation, and that during adolescence, yet in a somewhat less degree than in congenital cases. The deep−seated suppurations occur most frequently to new−born infants about the joint of the shoulder, and these produce the same consequences as dislocations. In adults, the bones are not so diminished in size, and justly, seeing that the others will not increase as in the former case; but wasting of the flesh takes place, for it is increased, and is diminished every day, and at all ages. And attention should be paid to the force of habit, and to the symptom produced by the tearing away of the acromion, whereby a void is left, which makes people suppose that the humerus is dislocated. The head of the humerus is felt in the armpit, and the patient cannot raise his arm, nor swing it to this side and that, as formerly. The other shoulder shows the difference. Modes of reduction:−The patient himself having placed his fist in the arm pit, pushes up the head of the humerus with it, and brings the hand forward to the breast. Another:−Force it backward, so that you may turn it round. Another:−Apply your head to the acromion, and your hands to the armpit, separate the head of the humerus (from the side?), and push the elbow in the opposite direction; or, instead of your knees, another person may turn aside the elbow, as formerly directed. Or, place the patient on your shoulder, with the shoulder in his armpit. Or, with the heel, something being introduced to fill up the hollow of the armpit, and using the right foot to the right shoulder. Or, with a pestle. Or, with the step of a ladder. Or, by rotation made with piece of wood stretched below the arm. Treatment:−As to attitude, the arm placed by the side, the hand and shoulder raised; the bandaging and adjustment of the parts while in this attitude. If not reduced, the top of the shoulder becomes attenuated.

PART 6

When the acromion is torn away, the appearance is the same as in dislocation of the shoulder; but there is no impediment, except that the bone does not return to its position. The figure should be the same as in dislocation, both as regards bandaging and suspending the limb. The bandaging according to rule.

PART 7

When partial displacement (sub−luxation?) takes place at the elbow, either inside or outside, but the sharp point (olecranon?) remains in the cavity of the humerus, make extension in a straight line, and push the projecting parts backward and to the sides.

PART 8

In complete dislocations to either side, make extension while the arm is in the position it is put in to be bandaged for a fracture, for thus the rounded part of the elbow will not form an obstacle to it. Dislocation most commonly takes place inward. The parts are to be adjusted by separating the bones as much as possible, so that the end of the humerus may not come in contact with the olecranon, but it is to be carried up and turned round, and not forced in a straight line; at the same time the opposite sides are to be pushed together, and the bones reduced to their place. In these cases rotation of the elbow cooperates; that is to say, turning the arm into a state of supination and pronation; so much for the reduction. With regard to the attitude in which it is to be put,−the hand is to be placed somewhat higher than the elbow, and the arm by the side; this position suits with it when slung from the neck, is easily borne, is its natural position, and one adapted for ordinary purposes, unless callus form improperly: the callus soon forms. Treatment:−By bandages according to the common rule for articulations, and the point of the elbow is to be included in the bandage.

PART 9

The elbow, when luxated, induces the most serious consequences, fevers, pain, nausea, vomiting of pure bile; and this especially in dislocations backward, from pressure on the nerve which occasions numbness; next to it is dislocation forward. The treatment is the same. The reduction of dislocation backward is by extension and adaptation: the symptom of this variety, loss of the power of extension; of dislocation forward, loss of the power of flexion. In it a hard ball is to be placed in the bend of the elbow, and the fore−arm is to be bent over this while sudden extension is made.

PART 10

Diastasis of the bones may be recognized by examining the part where the vein which runs along the arm divides.

PART 11

In these cases callus is speedily formed. In congenital dislocations, the bones below the seat of the injury are shorter than natural; in this case, the greatest shortening is in the nearest, namely, those of the fore−arm; second, those of the hand; third, those of the fingers. The arm and shoulders are stronger, owing to the nourishment which they receive, and the other arm, from the additional work it has to perform, is still more strong. The wasting of the flesh, if the dislocation was outward, is on the inside; or if otherwise, on the side opposite the dislocation.

PART 12

In dislocation at the elbow, whether outward or inward, extension is to be made with the fore−arm at right angles to the arm; the arm is to be suspended by a shawl passed through the armpit, and a weight is to be attached to the extremity of the elbow; or force is to be applied with the hands. The articular extremity being properly raised, the parts are to be adjusted with the palms of the hands, as in dislocations of the hands. It is to be bandaged, suspended in a sling, and placed, while in this attitude.

