

The genuine work of Hippocrates / translated from the Greek, with a preliminary discourse and annotations by Francis Adams.

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H I P P O C R A T E S

TRANSLATED FROM THE GREEK

WITH

A PRELIMINARY DISCOURSE AND ANNOTATIONS

BY

FRANCIS ADAMS, LL.D.

SURGEON.

VOL. II.

L O N D O N

PRINTED FOR THE SYDENHAM SOCIETY

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ON
THINGS RELATING TO THE SURGERY.

THINGS RELATING TO THE REVENUE

THE PHYSICIAN'S ESTABLISHMENT,

OR

THE SURGERY.

THE ARGUMENT.

IN the critical notice of this treatise given in the second section of the Preliminary Discourse, I have briefly described the nature and object of the *Iatrium*. There seems to be no doubt that it was an establishment belonging to the *periodeutæ*, or travelling physicians, in which were kept all sorts of medicines and surgical apparatus required in the practice of the profession. This, then, would resemble "the surgery" spoken of by Pott,¹ as a place in which he received his patients for consultation. In my younger days I have visited what I regard as having been "the surgery" of a famous operator in the north, a contemporary of Pott, Dr. Thomas Livingston, of Aberdeen. It was then in the keeping of his son, and, in accordance with the spirit of the times, had ceased to be "a surgery," and was become little more than "a cabinet of antique curiosities;" it consisted, in short, of a choice collection of surgical instruments and everything else that constituted a portion of the *armamentarium chirurgicum*; but I was given to understand that, in former times, medicines were regularly prepared and compounded in it by the apprentices and attendants of the physician, for the purpose, no doubt, of being used by him in the practice of his profession, although I can scarcely suppose that it was patent to the public as a laboratory. Such an establishment, then, would be quite akin to the *Iatrium* of Hippocrates and his successors. I have ventured then to translate *Iatrium* by "the surgery." Galen hesitates respecting the title; he says, some named it, "On the

¹ Injuries of the Head, sect. 2, Case I.

Iatrium ;” and some “On the things relating to the Iatrium,” because it treats of matters connected with the Iatrium.¹

No one can read this tract attentively without being impressed with the truth of Galen’s remark respecting it, namely, that it is merely a rough sketch of a work, and that it had not been finished by the author for publication. Indeed, Galen sometimes expresses himself in equivocal terms as to its authenticity, and M. Littré was at first disposed to exclude it from the list of genuine works, but afterwards decided upon admitting it. One thing, at all events, is quite clear respecting it, namely, that it is a compendium of the subject-matters which are discussed fully in the works ‘On Fractures,’ and ‘On the Articulations,’ more especially in the former of these. In a word, it is a succinct outline of surgical matters, nearly unintelligible by itself, but highly valuable for refreshing the memory and methodising the information collected from the works we have just referred to. In execution it bears a resemblance to some of the esoteric works of Aristotle, which are composed in so condensed a style, that they would be nearly unintelligible if they were not illustrated by copious commentaries. The tract of Theophrastus ‘On Stones,’ is another work of the same class as the present one.

§ 1. The work begins with a brief enumeration of the general principles of diagnosis, or, more properly speaking, of semeiology, and of the objects and means by which diseases are to be recognised. The grand rule for discrimination is held to be the comparison of the diseased part with the corresponding part on the sound side.

¹ The fullest account which we possess of the ancient iatrium, is that which is contained in the Hippocratic treatise, *De Medico*. The author of the treatise, after giving some general directions respecting the construction of the house, namely, that it should be so constructed that neither the wind nor sun might prove offensive to the patient, goes on to enumerate the various articles which it should contain, such as scalpels, lancets, cupping-instruments, trepans, raspatories, with bandages and medicines. That it was “an operation-room” there can be no doubt; whether it was also a public laboratory for the sale of medicines is not so clear; but it seems probable, from what we learn respecting the iatrium which Aristotle inherited from his father, Nicomachus (see Suidas, under *Aristoteles*), for Athenæus taunts Aristotle with having been a druggist (*φαρμακοπώλης*).—*Deipnos*, viii, 13. I ought to have stated above, that Galen, in his *Exegesis*, &c. explains the title of this work as follows : *Κατ’ ἰητρῆιον τὰ κατὰ τὴν χειρουργίαν*.—See further, Malgaigne, *Operat. Surg.*, Pref. Engl. Edit.

§ 2. A most comprehensive statement is then given of all the matters and objects relating to the surgery,—the operator,—the patient,—the assistants,—the instruments,—the light,—the position of the patient and of the operator, and so forth.

§ 3. The circumstances connected with surgical operations are then discussed somewhat more fully, and very sensible directions are laid down in regard to the conduct of the operator and of the patient.

§ 4. Some very acute remarks are next made with regard to the operator's hand, and the means to be used in order to acquire dexterity and elegant manipulation.

§ 5. Directions are then given for the disposal of the surgical instruments, so that they may be readily got hold of when required by the operator. This paragraph evinces much practical acquaintance with the business of the operation-room.

§ 6. The duties of the assistant are distinctly laid down and prescribed.

§ 7. General directions are given for the application of the bandages along with a description of the characters by which to distinguish bandaging when properly applied. Names of some of the most important fasciæ, or forms of bandages.

§ 8. Directions are given for regulating the amount of the compression produced by the bandages, and for securing the bandages by a thread with knots.

§ 9. Many remarks are made on the tendency of a bandage to fall off from particular parts of the body, and directions are given to obviate this tendency.

§ 10. The general characters of the bandage are again described somewhat more fully than before.

§ 11. The application of several forms of bandage, especially the hypodesmis and epidesmis, according to circumstances and the object for which they are used, is described with much precision and minuteness of detail.

§ 12. The remainder of the directions for bandaging a fractured limb is given, along with the application of the splints, and the use of cerate for giving firmness, and of selvages or slips of cloth for giving security to them. The splints also are minutely described.

§ 13. The affusion of hot water on the limb after the removal of the bandages is particularly enjoined.

§ 14. The adjustment of the limb, more especially by means

of canals, *or* gutters for giving greater security to the inferior extremity, is particularly insisted upon.

§ 15. Directions are given with regard to the natural, that is to say, the proper position of a fractured limb while in the acts of setting and adjusting it. The fore-arm is to be placed at right angles to the arm, in a state intermediate between pronation and supination, and an inferior extremity is to be laid in an extended position.

§ 16. Directions are given with regard to the force to be applied in adjusting fractured bones : it is to be in proportion to the size of the bone, and stronger in the case of young than of old persons.

§ 17. The general effects of friction are briefly defined.

§ 18. Minute and very sensible directions are given as to the appearances which the bandaging should present during the process of treatment.

§ 19. The general object of the surgical contrivances connected with the management of a fractured limb is correctly defined to be—to keep the limb in position.

§ 20. The effects of rest and exercise on the condition of the limb or member are briefly defined.

§ 21. The strength of the bandaging is directed to be made to depend on the number of the bandages, rather than the tightness with which they are applied.

§ 22. The effects of bandaging in the treatment of ecchymosis, contusions, and swellings are described, along with other circumstances connected with the treatment of these cases.

§ 23. The application of bandages, position, and friction, in the treatment of dislocations, sprains, separation of bones, club-feet, and other surgical cases, are minutely and accurately defined.

§ 24. The treatment of limbs which have become atrophied from want of exercise and the compression of tight bandages during the process of treatment for fracture, is strikingly defined. The application of a loose bandage in a peculiar form, as here described, is well deserving of attention.

§ 25. The means to be taken in order to steady the head and chest in injuries of the same, are briefly and distinctly defined.

From this brief analysis of its contents the reader will readily perceive that the greater part of the work is devoted to the treatment of fractures and injuries of a similar nature. The

rules for the management of this part of surgical practice are certainly laid down here with a degree of precision which bespeaks a minute and accurate acquaintance with the subject, and evinces a great talent for judging correctly the bearings of practical questions in surgery. It may well be doubted whether the same subject be methodised and defined with the same precision in any other work, ancient or modern. It must always be borne in mind, however, that, as stated above, the work is to be viewed in the light of a rough sketch, which, in order to be understood, must be taken in connexion with the fuller exposition of the subject given in the work 'On Fractures.' At first, then, I was inclined to arrange the present treatise after the works 'On Fractures,' and 'On the Articulations,' believing that it would thus occupy its most suitable position, by serving as a remembrancer to the reader of the various objects which he had previously viewed in detail. But although it might, no doubt, prove very useful according to this arrangement (and indeed it is so arranged by Galen), I am not sure but that it stands more properly in its present place, as it is always of advantage to take at first, as it were, a *coup-d'œil* of a subject, so as to ascertain its limits, divisions, and the bearings of its particular parts upon one another, before proceeding to examine each of them in detail. There is also a great advantage to a student in having a syllabus of any subject which he intends to investigate, so that his attention may be awakened and directed beforehand to the matters which will be presented to him in going over the intended field of inquiry. For the reasons now adverted to, I am of opinion, then, that whoever would wish to make himself thoroughly acquainted with the surgical works of Hippocrates, should commence his studies with the present treatise. In a word, this work may be regarded as the prologue, and the 'Mochlicus' as the epilogue, to the great work 'On Fractures and Dislocations.'

I may mention, in conclusion, that although Galen in one place expresses himself rather undecidedly regarding its authenticity, it would appear that, after all, this tract was a great favorite of his, for he has not only written an elaborate Commentary upon it, but has made frequent allusions to it in other parts of his works.

ON THE SURGERY.

1. It is the business of the physician to know, in the first place, things similar and things dissimilar; those connected with things most important, most easily known, and in any-wise known;¹ which are to be seen, touched, and heard; which are to be perceived in the sight, and the touch, and the hearing, and the nose, and the tongue, and the understanding;² which are to be known by all the means we know other things.³

2. The things relating to surgery, are—the patient; the operator; the assistants; the instruments; the light, where and how; how many things, and how; where the body, and the instruments; the time; the manner; the place.⁴

¹ The meaning of the first clause of this sentence, according to Galen, is, that the first thing which the medical practitioner must do is to make himself well acquainted with semeiology, by comparing carefully the condition of disease with that of health. In all cases of accident, it was the practice of the ancient surgeons to compare carefully the injured part with its fellow or corresponding part on the opposite side. Galen, in his Commentary, relates an interesting case, which shows the necessity of care in making such a comparison. A patient had met with an accident, by which the acromion was torn from the scapula, and the nature of the injury was not recognised at first, owing to the appearances being similar on the opposite side; but Galen, upon inquiry, found that these had been occasioned by a previous accident. I may mention here, by the way, that Sir Charles Bell, in treating of dislocations of the hip-joint, very properly inculcates the propriety of ascertaining the previous state of matters before deciding in a case of supposed luxation.

² It will be perceived that this clause is little else than an apparent repetition of the preceding one. Galen mentions several explanations which had been given to account for this; the most plausible of which appears to me to be, that the former clause relates to the senses of the physician, and the latter to those of the patient.

³ The last clause is illustrated by a very elaborate Commentary of Galen, in which he discusses with his usual subtilty the question respecting the criteria of human knowledge. Galen holds that our gnostic powers may all be referred to these three—sensation, understanding, and memory. These questions would now be reckoned too metaphysical for a surgical treatise.

⁴ This will be admitted even now to be a comprehensive list of everything that relates to the operation-room. The general meaning is quite obvious, and the only obscurity in this paragraph consists in the reading, for which see Galen's Commentary, and the Annotations of Littré. I shall only mention that by place, in the end of the sentence, was probably meant the diseased part, or seat of the disease. The term is thus used in the Hippocratic treatise, *De Locis in Homine*.

3. The operator is either sitting or standing, conveniently for himself, for the person operated upon, for the light. There are two kinds of light, the common and the artificial; the common is not at our disposal, the artificial is at our disposal. There are two modes of using each, either to the light, or from the light (to the side?). There is little use of that which is from (*or* oblique to the light), and the degree of it is obvious.¹ As to opposite the light, we must turn the part to be operated upon to that which is most brilliant of present and convenient lights, unless those parts which should be concealed, and which it is a shame to look upon;² thus the part that is operated upon should be opposite the light, and the operator opposite the part operated upon, except in so far as he does not stand in his own light; for in this case the operator will indeed see, but the thing operated upon will not be seen. With regard to himself: when sitting, his feet should be raised to a direct line with his knees, and nearly in contact with one another; the knees a little higher than the groins, and at some distance from one another, for the elbows to rest upon them. The robe, in a neat and orderly manner, is to be thrown over the elbows and shoulders equally and proportionally.³ With regard to the part operated upon; we have to consider how far distant, and how near, above, below, on this side, on that side, or in the middle. The measure as to distance and proximity is, that the elbows do not press the knees before, nor the sides behind; that the hands be not raised higher than the breasts, nor lower than so as that when the breast reposes on the knees he may have the

¹ By "from the light," Galen explains is meant "turned from the light," that is to say, oblique to the light. Galen mentions that it is applicable principally in operations on the eye, such as the anabrochismus, the removing of tumours from the eyelids, excision of the pterygium, and couching the cataract.