PART 13

Dislocations backward are to be rectified with the palms of the hands along with sudden extension. These two acts are to be performed together, as in other cases of the kind. In dislocation forward, the arm is to bend around a ball of cloth, of proper size, and at the same time replaced.

PART 14

If the displacement be on the other side both these operations are to be performed in effecting the adjustment of the arm. With regard to the treatment,−the position and the bandaging are the same as in the other cases. For all these cases may be reduced by ordinary distention.

PART 15

With regard to the modes of reduction, some act upon the principle of carrying the one piece of bone over the other, some by extension, and some by rotation: these last consist in rapidly turning the arm to this side and that.

PART 16

The joint of the hand is dislocated inward or outward, but most frequently inward. The symptoms are easily recognized; if inward, the patient cannot at all bend his fingers, but if outward, he cannot extend them. Reduction:−By placing the fingers above a table, extension and counter−extension are to be made by assistance, while, with the palm of the hand or the heel on the projecting bone, one presses forward, and from behind, upon the other bone, and lays some soft substance on it; and, if the dislocation be above, the hand is to be turned into a state of pronation; or, if backward, into a state of supination. The treatment is to be conducted with bandages.

PART 17

The whole hand is dislocated either inward, or outward, but especially inward, or to this side or that. Sometimes the epiphysis is displaced, and sometimes there is displacement (diastasis) of the one bone from the other. Powerful extension is to be made in this case; and the projecting part is to be pressed upon, and counter−pressure made on the opposite side: both modes being performed at the same time, both backward and laterally, either with the hands on a table, or with the heel. These accidents give rise to serious consequences and deformities; but in time the parts get so strong as to admit of being used. The treatment consists of bandages comprehending the hand and forearm, and splints are to be applied as far as the fingers; when put in splints, they are to be more frequently loosed than in fractures, and more copious allusions of water are to be used.

PART 18

In congenital dislocations the hand becomes shortened, and the atrophy of the flesh is generally on the side opposite the dislocation. In the adult the bones remain of their proper size.

PART 19

The symptoms of dislocation of the finger are obvious, and need not be described. This is the mode of reduction:−By stretching in a straight line, and making pressure on the projecting part, and counter−pressure, at the opposite side, on the other. The proper treatment consists in the application of bandages. When not reduced, the parts unite by callus outside of the joints. In congenital dislocations, and in those which occur during bones below the dislocation are shortened, and the flesh is wasted principally on the side opposite to the dislocation; in the adult the bones remain of their proper size.

PART 20

Dislocation at the hip−joint occurs in four modes, inward most frequently, outward next, the others of equal frequency. The symptoms:−The common, a comparison with the sound leg. The peculiar symptoms of dislocations inward; the head of the bone is felt at the perineum; the patient cannot bend his leg as formerly; the limb appears elongated, and to a great extent, unless you bring both limbs into the middle space between them in making a comparison of them; and the foot and the knee are inclined outward. If the dislocation has taken place from birth, or during one's growth, the thigh is shortened, the leg less so, and the others according to the same rule; the fleshy parts are atrophied, especially on the outside. Such persons are afraid to stand erect, and crawl along on the sound limb; or, if compelled, they walk with one or two staves, and bear up the affected limb; and the smaller the limb so much the more do they walk. If the accident happens to adults the bones remain of their proper size, but the flesh is wasted, as formerly described; the patients walk in a wriggling manner, like oxen; they are bent toward the flank, and the buttock on the uninjured side is prominent; for the uninjured limb must necessarily come below that it may support the body, whilst the other must be carried out of the way, as it cannot support the body, like those who have an ulcer in the foot. They poise the body by means of a staff on the sound side, and grasp the affected limb with the hand above the knee so as to carry the body in shifting from one place to another. If the parts below the hip−joint be used, the bones below are less atrophied, but the flesh more.

PART 21

The symptoms and attitudes in dislocation outward are the opposite, and the knee and foot incline a little inward. When it is congenital, or occurs during adolescence, the bones do not grow properly; according to the same rule, the bone of the hip−joint is somewhat higher than natural, and does not grow proportionally. In those who have frequent dislocations outward, without inflammation, the limb is of a more humid (flabby?) temperament than natural, like the thumb, for it is the part most frequently dislocated, owing to its configuration; in what persons the dislocation is to a greater or less extent; and in what persons it is more difficultly or easily produced; in what there is reason to hope that it can be speedily reduced, and in what not; and the remedy for this; and in what cases the dislocation frequently happens, and treatment of this. In dislocation outward from birth, or during adolescence, or from disease, (and it happens most frequently from disease, in which case there is sometimes exfoliation of the bone, but even where there is no exfoliation), the patients experience the same symptoms, but to an inferior degree to those in dislocations inward, if properly managed so that in walking they can put the whole foot to the ground and lean to either side. The younger the patient is, the greater care should be bestowed on him; when neglected, the case gets worse; when attended to, it improves; and, although there be atrophy in all parts of the limb, it is to a less extent.

PART 22

When there is a dislocation on both sides, the affections of the bones are the same; the flesh is well developed, except within, the nates protrude, the thighs are arched, unless there be sphacelus. If there be curvature of the spine above the hip−joint, the patients enjoy good health, but the body does not grow, with the exception of the head.

PART 23

The symptoms of dislocation backward are:−The parts before more empty, behind they protrude, the foot straight, flexion impossible, except with pain, extension least of all: in these the limb is shortened. They can neither extend the limb at the ham, nor at the groin, unless it be much raised, nor can they bend it. The uppermost joint, in most cases, takes the lead: this is common in joints, nerves, muscles, intestines, uteri, and other parts. There the bone of the hip−joint is carried backward to the nates, and on that account it is shortened, and because the patient cannot extend it. The flesh of the whole leg is wasted in all cases, in which most, and to what extent, has been already stated. Every part of the body which performs its functional work is strong, but, not withstanding, if inactive, it gets into a bad condition, unless its inactivity arise from fatigue, fever, or inflammation. And in dislocations outward, the limb is shortened, because the bone is lodged in flesh which yields; but, not withstanding, in dislocations inward, it is longer, because the bone is lodged on a projecting bone. Adults, then, who have this dislocation unreduced, are bent at the groins in walking, and the other ham is flexed; they scarcely reach the ground with the ball of the foot; they grasp the limb with the hand, and walk without a staff if they choose; if the staff be too long, their foot cannot reach the grounds−if they wish to reach the ground, they must use a short staff. There is wasting of the flesh in cases attended with pain; and the inclination of the leg is forward, and the sound leg in proportion. In congenital cases, or when in adolescence, or from disease, the bone is dislocated (under what circumstances will be explained afterward), the limb is particularly impaired, owing to the nerves and joints not being exercised, and the knee is impaired for the reasons stated. These persons, keeping the limb bent, walk with one staff or two. But the sound limb is in good flesh from usage.

PART 24

In dislocations forward the symptoms are the opposite: a vacuity behind, a protuberance before; of all motions they can least perform flexion, and extension best; the foot is straight, the limb is of the proper length at the heel; at its extremity the foot a little turned up; they are especially pained at first: of all these dislocations retention of urine occurs most frequently in this variety, because the bone is lodged among important nerves. The fore parts are stretched, do not grow, are diseased, and are obnoxious to premature decay; the back parts are wrinkled. In the case of adults, they walk erect, resting merely on the heel, and this they do decidedly if they can take great steps; but they drag it along; the wasting is least of all in this variety of dislocation, owing to their being able to use the limb, but the wasting is most behind. The whole limb being straighter than natural they stand in need of a staff on the affected side. When the dislocation is congenital, or has occurred during adolescence, if properly managed, the patient has the use of the limb as well as adults (otherwise?) have of it. But, if neglected, it is shortened and extended, for in such cases the joint is generally in a straight position. The diminution of the bones, and wasting of the fleshy parts, are analogous.

PART 25

In reduction−the extension of the thigh is to be powerful, and the adjustment what is common in all such cases, with the hands, or a board, or a lever, which, in dislocations inward, should be round, and in dislocations outward, flat; but it is mostly applicable in dislocations outward. Dislocations inward are to be remedied by means of bladders, extending to the bare part of the thigh, along with extension and binding together of the limbs. The patient may be suspended, with his feet a little separated from one another, and then a person inserting his arm within the affected limb, is to suspend himself from it, and perform extension and readjustment at the same time; and this method is sufficient in dislocations forward and the others, but least of all in dislocations backward. A board fastened under the limb, like the board fastened below the arm in dislocations at the shoulder, answers in dislocations inward, but less so in the other varieties. Along with extension you will use pressure either with the foot, the hand, or a board, especially in dislocations forward and backward.