² Galen remarks, that in operations on the parts of generation, and on the breasts in females, it is proper that the patient should be blindfolded. He also recommends in certain cases, when the patient is remarkably timid, to deceive him by telling him that the operation had been put off until another day, and while in the act of making, as it were, preparations for it, to perform the necessary incision.

³ The ancient physicians attached much importance to decorum, and studied effect very much in the practice of their art. In the Hippocratic treatise, On Elegance, the dress of the physician is not forgotten. In this passage it will be seen that the manner in which the surgeon's robe, *or* mantle, should be flung over him, while in the act of operating, is graphically described.

hands at right angles with the arm : thus it is as regards the medium ; but as concerns this side or that, the operator must not be beyond his seat, but in proportion as he may require turning he must shift the body, or part of the body, that is operated upon. When standing, he must make his inspection, resting firmly and equally on both feet ; but he must operate while supporting himself upon either leg, and not the one on the same side with the hand which he makes use of ; the knee being raised to the height of the groins as while sitting ; and the other measures in like manner. The person operated upon should accommodate the operator with regard to the other parts of his body, either standing, sitting, or lying ; so as that he may continue to preserve his figure, avoid sinking down, shrinking from, turning away ; and may maintain the figure and position of the part operated upon, during the act of presentation, during the operation, and in the subsequent position.¹

4. The nails should be neither longer nor shorter than the points of the fingers ; and the surgeon should practise with the extremities of the fingers, the index-finger being usually turned to the thumb ; when using the entire hand, it should be prone ; when both hands, they should be opposed to one another. It greatly promotes a dexterous use of the fingers when the space between them is large, and when the thumb is opposed to the index. But it is clearly a disease when the thumb is impaired from birth, or when, from a habit contracted during the time of nursing, it is impeded in its motions by the fingers. One should practise all sorts of work with either of them, and with both together (for they are both alike), endeavouring to do them well, elegantly, quickly, without trouble, neatly, and promptly.²

¹ The description of the position of the operator, and of the person operated upon, contained in this paragraph, is so clear as to stand little in need of elucidation. I may mention, that by the act of presentation, an expression which often occurs in the surgical treatises of Hippocrates, was meant the position in which the injured or diseased member of the patient is presented to the surgeon for operating upon it. By subsequent positions, it will readily be understood, is meant the state in which the limb is placed after the operation ; such, for example, as the adjustment of the leg in a canal, and the suspension of the arm in a sling after bandaging for fracture. These questions we shall find fully discussed in the work *On the Articulations*.

² The importance of these general directions for the surgeon, in order that he may acquire skilful manipulation, is obvious. The free motion of the thumb and index-finger evidently contributes in an especial manner to the dexterity of the ope-

5. The instruments, and when and how they should be prepared, will be treated of afterwards; so that they may not impede the work, and that there may be no difficulty in taking hold of them, with the part of the body which operates. But if another gives them, he must be ready a little beforehand, and do as you direct.¹

6. Those about the patient must present the part to be operated upon as may seem proper, and they must hold the rest of the body steady, in silence, and listening to the commands of the operator.

7. There are two views of bandaging: that which regards it while doing, and that which regards it when done.² It should be done quickly, without pain, with ease, and with elegance; quickly, by despatching the work; without pain, by being readily done; with ease, by being prepared for everything; and with elegance, so that it may be agreeable to the sight. By what mode of training these accomplishments are to be acquired has been stated. When done, it should fit well and neatly; it is neatly done when with judgment, and when it is equal and unequal, according as the parts are equal or unequal. The forms of it (the bandage?) are the simple, the slightly winding (called *ascia*), the sloping (*sima*), the *monoculus*, the *rhombus*, and the *semi-rhombus*.³ The form of bandage should be suitable to the form and the affection of the part to which it is applied.

rator. The importance also of practising with either hand, so as to become ambidextrous, is now generally admitted. The text in the clause of the sentence, where the impediment of the hand is described, would appear to be corrupted. See Galen, Foës, and Littré.

¹ The directions, I need scarcely remark, are most apposite, and bespeak a familiar acquaintance with surgical practice. By instruments, as Galen in his Commentary remarks, is meant in this place not only mechanical contrivances, such as the *ambe* and *bench*, used in the reduction of dislocations, but all the apparatus used by the surgeon in performing operations.

² The meaning of this clause, although rather quaintly expressed, seems pretty obvious. It is thus rendered by Verduc: "We must observe, with Hippocrates, that with regard to the first difference drawn from the time of the operation, we must consider a bandage while it is yet amaking, by way of distinction from one that is already made. For the former there are three conditions required, which are couched under these three words, *cito, tute, jucunde*, i. e. speedily, safely, and dexterously, &c." (On Fractures, Bandages, &c.)

³ Our author here describes, rather confusedly and indistinctly, six sorts of bandages, namely, three simple, and three compound: the simple are, the circular, the *ascia*, and the *sima*; the compound are, the *monoculus*, the *rhombus*, and the *semi-rhombus*. The circular cannot be misunderstood; it consisted of a single roll of

8. There are two useful purposes to be fulfilled by bandaging :¹ (*first*,) strength, which is imparted by the compression and the number of folds. In one case the bandage effects the cure, and in another it contributes to the cure. For these purposes this is the rule—that the force of the constriction be such as to prevent the adjoining parts from separating, without compressing them much, and so that the parts may be adjusted but not forced together ; and that the constriction be small at the extremities, and least of all in the middle. The knot and the thread that is passed through should not be in a downward but in an upward direction, regard being had to the circumstances under which the case is presented ; to position, to the bandaging, and to the compression. The commencement of the ligatures is not to be placed at the wound, but where the knot is situated.² The knot should not be placed where it will be exposed to friction, nor where it will be in the way, nor where it will be useless. The knot and the thread should be soft, and not large.

9. (*Second*.) One ought to be well aware that every bandage has a tendency to fall off towards the part that declines or becomes smaller ; as, for example, upwards, in the case of the head, and downwards, in the case of the leg. The turns of the bandage should be made from right to left, and from left to right, except on the head, where it should be in a straight direction.³ When opposite parts are to be bandaged together,

bandage carried circularly round the limb or member. The *ascia* (*σκέπαρνον*) and the *sima* were two forms of spiral bandage differing only in this respect, that in the former the edges of the bandage passed each other to a small extent, in the latter to a greater. The *oculus*, or *monoculus*, was a bandage adapted to dressings on one eye. The *rhombus* and *semi-rhombus* took their names from their figure, and were used principally on the head and feet. It being very difficult to convey a correct idea of these bandages in words, I will give figures of them taken from Vidus Vidius, from which their construction will be readily comprehended at a glance.

¹ As Galen states in his Commentary, it does not clearly appear from the text what are the two purposes which bandaging supplies. M. Littré supposes that the exposition of the second begins at § 9.

² The meaning of this sentence is doubtful. See Galen's Commentary, and Littré's notes.

³ Galen explains the meaning of this expression (*κατ' ἄνω*) by stating that in bandaging the head, the fold of the bandage is to be brought from the top of the head straight down below the chin, and is to be carried thence to the part affected, and then again in like manner, either twice, or thrice, or as often as is thought necessary.

we must use a bandage with two heads; or if we make use of a bandage with one head, we must attach it in like manner at some fixed point; such, for example, as the middle of the head; and so in other cases. Those parts which are much exposed to motion, such as the joints, where there is flexion, should have few and slight bandages applied to them, as at the ham; but where there is much extension, the bandage should be single and broad, as at the kneepan; and for the maintenance of the bandage in its proper place, some turns should be carried to those parts which are not much moved, and are lank, such as the parts above and below the knee.¹ In the case of the shoulder, a fold should be carried round by the other armpit; in that of the groin, by the flanks of the opposite side; and of the leg, to above the calf of the leg. When the bandage has a tendency to escape above, it should be secured below, and *vice versâ*; and where there is no means of doing this, as in the case of the head, the turns are to be made mostly on the most level part of the head, and the folds are to be done with as little obliquity as possible, so that the firmest part being last applied may secure the portions which are more moveable. When we cannot secure the bandaging by means of folds of the cloth, nor by suspending them from the opposite side, we must have recourse to stitching it with ligatures, either passed circularly or in the form of a seam.²

10. The bandages should be clean, light, soft, and thin.³ One should practise rolling with both hands together, and with either separately. One should also choose a suitable one, according to the breadth and thickness of the parts. The heads of the bandages should be hard, smooth, and neatly put on.

¹ The propriety of these directions for bandaging the knee will readily be acknowledged. By lank parts (*λαπαρά*), Galen explains, were meant loose and slender parts, as opposed to such as are full and prominent.

² The meaning in the last clause of this paragraph is difficult to determine. See Galen, Vidus Vidius, and Littré.

³ Verduc translates and explains this passage as follows: "Hippocrates enjoins further, that the bands be smooth, plain, soft, and light; by smoothness and plainness he excludes unevenness, or the least puckering and rising unequally; by requiring softness, he insinuates that they must not press, or wring, or wound the part; and fineness is requisite to facilitate the passage of the liquors through its substance; and the inconveniency of overloading the affected part makes lightness a necessary quality." On Fractures, Bandages, &c., p. 291.

That sort of bandaging is the worst which quickly falls off; but those are bad bandages which neither compress nor yet come off.¹

11. The following are the objects which the upper bandage, the under bandage, or both aim at:² The object of the under bandage is either to bring together parts that are separated, or to compress such as are expanded, or to separate what are contracted, or to restore to shape what are distorted, or the contrary. It is necessary to prepare pieces of linen cloth, which are light, thin, soft, clean, having no seams nor protuberances on them, but sound, and able to bear some stretching, or even a little more than required; not dry, but wetted with a juice suitable to the purpose required. We must deal with parts separated (*in a sinus?*) in such wise, that the parts which are raised may touch the bottom without producing pressure; we must begin on the sound part, and terminate at the wound; so that whatever humour is in it may be expelled, and that it may be prevented from collecting more.³ And straight parts are to be bandaged in a straight direction, and oblique obliquely, in such a position as to create no pain; and so that there may be no constriction nor falling off on a change of position, either for the purpose of taking hold of anything, or laying the limb; and that muscles, veins, nerves, and bones may be properly placed and adjusted to one another. It should be raised or laid in a natural position, so as not to occasion pain. In those cases in which an abscess is formed, we must act in a contrary way.⁴ When our object is to bring together

¹ Though the general drift of this paragraph be sufficiently clear, there are many things in it by no means easy to be understood. Indeed, Galen finds the language so unworthy of Hippocrates, that he does not scruple to give it as his opinion that the work had never been finished for publication by the author. By heads Galen says, that some of the commentators understood the ends, and others the edges of the bandages. The text in the last clause seems evidently to be corrupt.

² The *epidesmis* and *hypodesmis*, which are both described in a very distinct manner in this paragraph, evidently apply principally to fractures and other injuries of the extremities. There is little in this description that requires explanation. The application of them in the case of a fractured arm, we shall find minutely described in the work On the Articulations.

³ This description seems evidently to apply to a sinus, or collection of matter below the skin. In this sense it is understood by Galen, and by Verduc, in his work on Fractures and Bandages.

⁴ There is great uncertainty about the meaning of this sentence, as may be

parts which have become expanded, in other respects we must proceed on the same plan ; and we must commence the bringing together from some considerable distance ; and after their approach, we must apply compression, at first slight, and afterwards stronger, the limit of it being the actual contact of the parts. In order to separate parts which are drawn together, when attended with inflammation, we must proceed on the opposite plan ; but when without inflammation, we must use the same preparations, but bandage in the opposite direction. In order to rectify distorted parts, we must proceed otherwise on the same principles ; but the parts which are separated must be brought together by an under bandage, by agglutinants, and by suspending it (*the limb?*) in its natural position.¹ And when the deformities are the contrary, this is to be done on the contrary plan.