PART 26

Dislocations at the knee are of a milder character than those of the elbow, owing to the compactness and regularity of the joint; and hence it is more readily dislocated and reduced. Dislocation generally takes place inward, but also outward and backward. The methods of reduction are−by circumflexion, or by rapid excalcitration, or by rolling a fillet into a ball, placing it in the ham, and then letting the patient's body suddenly drop down on his knees: this mode applies best in dislocations backward. Dislocations backward, like those of the elbows, may also be reduced by moderate extension. Lateral dislocations may be reduced by circumflexion or excalcitration, or by extension (but this is most applicable in dislocation backward), but also by moderate extension. The adjustment is what is common in all. If not reduced, in dislocations backward, they cannot bend the leg and thigh upon one another, but neither can they do this in the others except to a small extent; and the fore parts of the thigh and leg are wasted. In dislocations inward they are bandy−legged, and the external parts are atrophied. But, in dislocations outward, they incline more outward, but are less lame, for the body is supported on the thicker bone, and the inner parts are wasted. The consequences of a congenital dislocation, or one occurring during adolescence, are analogous to the rule formerly laid down.

PART 27

Dislocations at the ankle−joint require strong extension, either with the hands or some such means, and adjustment, which at the same time effects both acts; this is common in all cases.

PART 28

Dislocations of the bones of the foot are to be treated like those of the hand.

PART 29

Dislocations of the bones connected with the leg, if not reduced, whether occurring at birth or during adolescence, are of the same character as those in the hand.

PART 30

Persons who, in jumping from a height, have pitched on the heel, so as to occasion diastasis (separation) of the bones, ecchymosis of the veins, and contusion of the nerves,−when these symptoms are very violent, there is danger that the parts may sphacelate, and give trouble to the patient during the remainder of his life; for these bones are so constructed as to slip past one another, and the nerves communicate together. And, likewise in cases of fracture, either from an injury in the leg or thigh, or in paralysis of the nerves connected with these parts, or, when in any other case of confinement to bed the heel, from neglect, becomes blackened, in all these cases serious effects result therefrom. Sometimes, in addition to the sphacelus, very acute fevers supervene, attended with hiccup, tumors, aberration of intellect, and speedy death, along with lividity of the large bloodvessels, and gangrene. The symptoms of the exacerbations are these: if the ecchymosis, the blackened parts, and those around them, be somewhat hard and red, and if lividity be combined with the hardness, there is danger of mortification; but, not withstanding, if the parts are sublivid, or even very livid and diffused, or greenish and soft, these symptoms, in all such cases, are favorable. The treatment consists in the administration of hellebore, if they be free from fever, but otherwise, they are to have oxyglyky for drink, if required. Bandaging,−agreeably to the rule in other joints; but this is to be attended to also,−the bandages should be numerous, and softer than usual; compression less; more water than usual to be used in the allusions; to be applied especially to the heel. The same object should be sought after in the position as in the bandaging, namely, that the humors may not be determined to the heel; the limb to be well laid should have the heel higher than the knee. Splints not to be used.

PART 31

When the foot is dislocated, either alone, or with the epiphysis, the displacement is more apt to be inward. If not reduced, in the course of time the parts of the hips, thigh, and leg, opposite the dislocation, become attenuated. Reduction:−As in dislocation at the wrist; but the extension requires to be very powerful. Treatment:−Agreeably to the rule laid down for the other joints. Less apt to be followed by serious consequences than the wrist, if kept quiet. Diet restricted, as being in an inactive state. Those occurring at birth, or during adolescence, observe the rule formerly stated.

PART 32

With regard to slight congenital dislocations, some of them can be rectified, especially club−foot. There is more than one variety of club−foot. The treatment consists in modeling the foot like a piece of wax; applying resinous cerate, and numerous bandages; or a sole, or a piece of lead is to be bound on, but not upon the bare skin; the adjustment and attitudes to correspond.

PART 33

If the dislocated bones cause a wound in the skin, and protrude, it is better to let them alone, provided only they are not allowed to hang, nor are compressed. The treatment consists in applying pitched cerate, or compresses dipped in hot wine (for cold is bad in all such cases), and certain leaves; but in winter unwashed wool may be applied as a cover to the part; neither cataplasms nor bandaging; restricted diet. Cold, great weight, compression, violence, restricted position, all such are to be accounted as fatal measures. When treated moderately (they escape), maimed and deformed; for, if the dislocation be at the ankle, the foot is drawn upward, and, if elsewhere, according to the same rule. The bones do not readily exfoliate; for only small portions of them are denuded, and they heal by narrow cicatrices. The danger is greatest in the greatest joints, and those highest up. The only chance of recovery is, if they are not reduced, except at the fingers and hand, and in these cases the danger should be announced beforehand. Attempts at reduction to be made on the first or second day; or, if not accomplished then, on the tenth, by no means on the fourth. Reduction by levers. Treatment:−As in injuries of the bones of the head, and the part is to be kept hot; and it is better to give hellebore immediately after the parts have been reduced. With regard to the other bones, it should be well known, that, if replaced, death will be the consequence; the more surely and expeditiously, the greater the articulation, and the more high its situation. Dislocation of the foot is attended with spasm (tetanus) and gangrene; and if, upon its being replaced, any of these symptoms come on, the chance of recovery, if there be any chance, is in displacing it anew; for spasms do not arise from relaxation, but from tension of the parts.

PART 34

Excision, either of articular bones or of pieces of bones, when not high up in the body, but about the foot or the hand, is generally followed by recovery, unless the patient die at once from deliquium animi. Treatment:−As in injuries of the head; warmth.

PART 35

Sphacelus of the fleshy parts is produced by the tight compression of bleeding wounds, and by pressure in the fractures of bones, and by blackening, arising from bandages. And in those cases in which a portion of the thigh or arm, both the bones and the flesh drop off, many recover, the case being less dangerous than many others. In cases, then, connected with fracture of the bones, the separation of the flesh quickly takes place, but the separation of the bone, at the boundary of its denuded part, is slower in taking place. But the parts below the seat of the injury, and the sound portion of the body, are to be previously taken away (for they die previously), taking care to avoid producing pain, for deliquium animi may occasion death. The bone of the thigh in such a case came away on the eightieth day, but the leg was removed on the twentieth day. The bones of the leg, in a certain case, came away at the middle of the sixtieth day. In these cases the separation is quick or slow, according to the compression applied by the physician. When the compression is gently applied the bones do not drop off at all, neither are they denuded of flesh, but the gangrene is confined in the more superficial parts. The treatment of such cases must be undertaken; for most of them are more formidable in appearance than in reality. The treatment should be mild, but, not withstanding, with a restricted diet; hemorrhages and cold are to be dreaded; the position, so as that the limb may be inclined upward, and afterward, on account of the purulent abscess, horizontally, or such as may suit with it. In such cases, and in mortifications, there are usually, about the crisis, hemorrhages and crisis, hemorrhages and violent diarrhoeas, which, however, only last for a few days; the patients do not lose their appetite, neither are they feverish, nor should they be put upon a reduced diet.

PART 36

Displacement of the spine, if inward, threatens immediate death, attended with retention of urine and loss of sensibility. Outward, the accident is free from most of these bad effects, much more so than where there is merely concussion without displacement; the effects in the former case being confined to the spot affected, whereas in the latter they are further communicated to the whole body, and are of a mortal character. In like manner, when the ribs are fractured, whether one or more, provided there be no splinters, there is rarely fever, spitting of blood, and sphacelus, and ordinary treatment without evacuation will suffice, provided there be no fever;−bandaging, according to rule; and the callus forms in twenty days, the bone being of a porous nature. But in cases of contusion, tubercles form, along with cough, suppurating sores, and sphacelus of the ribs, for nerves from all the parts run along each rib. In many of these cases haemoptysis and empyema also take place. The management of this case consists in careful treatment, bandaging according to rule, diet at first restricted, but afterward more liberal, quiet, silence, position, bowels, and venereal matters regulated. Even when there is no spitting of blood, these contusions are more painful than fractures, and are more subject in time to relapses; and when any mucous collection is left in the part, it makes itself be felt in disorders of the body. Treatment:−burning, when the bone is affected, down to the bone, but not touching the bone itself; if in the intercostal space, the burning must not extend through it, nor be too superficial. In sphacelus of the ribs, tents are to be tried, all other particulars will be stated afterward: but they should be learned by sight rather than by words, namely, food, drink, heat, cold, attitude; medicines, dry, liquid, red, dark, white, sour, for the ulcers, and so with regard to the diet.