12. In fractures we must attend to the length, breadth, thickness, and number of the compresses. The length should be that of the bandaging ; the breadth, three or four fingers ; thickness, three or fourfold ; number so as to encircle the limb, neither more nor less ; those applied for the purpose of rectifying a deformity, should be of such a length as to encircle it ; the breadth and thickness being determined by the vacuity, which is not to be filled up at once. The under bandages are two, the first of which is to be carried from the seat of the injury upwards, and the second from the seat of the injury downwards, and from below upwards ; the parts about the seat of the injury being most compressed, the extremities least, and the rest in proportion. The upper bandages should take in a considerable portion of the sound parts. We must attend to the number, length, and breadth of the bandages ; the number must be such as not to be inferior to what the injury requires, nor occasion compression with the splints, nor prove cumbersome, nor occasion any slipping of them, nor render them in-

learned from the Commentary of Galen. He informs us that some read it negatively, that is to say, with the negative particle ($\mu\eta$), and that Asclepiades put an entirely different sense on the passage, understanding the words to apply to the loosening of the bandages, and not to the condition of the part to which they are applied. Foës inclines to adopt this interpretation, which I must say is, in many respects, more feasible than the other. Galen seems undecided.

¹ This passage refers apparently to fractures of the fore-arm, which we shall find treated of very fully in the work On Fractures. The suspension of the limb in a napkin, or other cloth, constituted a very important part of the process of treatment.

efficient. As to length and breadth, they should be three, four, five, or six cubits in length, and as many fingers broad. The folds of the strings (*selvages*?)¹ should be such as not to occasion pressure; they are to be soft and not thick; and all these things are to be proportionate to the length, breadth, and thickness of the part affected. The splints are to be smooth, even, and rounded at the extremities; somewhat less all along than the upper bandaging, and thickest at the part to which the fracture inclines. Those parts where there are tuberosities, and which are devoid of flesh, such as the ankles or fingers, we must guard from the splints which are placed over them, either by position or by their shortness. They are to be secured by the strings in such a manner as not to occasion pressure at first. A soft, consistent, and clean cerate should be rubbed into the folds of the bandage.²

13. As to the temperature and quantity of the water used, its heat should be just such as the hand can bear, and it ought

¹ There is a good deal of difficulty in determining the exact meaning of this term (*παπαίρημα*); indeed, there is considerable uncertainty about the reading. Consult Galen, Vidus Vidius, Foës, Littré, and Schneider (*Lexicon*). Both Foës and Littré incline to render it by *lisière* in French, that is to say, the *list* or *selvage* of linen cloth. That this should have been used to secure the compresses, and keep them in position, seems very natural, and I am inclined to adopt this explanation of the term, as it suits so well with the sense. See Avicenna, iv, 5, 2, 7; also, Sculteti *Armamentarium Chirurgicum*, tab. 29. In plate 4, the appearance of the bandaged limb, having the splints secured with strings, is well represented.

² I need scarcely remark that this description of the process of treating a fractured limb is remarkable for precision and clearness, and it may well be doubted whether in the whole compass of medical literature there be a passage which contains so judicious an exposition of the principles upon which this surgical case should be managed. An important point connected with the ancient mode of treating fractures was the use of cerate, or a composition from wax, in the application of the bandages. Unfortunately our information regarding the use of this article by the ancient surgeons in bandaging is very limited, being mostly confined to this passage of our author, and the Commentary of Galen on the same, which, it is to be regretted, has come down to us in a corrupt state. It appears from it, however, that the wax was rubbed not only into the skin of the part to which the bandage was to be applied, but also upon every fold of the bandage as it was put on. It was applied in moderate quantity. See *Chirurgici Græci*, ed. Cocchi (p. 66). There can be no doubt then, that applied in this manner, the waxed bandages must have been fully as secure as the starched bandages now in use. The wax used for this purpose was cleansed from all impurities, and probably bleached. On the ancient mode of bleaching wax, see Dioscorides (ii, 105). The Arabians adopted this and all the other steps of this process from the Greeks. See, in particular, Avicenna (iv, 5, 2, 6). I may be allowed to re-

to be known that a large quantity is best for producing relaxation and attenuation, whereas a moderate quantity is best for incarnating and softening. The limit to the affusion is, to stop when the parts become swelled up, and before the swelling subsides; for the parts swell up at first, and fall afterwards.¹

14. The object on which it (*the limb?*) is laid should be soft, smooth, and sloping upwards towards the protuberant parts of the body, such as the heel or hips, so that there may be no projection, nor bending inwards, nor turning aside.² The canal (*spout or gutter?*) should rather comprehend the whole limb than the half of it, attention being paid to the injury and to whatever else appears to create inconvenience.³

15. The presentation of the injured part to the physician, the extension, the arrangement, and so forth, are to be regulated according to nature. What is nature in these operations is to be determined by the accomplishment of the object which we have in view, and for this purpose we must look to the part in the state of rest, in its middle state, and to habit; in regard to the state of rest and relaxation, as in the arm, that it be in a line with the hand; and with regard to the medium between

mark in this place, that it is not unlikely that the Arabs in Algiers, from whom it is well known that the French surgeons learned the process of treating fractures by the immoveable apparatus, may have derived their knowledge from their forefathers. How or when this excellent practice fell into disuse in civilized Europe I cannot pretend to explain. I may mention, however, that Verduc, who professes to follow Galen and Hippocrates implicitly in describing the application of bandages to fractured limbs, takes no notice whatever of the use of cerate. Thus it is that we always pass by valuable things when we do not estimate the use of them properly.

¹ The warm water, I may just mention, was applied upon the removal of the bandages. The objects for which it was applied are briefly noticed by our author, and are fully explained by Galen in his Commentary. Galen further alludes to the practice elsewhere. (*Meth. Med.*, xiv; and *Hygiene*, ii.) We shall find further mention of it in the work *On Fractures*.

² The meaning of this sentence, notwithstanding the explanations furnished by Galen, is somewhat obscure. One can readily appreciate the propriety of the direction to lay the heel in particular on an elevated object, in order, as Galen remarks, to prevent a defluxion to the part.

³ The canal (called in French *gouttière*), although Hippocrates elsewhere expresses himself regarding its usefulness in rather equivocal terms, appears to me to be one of the simplest and most ingenious contrivances imaginable for securing a fractured leg. For several years I have used in imitation of it a half-boot made of the strongest pasteboard, and have found it the greatest improvement imaginable in the treatment of fractures. It appears to me preferable to any of the mechanical contrivances which are at present in use in the London hospitals.

flexion and extension, that the forearm be at right angles to the arm; and with regard to habit, it should be considered that some limbs bear certain positions preferably, as, for example, the thighs extension; for in such attitudes the parts can best bear to be placed for a considerable time without a change of posture. And in the change from the state of distension, the muscles, veins, nerves, and bones, when properly arranged and secured, will preserve their relations to one another while the limb is raised or placed.¹

16. The extension should be most powerful when the largest and thickest bones, or when both are broken; next when the under-bone, and least of all, when the upper. When immoderate, it is injurious, except in the case of children. The limb should be a little elevated. The model by which we judge if the part be properly set is the sound part of the same name, or the part which is its pair.²

17. Friction can relax, brace, incarnate, attenuate: hard braces, soft relaxes, much attenuates, and moderate thickens.³

18. The following should be the state of matters on the first application of the bandage. The person to whom it has been applied should say that he feels the compression particularly at the seat of the injury, but very little at the extremities; the parts should be adjusted but not pressed together, and that rather by the number of the bandages than by the force of the constriction; and the tightness should rather be on the increase during the first day and night; but on the next it

¹ There is not much of any practical importance in this paragraph which requires illustration. The best position for a fractured limb, as Galen remarks, is that in which it can be longest kept without producing pain; this, in the forearm, Hippocrates holds to be the state intermediate between pronation and supination, with the forearm at right angles to the arm, and in the leg complete extension. Galen pronounces decidedly in favour of the extended position during the treatment of a fractured thigh.

² This paragraph, it will readily be perceived, relates to fractures of the forearm. There is little in it which requires illustration. Galen remarks, that the bodies of young persons, being of a softer and more humid nature, endure greater extension than those of the aged without being exposed to pain or more serious consequences. This is no doubt the fact, and it is equally true that aged persons can scarcely bear to be touched without experiencing most acute pain.

³ This subject is so fully treated of in the English edition of PAULUS ÆGINETA, Book I, 18, that I need not touch upon it in this place. See, in particular, Galen (De Sanit. tuend., ii, Comment. h. l.), and Oribasius (Med. Collect., vi).

should be less, and on the third the bandages should be loose. On the next day a soft swelling should be observed in the extremities;¹ and on the third day, when the bandaging is loosed, the swelling should be found diminished in size, and this should be the case every time the bandages are removed. At the second application of the bandage, it should be ascertained whether the dressing has been properly done, and then greater compression should be made, and with more bandages; and on the third, still greater, and still more. On the seventh day from the first dressing, when the bandages are loosed, the limb should be found slender and the bones mobile. We must then have recourse to the splints, provided the limb be free of swelling, pruritus, and ulceration, and allow them to remain until twenty days after the accident; but if any suspicions arise, the bandages must be loosed in the interval. The splints should be tightened every third day.²

19. The suspending of a fractured limb in a sling, the disposition of it, and the bandaging, all have for their object to preserve it in position. The principal considerations with regard to the position are the habits and the peculiar nature of each of the limbs: the varieties are shown in running, walking, standing, lying, action, repose.³

¹ On this direction Verduc makes the following remark: "Hippocrates, who so often forewarns us of the danger of making the bandages either too tight or too slack, gives us a certain sign of the due tightness of the bandage, viz. the inflammation and rising softness of the lower extremity, whether the foot or hand. So that if the foot is not at all inflamed, you must immediately undo the dressings, for fear of a false callus. If the inferior extremities are very much inflamed, and have a hard tumour upon them, you must slacken the rollers."—On Fractures, Bandages, &c. It is well known that in modern practice the extremities are bandaged to prevent swelling from taking place in them. Whether or not this be in all cases a wise practice, I have my doubts; indeed I am inclined to think that the swelling below relieves the swelling, and consequently the congestion, in the seat of the fracture. When the bandages are not too tight, nor the patient in an unhealthy condition of body, the swelling below, to say the least of it, can do no harm, and, besides serving as an index of the state of the bandaging above, may, and I think certainly in some cases does, relieve the tension in the seat of the injury. The contents of this chapter is an accurate *résumé* of the more ample directions which, as we shall see below, are given in the works On Fractures and On Articulations.

² The splints, I believe, were secured by ligatures going round the limb in different places, care being taken to avoid the spot where the fracture was situated. See, in particular, Avicenna (iv, 5, 2, 7, 8).

³ The subject-matters contained in this passage are evidently pretty much the

20. It should be kept in mind that exercise strengthens, and inactivity wastes.¹

21. Compression should be produced by the number of bandages, rather than by the force of the constriction.

22. In cases of ecchymosis, contusions, sprains, or swellings not attended with inflammations, blood is to be expelled from the wound, in greatest quantity to the upper part, and in smallest to the inferior; neither the arm nor the leg should be placed in a declining position: the head of the bandage should be placed on the wound, and there the greatest pressure should be made; the least at the extremities, and intermediately in the middle; the last fold of the bandage should be at the upper part of the body. As to binding and compression, these objects are to be attained rather by the number of the bandages than the force of the constriction; and moreover, in these cases the bandages should be thin, light, soft, clean, broad, sound, so that they may effect their purpose, even without splints. And we must use affusions.²

23. Dislocations, sprains, diastases of bones, violent separation, abruption of the extremities of bones, and distrainings, so as to induce *varus* or *valgus*, in these cases we must apply the bandages so as not to compress the part whence the displacement took place, and that we may render them tight at the side to which the displacement was, and give the limb an inclination in the opposite direction, and that in an excessive degree. We employ bandages, compresses, suspension of the limb in a sling, attitude, extension, friction, rectification; and along with these the affusion of much water.³

same as those contained in §15. Galen insists strongly upon this being a clear proof that the present work is a mere rough sketch, and that it had never been completed by our author. In the course of his Commentary, he repeatedly insists that the original publisher must have used great liberties with the text.