PART 37

Displacements (of the vertebrae) from a fall rarely admit of being rectified, and those above the diaphragm are most difficult to rectify. When the accident happens to children, the body does not grow, with the exception of the legs, the arms, and head. Excurvation, in adults, speedily relieves the individual from the disease he is laboring under, but in time it renews its attack, with the same symptoms as in children, but of a less serious nature. Some individuals have borne this affection well, and have turned out to be brawny and fat. But few of them have lived to the age of sixty. Lateral curvatures also occur, the proximate cause of which is the attitudes in which these persons lie. These cases have their prognostics accordingly.

PART 38

The rule for the reduction and adjustment:−The axle, the lever, the wedge, pressure above; the axle to separate, the lever to push aside. Reduction and adjustment are to be accomplished by forcible extension, the parts being placed in such a position as will facilitate the conveying of the displaced bone over the extremity of the bone from which it was displaced: this is to be accomplished either with the hands, or by suspension, or axles, or turned round something. With the hands this is to be effected properly, according to the structure of the parts. In the case of the wrist and elbow, the parts are to be forced asunder, at the wrist in the line of the elbow, and the elbow with the fore−arm at a right angle with the arm, as when it is suspended in a sling. When we want to separate the protruding bones, and force them into place, in the case of the fingers, the toes, or the wrist, the proper separation may be made by hands, while the projecting part is forced into its place by pressing down with the heel or the palm of the hand upon some resisting object, while something moderately soft is laid under the projecting part, but nothing such under the other, and then pressure is to be made backward and downward, whether the dislocation be inward or outward. In lateral displacement, pressure and counter−pressure must be made on the opposite sides. Displacements forward can be reduced neither by sneezing, nor coughing, nor by the injection of air, nor by the cupping−instrument; and if anything can do good in such a case, it is extension. People are deceived in fractures of the spinal processes, the pain of which causing the patient to stoop forward, the case is taken for dislocation inward; these fractures heal speedily and easily. Dislocation outward is to be remedied by succussion, when high up, toward the feet; and when situated low down, in the contrary direction; the part is to be pressed back into its place, either with the foot or a board. Dislocations to either side, if they admit of any remedy, are to be treated by extension, and suitable attitudes, with regimen. The whole apparatus should be broad, soft, and strong; or otherwise, they should be wrapped in rags; before being used, they should all be prepared proportionately to the length, height, and breadth. In applying extension to the thigh, for example, the bands should be fastened at the ankle and above the knee, these stretching in the same direction, another band to be passed by the loins, and around the armpits, and by the perineum and thigh, one end passing up the breast and the other along the back, these all stretching in the same direction and being fastened either to a piece of wood resembling a pestle or to an axle. When this is done on a couch, either of its feet is to be fastened to the threshold, and a strong block of wood is to be laid across the other, and the pieces of wood resembling a pestle are to be raised on these, to make extension and counter−extension; the naves of a wheel are to be fastened in the floor, or a ladder is to be adjusted, so that extension may be made in both directions. The thing commonly used is a bench six cubits long, two cubits broad, one fathom in thickness, having two low axles at this end and that, and having at its middle two moderate sized pillars, to which is to be adjusted a transverse piece of wood like the step of a ladder, which is to receive the piece of wood tied below the limb, as is done in dislocation at the shoulder; and the bench is to have excavations like trays, smooth, four inches in breadth and depth, and at such an interval as to leave room for the lever used to reduce the limb. In the middle of the bench a square hole is to be scooped out to receive a small pillar, which, being adjusted to the perineum, will obviate the tendency of the body to slip downward, and being rather loose may act somewhat as a lever. In certain occasions a piece of wood is required, which is inserted into a hole scooped out of the wall; the other end of it is then to be pressed down, something moderately soft being placed under it.

PART 39

In those cases where the bone of the palate has exfoliated, the nose sinks in its middle. In contusions of the head without a wound, either from a fall, a fracture, or pressure, in certain of these cases acrid humors descend from the head to the throat, and from the wound in the head to the liver and thigh.