¹ As a corollary to this proposition Galen remarks, that in surgical treatment an injured limb ought not to be too long kept entirely without motion, but that as soon as the inflammation has subsided, it should be cautiously moved after hot water has been poured upon it, &c.

² It is foreign to my purpose to enter upon a discussion of the different readings in this paragraph, as this would occupy too much time and space. See Galen, Foës, and Littré. As I have translated it, the meaning seems obvious, and the practice very rational. The subject herein treated will be found more fully discussed in the work On Fractures.

³ This paragraph, as Galen remarks, contains an epitome of a variety of matters

24. In treating parts which are atrophied, we must comprehend a considerable part of the sound limb with the bandage, so that by the influx thereby produced, the wasted part may acquire a supply greater than its loss, and may be thus disposed to growth and restoration of its fleshy parts. It is better also to bandage the parts above, as the thigh in the case of the leg, and also the thigh and leg of the opposite side, so that they may be placed in similar circumstances, and may both equally be deprived of motion; and that the supply of nourishment may be alike curtailed and open to both. The compression should be the effect rather of the number of the bandages than of their tightness. We relax first the part most requiring it, and have recourse to that kind of friction which will promote the growth of flesh, and to affusion. No splints.¹

25. Those things which are for the purpose of giving support and strength to the part, as to the breast, side, head, and so forth, are used in such cases as the following: for pulsations, that there may be no motion in the part; and in separation at the sutures of the skull, in order to give support; and in order to strengthen the chest and head, in coughs, sneezings, and other movements. In all these cases the same measure of

which are fully treated of in the treatises, *On Fractures*, and *On the Articulations*. Whatever is obscure in it will readily be understood upon reference to these works. I shall only notice a few of the terms which may be somewhat obscure to the modern reader who is not familiar with the two treatises now referred to. *Diastasis* is the separation of the two bones not connected together by *diarthrosis*, but in immediate connexion, such as the separation of the radius from the ulna at the elbow-joint, and the separation of the cranial bones at a suture. *Abruptio* applies to the snapping off of the extremity of a bone, such as that of the humerus. The *distrainings*, or *distortions* (*διαστρέμματα*), relate principally to cases of club-foot, and will come to be more properly treated of in the portion of the work *On the Articulations*, which relates to that subject.

¹ Upon reference to Galen, it will be seen that he bestows a very lengthy and elaborate Commentary on this paragraph, partly in illustration of the verbal meaning of the terms here used, and partly in discussing the merit of the practical rules laid down by our author. By atrophied parts in this place, Hippocrates would appear to allude to parts which have become wasted in flesh, owing to the compression and want of exercise during their treatment for fractures. The treatment of emaciated parts is briefly laid down by PAULUS ÆGINETA, Book I, 59, and the other authorities. See the Commentary. It is remarkable that, as far as I can discover, none of the later authorities make mention of the loose bandaging here recommended by our author. Galen, however, states that he had used it as directed by Hippocrates, and with good effect.

bandaging is to be observed, for where the injury is, there the bandage should compress most, and something soft is to be placed below that suits with the complaint; and we must not apply the bandages tighter than just to stop the pulsations from creating disturbance, and that the separated parts at the sutures may be brought into contact, they must not be such as absolutely to stop the coughs and sneezings, but so as to give support, and, without occasioning uneasiness,¹ prevent the parts from being shaken.

¹ There is not much in this paragraph which stands in need of illustration, but then Galen's Commentary is well deserving of being consulted. He explains that, in affections of the head and chest, it was customary to use small pillows and bags filled with millet to give support to the parts affected and stop motion in them. It will be remarked, that in this place our author makes distinct mention of diastasis or separation of the bones of the cranium at the sutures. See above.

ON FRACTURES.

UNIVERSITY OF CHICAGO

ON FRACTURES.

THE ARGUMENT.

THE work commences with an announcement of the general principle upon which all cases of fracture and dislocation are to be rectified, which is this, that extension should be made as straight as possible, the term straight being immediately afterwards explained to be meant as applying to that direction which is most natural to the limb affected, that is to say, the position which will afford the patient most ease and comfort after the limb has been properly arranged. This principle of treatment he illustrates at considerable length, and with great force of argument, in the case of the fore-arm, and reviews the different positions in which it had been recommended that it should be placed, namely, the state of pronation, of supination, the intermediate, and, lastly, that of the archer when he is in the attitude of drawing the string of his bow. The author shows, in a very striking manner, the evil effects resulting from the practice of not putting the limb, during the process of bandaging, into the attitude in which it is meant that it should be kept afterwards, as by the change of position the whole apparatus will be in so far deranged. §§ 1—3.

Fractures of the fore-arm are next considered, and most minute directions are given regarding the whole process of managing it—the setting of the fractured bones—the application of the bandages, the compresses, and splints, and the arrangement of the limb after the process is completed. The general rules of practice laid down for the management of this case are meant to apply to all fractures, with a few exceptions. §§ 4—7.

Fracture of the arm, *or* humerus, is next considered, and here our author's mode of procedure is highly deserving of attention, as being considerably different from the method

now in use: he attaches much importance to the mode in which extension is made, and pointedly directs that the limb be placed in its proper position before the application of the bandages and the rest of the apparatus. § 8.

He then proceeds to the consideration of the foot and the injuries of the bones which compose it. § 9.

The displacement of the tarsal bones from those of the leg are next considered, by which luxations of the astragalus and os calcis are probably meant. §§ 10, 11.

After a brief description of the bones of the leg, he gives an account, in general terms, of luxations of the foot, and then describes very elaborately the process of reducing them, and of conducting the treatment afterwards. §§ 13, 14.

Fractures of the leg are then treated of at considerable length in §§ 15, 16, 17, 18.

Fractures of the thigh-bone are next taken into consideration, and most minute directions are given for the management of them in §§ 19, 20, 21, 22, 23. Our author gives some account of the canals, *or* gutters, then used for receiving the limb in cases of fractured leg or thigh; he does not much approve of them, but gives it as his opinion that the beneficial effects of them had been much exaggerated.

Compound fractures are next considered, and all the different modes of treating them which were then in vogue are discussed, and freely criticised in §§ 24, 25, 26, 27, 28, 29. The exfoliation of the bones and the separation of spiculæ are next brought under notice, and the treatment of such cases freely considered. § 30.

Many minute directions are given relative to the reduction of broken bones by means of the lever, and the treatment afterwards. §§ 31, 32.

The treatment in those cases in which it has been found impracticable to reduce the fractured bones is next delivered, including many important observations regarding the exfoliation of bones, and the resection of them. §§ 33, 34.

The danger of compound fractures of the femur and humerus is pointedly declared, and the treatment of such cases when it is to be attempted is clearly indicated. §§ 35, 36.

In § 37 is given a brief description of luxations of the knee, along with an elaborate, and, upon the whole, a very accurate

statement of the points of analogy between the knee- and elbow-joints.

In §§ 38, 39, 40, 41, 42, 43, 44, the luxations and subluxations at the elbow-joint are treated of very succinctly, but so as to display a very intimate acquaintance with this class of accidents.

In § 45 there is given a curious, but rather obscure, description of fracture of the olecranon.

In § 46 is given a brief account of fracture of the epiphysis, *or* trochlea of the humerus, a most interesting subject, on which we shall enter more fully by and by.

In the last two paragraphs some general rules are given respecting accidents at the elbow, as regards bandages and position.

From this enumeration of the contents of the present work, it will be readily seen that it is not a complete work on fractures; and, moreover, that it contains many things which are altogether foreign to that subject. In short, a considerable portion of it is evidently devoted to dislocations and other cognate subjects, as in like manner it will be presently seen that a considerable portion of the next work, which is more especially devoted to dislocations, is occupied with observations on fractures. It is difficult to account in a satisfactory manner for this want of arrangement, more especially as the two treatises are generally acknowledged to have constituted originally one work. The most plausible conjecture which I can form, in order to account for this mixing up together of the different matters in each, is this,—that when, for convenience sake, the work was divided into two, namely, one part ‘On Fractures,’ and another ‘On the Articulations,’ it was found necessary, in order to give a clear view of the subjects treated of in the one, to illustrate them by extracts relative to the cognate subjects treated of in the other. And, in fact, although the subjects here discussed be given rather confusedly, it will be found, in a practical point of view, very convenient, nay, indispensably necessary, to consider certain fractures and dislocations at the same time, in order to establish an accurate diagnosis between them. For example, how is it possible to understand dislocations at the elbow without a knowledge of fractures of the extremities of the

bones which enter into the formation of it, namely, of the humerus and the bones of the fore-arm? And again, who could understand fractures at the lower end of the tibia and fibula without an acquaintance with dislocations at the ankle-joint? Altogether, then, it certainly appears to me, upon mature reflection, rather an advantage to the student to have these two classes of accident treated of together, as they are in this and the succeeding work. The complete manner in which the various subjects are handled, the admirable plan upon which our author proceeds from obvious and indisputable principles, cannot fail to command the admiration of every careful and intelligent reader. The whole treatise, also, is written in so lucid a style that, with the few foot-notes which I have added, the reader will find no more difficulty in availing himself of the contents of this work, although written twenty-two centuries ago, than if it had been a publication of the present day. I shall now only make a few observations on certain subjects, either because they seem to require some elucidation, owing to their being treated of very succinctly, or because I look upon them as being particularly deserving of attention.

The process of setting, bandaging, and arranging a fractured limb, although this truly is now a hackneyed subject, will be found described in this treatise with so much precision, that I am persuaded the surgeon of the present day may derive information from it, for it appears to me that certain of the rules of practice here laid down by Hippocrates, are sometimes improperly overlooked by the modern practitioner. For example, although the propriety of putting a fractured limb, before it is set, into the position in which it is to be kept afterwards, is so clearly stated in this work, it is often disregarded in modern practice, and the consequences here described follow accordingly, namely, the derangement of the bandages, and, consequently, displacement of the fractured portions of bone after the position of the limb is altered. I am also of opinion, after having repeatedly adopted the practice recommended by Hippocrates, that the rule here stated, not to apply the bandages and apparatus beyond the fractured limb, is consistent with sound principles, and that the departure from it in modern practice is, in many cases, anything but an improvement. This I have hinted in the annotations

on the preceding treatise, and I am now glad to find that so distinguished an authority as M. Malgaigne joins me in expressing this opinion. Treating of the splints, compresses, and bandages used in the Hippocratic system of bandaging a fractured limb, he adds: " Reste enfin leur longueur, qui choque nos habitudes; car où est le chirurgien qui se borne à recouvrir l'avant-bras fracturé, sans empiéter sur la main et avec les bandes et avec les attelles? Or, déjà l'occasion ne m'a pas manqué pour le dire, et je n'hésiterai pas à le répéter ici, ces bandes, ces attelles, prolongées sur la main, ne sont justifiées par aucune considération sérieuse et légitime, et elles ont de graves inconvénients. En thèse générale, attelles ou bandages ne sont faits que pour remplacer par un squelette extérieur le squelette naturel fracturé, qui donnait au membre sa longueur, sa forme, sa solidité, et ils ne doivent pas se prolonger au-delà, à moins d'indications toutes spéciales. Il faut ajouter cependant que tout membre fracturé, pour arriver à la consolidation, devant rester long-temps dans l'immobilité, a besoin d'une position stable qui la lui garantisse, et que l'appareil que nous venons d'étudier serait insuffisant à cet égard. Mais les moyens de remplir cette indication nouvelle sont divers pour chaque membre et pour chaque brisure du membre; ils pourraient être décrits sous le nom d'appareils complémentaires. Or, ces appareils complémentaires ne sont pas oubliés par Hippocrate; l'écharpe pour l'avant-bras, le bandage de corps pour le bras, les coussins ou les gouttières pour le membre inférieur."¹ And, in addition to the reasons here assigned by M. Malgaigne for confining the apparatus, in general, to the fractured portion of the limb, I would again say, that I am inclined to think that bandaging the part below the injury, for example, the hand, in fractures of the fore-arm, has a tendency to increase the swelling above, which would otherwise be determined to the parts below, and thus relieve the seat of the injury.

I would beg leave most particularly to direct attention to the condemnatory remarks of our author upon the method of treating compound fractures, by bandaging the parts on both sides of the wound, and leaving it uncovered to admit of dressings being applied to it. I may mention in this place, that the last occasion on which I met with the lamented Mr. Liston, we

¹ Des Appareils pour le Traitement des Fractures en général, &c.

conversed on this subject, when he stated decidedly that he agreed with Hippocrates in condemning the practice, which, however, he often saw adopted in hospital practice. Our author's treatment of compound fractures is also deserving of much attention, as indicating the large amount of experience which he must have had in this way.

There are three surgical subjects which are very fully, but yet rather confusedly, treated of by our author in this and the two following works, namely, the accidents which befall the knee, the ankle, and the elbow.

On Dislocations at the Knee.

It strikes one as very remarkable, that the ancient surgeons should all speak of dislocations at the knee-joint as being of frequent occurrence, whereas they are now regarded as being among the rarest accidents of the kind to which the joints of the human body are subject. In this case, we must either suppose that the ancient surgeons had somehow been guilty of a mistake, or that the accident had been more common in ancient times than it is now. I have often wondered whether the difficulty might not be got over, by supposing that the wrestlers at the public games of his country, who, it is clear, furnished Hippocrates with a large proportion of his cases of fracture and dislocation, may not have been particularly liable to this accident. Having once met with a very interesting case of dislocation at the knee-joint, I persuade myself that I cannot better illustrate this subject than by giving a Report of it which I published in the LONDON MEDICAL GAZETTE, Dec. 1842. I do so the more readily, as it will enable me to correct some unfortunate typographical blunders which occur in the Report as it appeared in the Gazette.

*“Case of Dislocation at the Knee-joint.—*By Francis Adams, Esq., Surgeon; Sept. 10th, 1842. Alexander Robie, æt. 55, while in the act of carrying provender between two large bullocks in their stall, was knocked down by a stroke of one of their hind legs on the right knee; and while lying on the ground, was severely injured by being trod upon in several parts of the body, especially near the middle of the right leg. I saw him about two hours after the accident, and found the bones of the right leg lying on the fore part of the femur; the articular cavities could be distinctly felt, while, below, the contour of the

condyles could be traced : in short, I never saw a case of dislocation in which the symptoms were so strongly marked. The patella was pulled considerably up the thigh; but it appeared pretty obvious that neither the *ligamentum patellæ*, nor the tendon of the *triceps*, was ruptured; but my impression at the time certainly was, that, in order to admit of so great a displacement, all the principal ligaments of the joint must be torn. The limb was immoveably extended. By making proper extension and counter-extension, the reduction was effected with little difficulty. The limb was then bandaged loosely, from the toes to near the middle of the thigh, and laid half-bent on a thick pillow, and evaporating lotions were directed to be applied occasionally. For some days no severe symptoms occurred in the joint; but swelling and suppuration having afterwards taken place in the leg, especially about the calf of it, the bandages had to be removed and poultices applied. The limb continued very much swollen, and the discharges became fetid, while, owing perhaps to its weight, the bones of the leg, about the twelfth day, were dragged downwards, so as then to give the knee-joint the appearance of a semi-luxation backwards. The limb was secured in the best manner that could be managed in its tender state, and the bones retained in position by means of a jointed splint applied below the thigh and leg.

"30th. The limb has gone on getting daily into a worse state; the foot has lost its heat and sensibility, and the whole leg behind up to the knee is of a darkish green colour. About the calf of the leg it is greatly swollen, and the discharge from it very copious. The joint is so loose that the bones can with difficulty be kept in position: the pulse about 115. He has agreed to have his limb removed to-morrow, if no improvement take place in the interval.

"Oct. 1st. I amputated the limb to-day about the middle of the thigh, with the assistance of my professional neighbour Mr. Walker. The patient bore the operation with great fortitude, and appeared soon afterwards much relieved from his sufferings. The muscles felt so soft and flabby, as to excite apprehensions in my mind, that the vessels might not bear the ligatures well; no unpleasant symptoms, however, occurred, and in the course of three weeks the stump was completely healed.

"We examined the parts about the knee-joint immediately

after the operation. As I had formerly supposed to be the case, the tendon of the *quadriceps* and *ligamentum patellæ* were entire; the latter, however, was remarkably stretched and slackened; contrary to my expectations, I found that the lateral ligaments were not torn. Upon cutting into the joint, the crucial ligaments were found to be torn in pieces, but all the other parts were uninjured; the posterior ligament, the heads of the gastrocnemius, and the popliteal vessels, being all safe from any serious injury. The limb below being a general mass of suppuration and putridity, was but cursorily examined; it appeared certain, however, that the back part of the leg had been bruised to the state of a pulp. The condyles of the femur were somewhat smaller than they normally are, and were so rounded as to show an unusual aptitude to slip out of the articular cavities; and to this construction of the bones, joined, perhaps, to some preternatural laxity of the ligaments, the accident, in all probability, is to be ascribed.

“This would appear to be one of the rarest dislocations to which the joints of the human body are subject. The only unequivocal case which I know of as having been reported in this country, is the one related by Mr. Jonathan Toogood, in the ‘Provincial Medical and Surgical Journal,’ June, 1842. Another, supposed to be of a similar nature, he justly regards as probably incomplete. In these two cases recovery took place without any untoward symptoms, as I have no doubt would have happened to my patient, had the injury been confined to the knee-joint. Mr. Toogood mentions, that neither Sir Astley Cooper, Dupuytren, nor Roux, had ever met with such a case, nor, as far as I can discover, do any of our latest writers on surgery mention having ever had occasion to treat this accident. Cheselden, although correct in stating that ‘the knee cannot be completely dislocated without breaking the *cross* ligaments’ (Anatom. p. 45), may be supposed from the problematical way in which he expresses himself, to have had no experience of such a case. Boyer also writes of the accident in equivocal terms, and is wrong in stating that the heads of the gastrocnemius, and other soft parts, must necessarily be torn. Of the ancient authorities in surgery Celsus is the only one who makes mention of dislocation forwards: he says, ‘In priorem non prolabi plerique scripserunt; potestque id vero proximum

esse, cum inde opposita patella ipsa quoque tibiæ caput contineat. Meges tamen eum cui in priorem partem excidisset, a se curatum esse memoriæ prodidit.' (viii. 21.) Hippocrates, the great ancient authority on fractures and dislocations, describes dislocations of the knee outwards, inwards, and backwards, but says nothing of dislocations forwards; and all the other ancient writers on surgery, both Greek and Arabian, repeat the same statement. In like manner the earlier surgical writers in modern times, being all servile copyists of the Arabians, give the same account of dislocations at the knee. See Theodoricus, ii, 52. As far as I can learn, the case now related is the only one on record in which the actual state of the parts was ascertained by dissection."

Since writing the above report, I have ascertained that I had overlooked an unequivocal case of dislocation at the knee-joint related by our old authority, Wiseman. He describes it most circumstantially, to the effect that "the head of the os tibiæ was shot under the thigh-bone, and lay stretched out straight. By making extension and counter-extension, and fixing the limb towards the buttocks, it slipped into its place." This, then, was a case of dislocation of the tibia backwards, and in so far differed from mine, which was a dislocation forwards. It has been made a question whether or not our author, in treating of displacements at the knee, regards the femur or the tibia as the fixed point. M. Littré inclines to the opinion, that he makes the tibia the fixed point, and regards the femur as the part which is displaced; according to this rule, the case I have related would have been ranked by Hippocrates as a dislocation backwards. It would appear, then, after all, that the case related above is one of the forms which Hippocrates recognises. Of the lateral dislocations noticed by Hippocrates, and the other ancient authorities, there is hardly any unequivocal case reported in modern works on surgery. I am inclined to think that they must all be incomplete, or connected with congenital malformation. Subluxations constitute a class of accidents, about the nature of which there is still much uncertainty, after all the investigations which they have undergone of late years. Many of them would appear to be mere displacements of the semi-lunar cartilages. It is curious to remark, that all our earlier authori-

ties agree with the ancient in representing dislocations at the knee as a very mild class of accidents. Wiseman says, "They are not difficult to reduce, nor subject to such accidents as those of the elbow." (v, 9.) Vesalius speaks of them as being very insignificant accidents, insomuch that the patient himself can readily reduce them. (Chirurg. Mag. i, 17.) Ambrose Paré writes of them in similar terms. It is probable that these, and other modern authorities, merely copy from the ancient authorities, and that severe sprains, exaggerated by the imaginations of the patients into dislocations, have been often recognised as such by the professional attendants.

On the Accidents which befall the Bones of the Elbow.

As there is scarcely a subject connected with surgery more puzzling, even at the present day, than the fractures and luxations which occur at the elbow-joint, so it is one to which Hippocrates had evidently paid the most minute attention, and accordingly he has treated of it in three different works, namely, at 'Fractures,' §§ 38, 39, 40, 41, 42, 43, 44, 45, 46; 'Articulations,' §§ 17, 18, 19, 20, 21, 22, 23, 24, 25, 66; 'Mochlicus,' §§ 7, 8, 9, 10, 11, 12, 13. Of the important matters contained in these paragraphs I now feel myself called upon to attempt an accurate analysis, without which it must be admitted that my translation can possess but little value; for he forms but a very imperfect idea of the duties of a translator who thinks he has nothing to do but merely to render certain vocables of the original into the corresponding ones in the language of the translation, without concerning himself with the exact sense and import of the original author.

I shall now proceed to enumerate all the varieties of dislocation and fracture at the elbow-joint, which our author describes, or, at least, appears to describe.

1. Dislocation of the ulna and radius backwards, 'Articulations,' §§ 19—23; 'Fractures,' § 42; 'Mochlicus,' § 9: there his descriptions agree very well with those of Sir Astley Cooper, Mr. Bransby Cooper,¹ and all the best modern authorities. Incomplete dislocations, described by our author,

¹ Lectures in the Medical Gazette, No. 1065.

'Articulations,' §§ 17—24; 'Fractures,' §§ 39, 40; 'Mochlicus,' § 14; but scarcely recognised by modern authorities.¹

2. Dislocation of the ulna and radius forwards; see 'Fractures,' § 43; 'Articulations,' §§ 19—23; 'Mochlicus,' § 9. This case is scarcely admitted as possible, by modern authorities, unless attended with fracture of the olecranon. Dr. Fergusson, however, is not quite decided upon this point, and in great laxity of the joint I can easily suppose it possible.

3. Complete lateral dislocation described at 'Fractures,' § 41; 'Articulations,' §§ 18—22; 'Mochlicus,' § 12. This case is scarcely recognised as possible by Sir Charles Bell, Sir Astley Cooper, Mr. Bransby Cooper, and Mr. Liston; but is distinctly admitted by Chelius, § 1048, and partially so by Mr. R. Adams, in the 'Cyclopædia of Anatomy.'²

4. Partial or incomplete lateral dislocations described at 'Fractures,' § 40. These are recognised and described by Sir Charles Bell, Mr. Liston, Mr. R. Adams, in the 'Cyclopædia of Anatomy,' and by Chelius, and all our best authorities of the present day.

5. Luxation of the radius forwards, backwards, and to either side, obscurely noticed at 'Fractures,' § 41—44; 'Articulations,' § 18. Those backwards and forwards are described by Sir Astley Cooper, Mr. Bransby Cooper, Mr. R. Adams (Cyc. Anat., l. c.), and all our best authorities; but lateral dislocation has been noticed by few. It is recognised, however, by Sir Astley Cooper, in the Appendix to his work on Luxations, and Mr. R. Adams, in the 'Dublin Journal of Medical Science,' vol. xxii, p. 504.

6. Fractures of the olecranon, described by our author at 'Fractures,' § 45, and still more distinctly by Galen, (*Chirurgici Græci*, p. 87). Sir Charles Bell, and all the best modern authorities describe this accident in similar terms. I may mention, under this head, that neither Hippocrates, nor any other author, ancient or modern, as far as I am aware, has noticed rupture of the tendon of the triceps, and yet I have met with a case of this accident.

7. Abruption of the articular extremity of the humerus, that is to say, of its apophysis, *or* trochlea, is described by our

¹ Chelius, indeed, speaks of incomplete lateral dislocations, but only in very general terms (§ 1048).