PART 40

The symptoms of subluxations and luxations, and where, and how, and how much these differ from one another. And the cases in which the articular cavity has been broke off, and in which the ligament has been torn, and in which the epiphysis has broken in which, and how, when the limb consists of two bones, one or both are broken: in consequence of these the dangers, chances in which bad, and when the injuries will result in death, and when in recovery. What cases are to be reduced or attempted, and when, and which, and when not; the hopes and dangers in these cases. Which and when congenital dislocations are to be undertaken: the parts in a state of growth, the parts fully grown, and why sooner, or slower: and why a part becomes maimed, and how, and how not: and why a certain part is atrophied, and where, and how, and in what cases to a less extent. And why fractured parts unite sooner or slower, how distortions and callosities form, and the remedy for them. In what cases there are external wounds, either at first or afterwards: in what fractures the bones are shortened, and in what not: in what cases the fractured bones protrude, and when they protrude most: in what cases dislocated bones protrude. That physicians are deceived, and by what means, in what they see, and in what they devise, regarding affections, and regarding cures. Established rules with regard to bandaging: preparation, presentation of the part, extension, adjustment, friction, bandaging, suspension and placing of the limb, attitude, seasons, diet. The more porous parts heal fastest, and vice versa. Distortions, where the bones are crooked. Flesh and tendons wasted on the side of the dislocation. The force used in reduction to be applied at as great a distance as possible from the seat of the displacement. Of nerves (ligaments?), those which are in motion and in humidity (flabby?) are of a yielding nature; those that are not, less so. In every dislocation the most speedy reduction is best. Reduction not to be made while the patient is in a febrile state, nor on the fourth or fifth day; and least of all, in those of the elbow, and all cases which induce torpor; the soonest the best, provided the inflammatory stage be avoided. Parts torn asunder, whether nerves, or cartilages, or epiphyses, or parts separated at symphyses, cannot possibly be restored to their former state; but callus is quickly formed in most cases, yet the use of the limb is preserved. Of luxations, those nearest the extremities are least dangerous. Those joints which are most easily dislocated are the least subject to inflammation. Those which have been least inflamed, and have not been subjected to after−treatment, are most liable to be dislocated anew. Extension should be made in the position most calculated to enable the one bone to clear the extremity of the other, attention being paid to configuration and place. Adjustment to be made in the direction of the displacement; to push the displaced limb straight backward and sideways. Parts suddenly drawn aside are to be suddenly drawn back by a rotatory motion. Articulations which have been oftenest dislocated are the most easily reduced; the cause is the conformation of the nerves (ligaments?) or of the bones; of the ligaments that they are long and yielding; and of the bones, the shallowness of the articular cavity, and roundness of the head [of the bone that enters it]. Usage, by its friction, forms a new socket. The cause−the disposition, and habit, and age. A part somewhat mucous is not subject to inflammation.

PART 41

In those cases where there are wounds, either at first, or from protrusion of the bones; or afterwards, from pruritus, or irritation; in the latter case you are immediately to unloose the bandages, and having applied pitched cerate to the wound, bandage the limb, placing the head of the roller upon the wound, and proceeding otherwise as if there were no wound in the case; for thus will the swelling be reduced as much as possible, and the wound will suppurate most quickly, and the diseased parts will separate, and when it becomes clean the wound will most quickly heal. Splints are not to be applied to the place, nor is it to be bound tight. Proceed thus when no large bones exfoliate, but not in the latter case, for then there is great suppuration, and the same treatment is not applicable, but the parts require to be exposed to the air on account of the abscesses. In such cases where the bones protrude, and whether reduced or not, bandaging is not befitting, but distention is to be practiced by means of rolls of cloth, made like those used upon shackles; one of these is to be placed at the ankle, and the other at the knee; they are to be flattened toward the leg, soft, strong, and having rings; and rods made of cornel, and of a proper length and thickness are to be adjusted to them, so as to keep the parts distended; and straps, attached to both extremities, are to be inserted into the rings, so that the extremities being fixed into the rolls, may effect distention. Treatment:−Pitched cerate, in a hot state; the attitudes, position of the foot and hip; regulated diet. The bones which have protruded through the skin are to be replaced the same day, or next; not on the fourth or fifth, but when the swelling has subsided. Reduction is to be performed with levers; when the bone does not present any place upon which the lever can rest, a portion of the part which prevents this is to be sawed off. But the denuded parts will drop off, and the limb become shortened.

PART 42

Dislocations at the joints are to a greater and less extent. Those that are to a less extent are the most easily reduced; those that are to a greater extent occasion lesions of the bones, of the ligaments, of the joints, of the fleshy parts, and of the attitudes. The thigh and arm resemble one another very much in their dislocations.

THE END