² Abnormal Condition of the Elbow-joint.

author as being an accident which, although it may appear more serious, is, in fact, far milder than most of the injuries of the elbow-joint, 'Fractures,' § 46. It is more distinctly noticed by Galen, in a fragment of his 'Commentary,' preserved by Cocchi (Chirurg. Græc., p. 86): "Abruptio is not a different sort of injury from fracture, but abruptio is a fracture taking place in the seat of the articulation. In the articulation at the elbow sometimes the bone of the fore-arm is broken off,¹ and sometimes that of the arm (the humerus)." Nothing can be more distinct than the description given by these two authors, and yet it is singular that scarcely any modern authority has noticed this accident, although I believe it to be of frequent occurrence. Complicated with dislocations, it has, indeed, been described of late, and most distinctly by Sir Charles Bell and Baron Dupuytren. Sir Charles writes of it thus: "*Fracture through the trochlea and across the fossa.* Take care to distinguish this accident from dislocation of the ulna and radius backwards, etc."² Baron Dupuytren, in like manner, in his admirable work, on Fractures and Dislocations, lately reprinted by the Sydenham Society, gives a masterly account of this case when it puts on the appearance of dislocation at the elbow-joint, but neither he, nor any other authority of late years, as far as I am aware, has described the case when not accompanied by displacement. This appears to me most remarkable, since I can attest, from the most ample experience, that it is an accident of very frequent occurrence, insomuch that scarcely a year passes in which I am not called upon to treat several cases of it. It occurs most frequently in young persons from falls, and may be readily discovered by pulling gently at the arm and fore-arm, and placing the thumb on the front of the articulation, when a crepitus will be easily detected. If not detected and properly treated, the case ends in a stiff joint, so that extension cannot be made to a greater extent than about 130 or 140 degrees, and flexion also is imperfectly performed. The fore-arm at first should be bent at about a

¹ Does he mean fracture of the coronoid process of the ulna? Dr. Fergusson, as far as I am aware, is the only one of our recent authorities who hints that it is often fractured in dislocations backwards. Sir A. Cooper, however, has also noticed fracture of the coronoid process. See his work on Dislocations, &c., p. 483.

² Institutes of Surgery, p. 126.

right angle to the arm, and secured with bandages, as the ligatures are usually put on after venesection, but these should soon be loosed, and the motion of the joint secured by making extension in good time. I also avail myself of the present opportunity to state it as my own belief, after a pretty extensive acquaintance with this class of accidents, that what is taken for a dislocation at the elbow is usually complicated with fracture of the apophysis of the humerus. Hence it is that patients so frequently complain of their surgeon having left them with a stiff joint after such an accident.

8. Congenital dislocation at the elbow-joint is briefly noticed by our author; 'Mochlicus,' § 11; 'Articulations,' § 21. Cases of congenital dislocations would appear to be particularly rare, but yet congenital dislocation of the radius is noticed by Dupuytren and R. Adams.¹

From the account which I have now given of our author's opinions regarding the accidents which befall the elbow-joint, it will be admitted even at the present day, that his information on the subject was almost complete. The only well-marked case which is omitted by him is the separate dislocation of the ulna; it is noticed by Mr. Bransby Cooper in the following terms: "It sometimes, but very rarely, occurs that the ulna is thrown backwards from the inner condyle, without a corresponding displacement of the radius." It is also noticed by Sir Astley Cooper and by R. Adams in the 'Cyclopædia of Anatomy.' But, in fact, it had been distinctly described in ancient times, by Celsus and Oribasius. See the Comment. on PAULUS ÆGINETA, Book VI, 115. Is it not, in so far, consolatory to find that a great genius, like our author, does not anticipate all the discoveries which any subject he handles is capable of receiving? Yet, after the lapse of twenty-two centuries, how few additions have been made to the information which he supplies on this head!²

¹ Cyclopædia of Anatomy, Abnormal Elbow-joint.

² The reader may find it interesting to compare with the list of accidents described by our author that which is given of them in the Cyclopædia of Anatomy: "1, Luxations of both bones backwards; 2, Luxations of both bones laterally, complete and incomplete; 3, Luxations of both bones laterally and posteriorly; 4, Luxation of the ulna alone backwards; 5, Luxation of the radius alone forward; 6, Luxation of the radius externally and superiorly; 7, Complete luxation of the radius backwards; 8, Sub-luxation of the radius backwards; 9, Congenital luxation of the radius." (Abnormal Elbow-joint.)

On the Fractures and Dislocations at the Ankle-joint.

In order to understand the account given by our author of accidents which befall the ankle-joint, it will be necessary to advert to his description of the bones which compose the leg. Turning, then, to 'Fractures,' § 12, and 'Mochlicus,' § 1, it will be seen that Hippocrates describes the tibia and fibula as being united together, above and below, by an *epiphysis*, and it appears problematical whether, by the lower *epiphysis*, he meant the outer malleolus, or the two malleoli taken together; and further, it will be a question for the reader to consider whether he does not use the term vaguely, sometimes in the one sense and sometimes in the other. It is to be borne in mind that Hippocrates lived at a time when the terms of art were by no means strictly defined. Thus it is well known that he applies the term nerve (*νεῦρον*) to nerves properly speaking, and also to tendons and membranes. By "great vertebra" he sometimes means the second cervical, sometimes the first dorsal, and at other times the last lumbar. It seems undeniable that he applies the term "head of the humerus," both to its upper and inferior extremity.¹ It need not be thought singular, then, that he should be found to use the term *epiphysis* in the same indefinite manner. He knows nothing of the distinction between *epiphysis* and *apophysis*, as applied by Galen, the one to the junction of two bones together, and the other to a protuberance of a single bone;² the latter term, indeed, he rarely or never uses, as applied to bones. See Foës, 'Œcon. Hippocrat.'

We shall now examine the contents of the paragraphs in which these accidents are described. See 'Fractures,' §§ 10, 11, 12, 13; 'Articulations,' §§ 83, 84, 85, 86, 87; 'Mochlicus,' §§ 27, 28, 29, 30, 31.

Dislocations of the astragalus, along with the other bones of the tarsus from the bones of the leg, are described at 'Fractures,' § 10, and at 'Articulations,' §§ 83, 85, 87; in the last of these paragraphs to the following effect: "In those cases

¹ Our old authority Wiseman, in like manner, applies the term "head" to the inferior as well as to the upper extremity of the humerus; he says, "the os humeri endeth broad towards the cubit, with a double head," &c. (vii, 6.)

² De Ossibus ad Tirones.

in which the foot is displaced, either by itself or with its epiphysis, it generally is dislocated inwards." Nearly the same description is repeated at 'Mochlicus,' § 31, and dislocations of these bones are otherwise alluded to at §§ 27, 28, 29, of the same work. The great puzzle is the description given at § 13 of 'Fractures,' which is as follows: "The bones connected with the foot are sometimes displaced, sometimes both the bones with the epiphysis; sometimes the epiphysis is displaced, and sometimes the other bone." It would be tedious to the professional reader, I fear, if I were to go into a lengthened discussion of all the different interpretations which might be given of this very obscure passage, and I must own that I have but little heart for the task, knowing, as I do, that I should not arrive at any very satisfactory result at the conclusion of my long labours. I shall give, then, a summary view of a question, the consideration of which has cost me no little time and application. If by *epiphysis* is here meant the conjoined malleoli, that is to say, the extremity of both bones of the leg, the first case described thus: "The bones connected with the foot are sometimes displaced, sometimes both bones with the epiphysis," may be taken to mean simple fracture of the extremity of the leg in the immediate vicinity of the joint—a case of not unfrequent occurrence, and which, from ample experience, I know puts on very much the appearance of a dislocation; in fact, this is the case which Mr. Bransby Cooper describes as dislocation of the astragalus outwards.¹ The next case, "sometimes the epiphysis is moved," may mean subluxation outwards; and the third, "sometimes the other bone," may apply to subluxation inwards. Indeed, the word here used (*ἐκινῆθῃ*) is generally restricted by our author to subluxations. It is to be recollected that, by dislocation at the ankle, Hippocrates meant, like Sir Astley Cooper, Mr. Bransby Cooper, and most of our late authorities, displacement of the bones of the leg from the astragalus.

If we turn to the authorities subsequent to Hippocrates, we shall not meet with much that is calculated to throw additional light upon the subject. Paulus Ægineta describes dislocation at the ankle briefly and vaguely. Celsus says the displacements

¹ See his Lectures in the Medical Gazette, formerly referred to.

may be in all directions. Oribasius describes three, namely, inwards, outwards, and backwards. The Arabian Albucasis mentions only two, inwards and outwards. See PAULUS ÆGINETA, Book VI, 120. Most of our late authorities, like Celsus, admit the possibility of displacements inwards, outwards, backwards, and forwards. But, after all, it is a subject which still stands much in want of further elucidation. For my own part, after a good deal of experience in treating these accidents, I must say that I incline very much to Mr. Syme's views, and am disposed to range them with fractures rather than with luxations, for I believe that fracture is generally, if not always, the primary and the more important injury.

Dislocation of the os calcis from the cuboid, or dislocation at Chopart's tarsal joint, would seem to be the accident described at § 11 of 'Fractures,' § 86 of 'Articulations,' and § 30 of 'Mochlicus.' See the annotations.

These are the only luxations at the ankle described by our author, and I need scarcely say that they comprise the principal accidents of this class with which the modern surgeon is acquainted. It will be seen, that the explanation of the passages in which they are noticed is attended with much difficulty; and I am bound to say, that great credit is due to M. Littré, and his countrymen MM. Malgaigne and Bosquillon, for the pains they have taken in elucidating their obscurities. I shall be much gratified if my exertions be found to have cast some additional light upon the subject. See further the annotations.

Congenital dislocations at the ankle-joint, *or* clubfoot, and also those of the hip-joint and wrist, will come to be treated of in the Argument prefixed to the next treatise.

ON FRACTURES.

IN treating fractures and dislocations, the physician must make the extension as straight as possible, for this is the most natural direction.¹ But if it incline to either side, it should rather turn to that of pronation, for there is thus less harm than if it be towards supination. Those, then, who act in such cases without deliberation, for the most part do not fall into any great mistake, for the person who is to have his arm bound, presents it in the proper position from necessity, but physicians who fancy themselves learned in these matters, are they who commit blunders. There is no necessity for much study, then, in order to set a broken arm, and in a word, any ordinary physician can perform it; but I am under the necessity of giving the longer directions on this subject, because I know physicians who have the reputation of being skilled in giving the proper positions to the arm in binding it up, while in reality they are only showing their own ignorance. But many other things in our art are judged of in this manner, for people rather admire what is new, although they do not know whether it be proper or not, than what they are accustomed to, and know already to be proper; and what is strange, they prefer to what is obvious. I must now state what the mistakes of medical men are, which I wish to unteach, and what instructions I have to give as to the management of the arm; for what I have to say regarding it, will apply to the other bones in the body.

¹ I may mention at the commencement, that, in this treatise and the succeeding one, *On the Articulations*, our author expresses himself in general so fully that there is little need of any commentary to explain his meaning. For this reason my annotations on these two works will be much briefer than those on the preceding treatises. In this place I have to remark that the reader must understand the epithet "straight," as explained by the context, that is to say, as signifying "the most natural" direction for the limb to which it is applied; its meaning in the case of fractures of the fore-arm will appear presently. See an elaborate disquisition on the meaning of the term by M. Littré (*Œuvres d'Hippocrate*, tom. iii, p. 389). It does not appear to me, however, that there is any difficulty in comprehending our author's use of the term.

2. The arm, then, for that is the subject we were treating of, was presented in the prone position to be bound, but the physician forced his patient to hold it as the archers do when they project the shoulder, and in this position he bound it up, thinking within himself that he was acting according to Nature, and in proof of this he pointed out that all the bones in the forearm were thus in a straight line, and that the integuments both inside and outside, were also in a straight line, and that the flesh and nerves (*tendons*?) were thus put in their natural position, and he appealed to what happens in archery, as a proof of this.¹ And so saying, and so doing, he is looked up to as a sage; and yet he forgets that in all the other arts and performances, whether executed by strength or dexterity, what is reckoned the natural position is not the same, and that in the same piece of work it may happen that the natural position of the right arm is not the same as that of the left. For there is one attitude in throwing the javelin, and another in slinging, another in casting stones, another in boxing, and another in a state of repose. And whatever arts one examines, it will be found that the natural position of the arms is not the same in each, but that in every case the arms are put into the attitude which suits best with the instrument that is used, and the

¹ There is a good deal of difficulty in determining what position of the arm is here meant, and there is the greatest diversity of opinion among the expositors on this head. Palladius says expressly, that supination is the position here referred to; but this apparently cannot be the case, as supination is treated of below in the third paragraph. Galen also calls the position either complete supination or nearly so. Littré sought to solve the difficulty by examining the figures of ancient archers in the attitude of drawing the bow, as represented in the Temple of Jupiter in Egina. In general, he found the arm in the position intermediate between pronation and supination. This, then, would appear to be the position here meant; but as this is, in fact, the best and easiest position in which a fractured arm can be placed, it may be asked in what respect then is it condemned as faulty? From what is stated in the latter part of this paragraph, it is clear that it is in being completely extended; whereas the easy and natural position is that with the fore-arm at right angles to the body. In the attitude of drawing the bow, of course the left arm is strongly extended. Were a fractured arm, then, to be put into this position while it was in the act of being bandaged, its position could not be changed without deranging the bandages; and if it were to be kept thus extended for a time, the attitude, as stated by our author, would no doubt be very painful. Galen, in his very lucid description of the process of putting up fractured limbs, states decidedly that, in the case of the fore-arm, the proper position is the rectangular (*ἐγγώνιον*).—Meth. Med., vi, 5. This is a principle which our author enforces on all occasions.

work to be performed. In practising archery, no doubt this is the best attitude of the left arm, for the ginglymoid extremity of the humerus being fixed in the cavity of the ulna, in this position, throws the bones of the forearm and arm into a line, as if they constituted a single bone, and all flexion at the joint is prevented in this position. It is no doubt certain that the member is thus put into the most unbending and extended position possible, so as not to be overcome or yield when the string is drawn by the right arm, and thus will the archer be enabled to draw the string farthest, and discharge his arrow with the greatest force and rapidity, for arrows thus discharged have the greatest swiftness and force, and are carried to the greatest distances. But there is nothing in common between the binding up of an arm and archery. Moreover, if having thus bound up the arm, the physician direct the patient to keep it thus, he will occasion him greater pain than he had from the wound itself; and thus also, if the physician order him to bend the arm, neither the bones, the nerves, nor the flesh will any longer be in the same condition, but will be arranged differently, having overcome the bandaging. What use, then, is there of the archer's attitude? And these mistakes, the physician, conceited in his knowledge, would probably not have committed if he had allowed the patient himself to present his arm.

3. But another physician putting the arm into the state of supination, gives orders to extend the arm thus, and bandages it in this position, reckoning it the one according to nature, judging thus from the skin, and also fancying the bones to be thus in their natural position, because the bone which protrudes at the wrist, where the little finger is, appears to be in a line with the bone from which people measure the bone of the forearm. These things he brings forwards as proofs that the parts are in their natural state, and he is supposed to speak correctly. But, indeed, if the arm be kept stretched in a supine position, it will become very painful, and this fact any one may ascertain by extending his own arm in this attitude. And also a weaker man grasping with his hands a stronger man whose arm is turned in a supine position, could lead him wherever he chose, and neither, if a man held a sword thus in his hand, could he make any proper use of it, so constrained is this position. And, moreover, if, when a physician has thus

bound up the arm, he allow it to remain in the same position, the patient will endure greater pain if he walk about, but considerable, even if he remain at rest. And thus too, if he shall bend the arm, the muscles and the bones must necessarily assume a different position. But, in addition to other mischief, he is ignorant of these facts regarding the position, that the bone which protrudes at the wrist, close to the little finger, belongs to the forearm, whereas the one at the joint, from which people measure the forearm, is the head of the humerus. He fancies that both these belong to the same bone, and many others are of this opinion. The latter, in fact, is the same part as that which is called the elbow, upon which we sometimes rest,¹ and when he holds the arm thus in a supine position, in the first place the bone appears distorted, and in the next place the tendons which extend from the carpus along the inner side and from the fingers become distorted while the arm has a supine position; for these tendons proceed to the bone of the humerus, from which the forearm is measured. Such, and so many mistakes and marks of ignorance are committed, regarding the natural construction of the arm. But if one will extend a broken arm as I direct, he will turn the bone, situated at the extremity of the little finger, into the straight line, and also the one at the elbow, and the tendons which stretch from the carpus to the extremity of the humerus will be placed in the straight line; and when the arm is suspended in a sling, it will be in the same attitude as that in which it was bound up, and will give no pain to the patient when he walks about, nor when he lies reclined, and will not become fatigued.² The man should be so seated that the prominent part of the bone may be turned to the brightest light which is at hand, so that the operator in making the extension, may be at no loss to discover if it be sufficiently straight. The prominence of a broken bone could not escape being detected by the hand of an experienced person, when applied for this purpose, and, moreover, the projecting part is particularly painful to the touch.

¹ Compare Ruffus Ephesius (*De Partib. Hom.*), and Galen (*De Motu Muscul.*, ii).

² All the ancient authorities put a fractured fore-arm in this position, with the thumb above and the little finger below. See PAULUS ÆGINETA, Book VI, 100, and the authorities quoted in the Commentary, Syd. Soc. edition.

4. In cases of fracture in either of the bones of the forearm, it is easier to effect a cure if the upper bone be broken, although it be the thicker one, both because the sound bone is situated below, and forms a support to it, and because the deformity is more easily concealed, there being a thick mass of flesh on the upper side, except near to the wrist. But the lower bone is without a covering of flesh, is not easily concealed, and requires stronger extension. If it is not this bone, but the other which is broken, a more feeble extension proves sufficient, but if both be broken, a more powerful extension is required. In the case of a young person I have known the extension made more strong than was necessary, but in general the extension made is less than what is required. And when they are extended, the physician should apply the palms of his hands, and adjust the fractured parts and then having rubbed the parts with cerate,¹ but not in large quantity, so that the bandages may not come off, it is to be bound up in this state, care being taken that the hand be not lower than the elbow, but a little higher, so that the blood do not flow towards the extremity, but may be determined to the upper part; and then it is to be secured with the bandage, the head of which is to be placed at the fracture, and the bandage should impart firmness to the parts without occasioning strong compression.² When you have carried the bandage twice or thrice round at the seat of the fracture, it is to be carried upwards, so that the afflux of blood into it may be stopped, and the bandage should terminate there, and the first bandages ought not to be long. The head of the second bandage is also to be placed upon the seat of the fracture, and a single round of it being made there, it is then to be carried

¹ I have drawn attention, in the annotations on the work, *On the Surgery*, to this highly important article on the ancient system of bandaging. Palladius says expressly, that the object for which it was used was to secure the fractured parts by agglutinating the bandages. On the nature of the ancient cerates, see Galen's *Comment.*, tom. v, p. 531; ed. Basil. Galen, however, seems to say, in another place, that the cerate was used to dispel inflammation (*Meth. Med.*, vi, 5). Mention, however, is made on various occasions of rosin being added to the cerate, evidently for the purpose of rendering it more glutinous.

² Galen, in his description of the process, points out in strong terms the propriety of putting the arm into position before the bandages are applied, otherwise they will become deranged when the position is altered. (*Meth. Med.*, vi, 5.) This rule, I have reason to think, is often forgot in modern practice.

downwards, and is not to be applied so tight as the other, and there should be greater distances between the turns, so that the bandage may prove sufficient to revert to the spot where the other terminated. The bandages may be rolled to the left hand or to the right, or to whatever side suits best with the position of the fractured arm, or according to the inclination which it may have. Afterwards we must place along the arm, compresses, smeared with a little cerate, for thus they occasion less uneasiness, and are more easily arranged. And then we must apply the bandages cross-ways, sometimes to the right hand, and sometimes to the left, for the most part beginning below and terminating above, but sometimes commencing above and ending below. The parts which are thinly covered with flesh should be wrapped round with compresses, and inequalities should be made up, not by a number of folds at once, but by degrees. Some slack turns are also to be made around the wrist, to this side and to that. These two bandages are sufficient at first.¹

5. And these are the signs that the patient has been well treated and properly bandaged : if you ask him if the arm feels tight, and he says it does, but moderately so, and especially about the fracture ; and this reply he should make all along, if the bandage be properly applied. And these are symptoms of the bandaging being moderately tight ; if for the first day and night he fancies that the tightness does not diminish, but rather increases ; and if on the next day there be a soft swelling in the hand, for this is a sign of moderate compression, but at the end of the second day the compression should feel less, and on the third day the bandaging should appear loose. And if any of these symptoms be wanting, you may conclude that the bandaging is slacker than it should be ; or if any of these symptoms be in excess, you may infer that the compression is more than moderate ; and judging from these, you will apply the next bandages either slacker or tighter. Having removed the bandages on the third day, you must make extension and adjust the frac-

¹ The dimensions of these two bandages, in the work *On the Surgery*, are fixed to be three or four cubits in length, and three, four, five, or six inches in breadth, according to the age and size of the patient. See Galen's Comment. Palladius remarks, that it is inconvenient to have the bandages very broad, as they get ruffled, that is to say, do not lie smooth on the limb.

ture, and bind it up again ; and if the first bandaging was moderately applied, the second bandaging should be made somewhat tighter. The heads of the bandages should be placed on the fracture as in the former case ; for, by so doing, the humours will be driven to the extremities, whereas if you bandage any other part beforehand, the humours will be forced from it to the seat of the fracture : it is of much importance that this should be properly understood. Thus the bandaging and compression should always commence at the seat of the fracture, and everything else should be conducted on the same principle, so that the farther you proceed from the fracture, the compression should always be the less. The bandages should never be actually loose, but should be smoothly put on. At each dressing the number of bandages should be increased ; and the patient, if asked, should answer, that he feels the bandages somewhat tighter than on the former occasion, especially about the fracture, and everything else in proportion ; and with respect to the swelling, the pain, and recovery, everything should proceed as after the former dressing. But on the third day the outer bandaging should appear looser. Then having removed the bandages, you should bind it up again, somewhat tighter than before, and with all the bandages which will be required on the occasion, and afterwards one ought to experience the same train of symptoms as at the former periods of bandaging.

6. When the third day arrives, that is to say, the seventh from the first dressing, if properly done, the swelling in the hand should be not very great ; and the part which has been bandaged should be found more slender and less swelled at each time, and on the seventh day the swelling should be quite gone, and the broken bones should be more readily moved, and admit of being easily adjusted. And if these things be so, you should, after setting the fracture, apply the bandages so as to suit the splints, and a little more tight than formerly, unless there be more pain from the swelling in the hand. When you have applied the bandages, you must adjust the splints all around the limb, and secure them with strings so loose as just to keep them in their place, without the application of the splints contributing at all to the compression of the arm.¹ After this the pain and

¹ Our author nowhere describes the *ferulæ* or splints, nor defines their dimensions or the materials of which they consisted. Palladius speaks of their being made of

recovery should proceed as in the preceding periods of the bandaging. But if, on the third day, the patient say that the bandaging is loose, you must then fasten the splints, especially at the fracture, but also elsewhere, wherever the bandaging is rather loose than tight. The splint should be thickest where the fracture protrudes, but it should not be much more so than elsewhere. Particular attention should be paid to the line of the arm corresponding to the thumb, so that no splint be laid on it, but upon each side of it, nor in the line of the little finger where the bone is prominent at the wrist, but on each side of it. And if it be found necessary that splints should be applied in these directions at the seat of the fracture, they should be made shorter than the others, so as that they may not reach the bones which are prominent at the wrist, for otherwise there is danger of ulceration, and of the tendons being laid bare. The splints should be adjusted anew every third day in a very gentle manner, always keeping in mind that the object of the splints is to maintain the lower bandages in their place, and that they are not needed in order to contribute to the compression.

7. If, then, you see that the bones are properly adjusted by the first dressings, and that there is no troublesome pruritus in the part, nor any reason to suspect ulceration, you may allow the

the wood of the *philyra*, by which was probably meant the *Tilia europæa*, or lime-tree. See Theophrastus (H. P., i, 12; C. Pl., vi, 12). When they could not be procured, he recommends *reeds* (κάλαμοι) to be used instead. The ancients have described various *calami*, but the sort here referred to was most probably the common reed, or *Arundo phragmites*. I can readily suppose that it might serve this purpose very well. The Arabian medical authors make mention of various other substances out of which splints were fabricated, such as the pine-tree, the alcanna, the oleander, the palm-tree, and the pomegranate. See the authorities quoted at PAULUS ÆGINETA, Book VI, 99. Triller, as quoted by M. Littré in the Advertisement to the fourth volume of Hippocrates, decides, respecting the splints of the ancients, that they were composed of the stalks of ferulæ and of reeds. Not having seen Triller's work, I am ignorant what his authorities are for this opinion, but I cannot suppose them superior to those I have referred to above. Palladius says, the splints were secured by three loose fillets or ribands, one at each end and another in the middle. From the directions given by our author, it will be readily seen that he was aware of the danger of tying the ligatures too tight. I need scarcely say that tight bandages and strings, in fractures of the fore-arm, do mischief by encroaching upon the inter-osseous space. For the same reason our author has properly forbid splints to be put on along the bone of the thumb and the little finger. I need scarcely add that modern surgery can boast of no new views or improved methods of practice in the treatment of fractures of the fore-arm.

arm to remain bandaged in the splints until after the lapse of more than twenty days. The bones of the fore-arm generally get consolidated in thirty days altogether; but there is nothing precise in this matter, for one constitution differs from another, and one period of life from another. When you remove the bandages, you must pour hot water on the arm and bind it up again, but somewhat slacker, and with fewer bandages than formerly: and again on the third day you undo the bandages, and bind it still more loosely, and with still fewer bandages. And if, while the arm is bound up in the splints, you should at any time suspect that the bones do not lie properly, or if anything about the bandages annoys the patient, you should loose them at the middle of the time, or a little earlier, and apply them again. A diet slightly restricted will be sufficient in those cases in which there was no external wound at first, or when the bone does not protrude; but one should live rather sparingly until the tenth day, as being now deprived of exercise; and tender articles of food should be used, such as moderately loosen the bowels; but one should abstain altogether from flesh and wine, and then by degrees resume a more nourishing diet.¹ This doctrine may be laid down as a just rule in the treatment of fractures, both as to how they should be treated, and what will be the results of a proper plan of treatment; so that one may know, that if things do not turn out thus, there has been some defect or excess in the treatment. And in this simple plan of treatment it is necessary to attend also to the following directions, which some physicians pay little attention to, although, when improperly executed, they are capable of marring the whole process of bandaging: for if both the bones be broken, or the lower one only, and the patient who has got his arm bandaged keep it slung in a shawl, and that the shawl is particularly loose at the fracture, so that the arm is not properly suspended at this end or that, in this case the bone must necessarily be found distorted upwards; whereas, when both bones are thus broken, if the arm recline in the shawl at the wrist and elbow, but the rest of it be not kept up, the bone in this case will be

¹ Galen, in his Commentary, states that our author, in his works, makes mention of three modes of diet, namely, the full, the ordinary, and the low. That which is here recommended as applicable in the case of fractures is the ordinary, wine and flesh being principally forbidden.

distorted to the lower side. The greater part of the arm and the wrist of the hand should therefore be equally suspended in a broad soft shawl.¹

8. When the arm is broken, if one stretch the fore-arm and adjust it while in this position, the muscle of the arm will be bound while extended; but when the dressing is over, and the patient bends his arm at the elbow, the muscle of the arm will assume a different shape.² The following, then, is the most natural plan of setting the arm: having got a piece of wood a cubit or somewhat less in length, like the handles of spades, suspend it by means of a chain fastened to its extremities at both ends; and having seated the man on some high object, the arm is to be brought over, so that the armpit may rest on the piece of wood, and the man can scarcely touch the seat, being almost suspended; then having brought another seat, and placed one or more leather pillows under the arm, so as to keep it at a moderate height while it is bent at a right angle, the best plan is to put round the arm a broad and soft skin, or broad shawl, and to hang some great weight to it, so as to produce moderate extension; or otherwise, while the arm is in the position I have described, a strong man is to take hold of it at the elbow and pull it downwards.³ But the physician

¹ Galen, in his Commentary, has some very sensible observations on the two forms of displacement occasioned by suspending the arm improperly in the sling, but they are pretty obvious, and are given in too diffuse a style to suit my necessary limits. The process of suspending the arm in a sling was called *analepsis* (ἀνάληψις), a term for which we have no equivalent in modern nomenclature.

² The muscle of the arm to which our author refers is evidently the biceps. The direction here given to apply the bandages to a broken arm, while it is held in the same position as it is to be kept in afterwards, appears to me most important; and yet it is now generally overlooked. Galen expresses himself very forcibly on the propriety of not changing the position of the arm after the apparatus is adjusted. (See note, § 4.) The process of adjusting the parts in fracture of the arm is minutely described by PAULUS ÆGINETA. See the Commentary, Vol. II, p. 456, Syd. Soc. edition.

³ The description of this process, as given by our author, is remarkably distinct and easily understood when illustrated by a drawing, as is done in the Latin edition of Galen's works published by the Juntas, from which M. Littré would appear to have borrowed the figure which he gives (tom. iii, p. 445). The following description of the method of setting a fractured humerus is taken from a modern author, who is a servile copyist from Hippocrates and Galen, and deserves to be introduced here as illustrating the principles upon which our author proceeded in the management of this case: "Here there is one remark to be made that is very necessary in

standing erect, must perform the proper manipulation, having the one foot on some pretty high object,¹ and adjusting the bone with the palms of his hands; and it will readily be adjusted, for the extension is good if properly applied. Then let him bind the arm, commencing at the fracture, and do otherwise as directed above; let him put the same questions, and avail himself of the same signs to ascertain whether the arm be moderately tight or not; and every third day let him bind it anew and make it tighter; and on the seventh or ninth day let him bind it up with splints, and leave it so until after the lapse of more than thirty days. And if he suspect that the bone is not lying properly, let him remove the bandages in the interval, and having adjusted the arm, let him bind it up again. The bone of the arm is generally consolidated in forty days. When these are past, the dressing is to be removed, and fewer and slacker bandages applied instead of it. The patient is to be kept on a stricter diet, and for a longer space of time than in the former case; and we must form our judgment of it from the swelling in the hand, looking also to the strength of the patient. This also should be known, that the arm is naturally inclined outwards; to this side, therefore, the distortion usually takes place, if not properly treated; but indeed, all the other bones are usually distorted during treatment for fracture to that side to which they naturally incline. When, therefore, anything of this kind is suspected, the arm is to be encircled in a broad shawl, which is to be carried round the breast, and when the patient goes to rest, a compress of many folds, or some such thing, is to be folded and placed between the elbow and the side, for thus the bending of the bone will be rectified, but care must be taken lest it be inclined too much inwards.

9. The human foot is composed of several small bones like

the way of practice, namely, that in setting the arm the patient must sit on an unarmed chair, that a servant may embrace and grasp him under the armpit of the sound arm; that another servant must take hold of his arm and draw it upwards, without raising it; that, at the same time, a third servant is to pull the arm downwards towards the ground; and, in fine, that the arm must never be extended, and that the elbow must be always bent in when you thus draw the arm." (Verduc, *Treatise on Fractures, &c.*, p. 352.)

¹ Galen explains, that the intention in directing the physician to stand in this position is to give steadiness to him. This attitude is alluded to in the work *On the Surgery*, as Galen also remarks.

the hand.¹ These bones therefore are scarcely ever broken, unless the skin at the same time be wounded by some sharp and heavy body. The treatment of such injuries, therefore, will be delivered under the head of wounds. But if any bone be moved from its place, or any joint of the toes be luxated, or any of the bones of the part called the tarsus be displaced,² it must be forced back again to its place as described with regard to the hand; and is to be treated with cerate, compresses, and bandages, like the fractures, with the exception of the splints; and is to be secured tightly in the same way, and the bandages renewed on the third day; and the patient thus bandaged should return the same answers as in fractures, as to the bandages feeling tight or slack. All these bones recover perfectly in twenty days, except those that are connected with the bones of the leg, and are in a line with them. It is advantageous to lie in bed during the whole of this time; but the patients, thinking light of the complaint, have not perseverance to do this, and they walk about before they get well; wherefore many of these do not make a perfect recovery. And often the pain puts them in mind of the injury; and deservedly, for the feet sustain the weight of the whole body. When, therefore, they walk about before they are whole, the joints which have been luxated are cured incompletely; and, on that account, while walking about, they have pains in the leg from time to time.

10. But those bones which are connected with the bones of the leg are larger than the others,³ and the cure of them when

¹ The analogy between the construction of the hand and the foot is strikingly described by Galen in his Commentary on this passage. His description of the ankle-joint and the tarsal bones is, upon the whole, wonderfully accurate, except that he makes the number of the tarsal bones to be equal to those of the carpal. How this mistake originated I do not well know. I need scarcely add that modern anatomists count eight bones of the carpus, and only seven of the tarsus.

² The account of the displacement of the tarsal bones here given is, on the whole, very correct. In this way the navicular bone is sometimes displaced from the astragalus, and the cuboid from the os calcis. Several cases of this nature have been related in modern times. See Sir Astley Cooper's Lectures, and Bransby Cooper's Lectures, Medical Gazette, No. 1069, as quoted in the Annotations on the eleventh paragraph.

³ The meaning would appear to be this, that the tarsal bones are larger than their analogues in the upper extremities, namely, than the carpal. The accident described in this paragraph seems evidently to be displacement of the foot, either complete or partial from bones of the leg, that is to say (to use the terminology lately introduced

luxated is more protracted. The mode of treatment then is the same; but we must use more bandages and more splints, and the bandage is to be carried round to this side and to that, and pressure is to be made as in the other cases, particularly at the seat of the luxation, and the first circles of the bandages are to be made there. And at each time the bandages are taken off, much hot water is to be used, for in all injuries at joints the affusion of hot water in large quantity is to be had recourse to. And the same symptoms of compression and relaxation should manifest themselves in the same times, as in the cases formerly treated of, and the subsequent bandagings should be conducted in like manner. These cases get completely well for the most part in forty days, if the patients have resolution to keep their bed; but if not, they are subjected to the complaints formerly described, or still worse.

11. In persons who jumping from any high object pitch upon their heel with great force, the bones are separated, and the veins pour forth their contents, owing to the contusion of the flesh surrounding the bone, and hence a swelling and much pain supervene.¹ For this bone (*os calcis*) is not a small one,

by Mr. Bransby Cooper), displacement of the astragalus. It appears clear that by dislocation at the ankle-joint, Hippocrates here meant a displacement of the astragalus along with the other tarsal bones from the ends of the bones of the leg.

¹ Galen, in his Commentary, states expressly that the accident here described consists in a separation of the astragalus from its connexion with the navicular, and of the *os calcis* from its connexion with the cuboid, by the rupture of the ligaments which unite them. The following description of this accident was lately given by Mr. Bransby Cooper, in one of his Lectures published in the Medical Gazette, No. 1069: "*Dislocation of the navicular bone from the astragalus and the cuboid from the os calcis.*—This is, in fact, a dislocation of 'Chopart's tarsal joint.' I once saw it in the case of a man who was admitted into Guy's Hospital. The toes, metatarsus, and anterior part of the tarsus were twisted inwards; the anterior articular surface of the astragalus and *os calcis* formed a projection on the outer side of the foot, the astragalus being so tightly pressed against the skin as to threaten momentary laceration; and a deep hollow, evidently resulting from the displacement of the cuboid bone, could be felt just in front of the *os calcis*. Reduction was accomplished by the usual extension and counter-extension, and by forcing the metatarsus outwards, while pressure on the bones of the leg in the opposite direction guided the displaced tarsal bones into their proper situation." This accident is obscurely described in Liston's Practical Surgery. It is not noticed in the elaborate work of Baron Dupuytren On the Injuries of Bones. The case, however, which we are now treating of would appear to be noticed by Paulus Ægineta in the following passage, where, however, the description is rather obscure: "If from a leap, as commonly

protrudes beyond the line of the leg, and is connected with important veins and tendons; for the back tendon of the leg is inserted into this bone. Such cases are to be treated with cerate, and with compresses and bandages; and hot water is to be used in large quantity; and they require many bandages, which ought to be particularly good and appropriate. And if the patient happen to have a tender skin about the heel, nothing is to be done to it; but if, as some have it, the skin be thick and hardened, it is to be pared down smoothly and thinned, but without wounding it. It is not everybody who can apply the bandage properly in such cases; for if one shall bind the parts, as in other accidents about the ankle, sometimes bringing a fold round the foot and sometimes round the tendon, these turns leave out the heel, which is the seat of the contusion, and thus there is danger that the os calcis may sphacelate; and if this should take place, the impediment may endure for life; and also in all the other cases of sphacelus, not proceeding from such a cause as this; as when, from being carelessly allowed to lie in a certain position during confinement to bed, the heel becomes black, or when a serious wound has occurred in the leg and it is long of healing, and is connected with the heel, or when the same thing happens in the thigh, or when in any disease a protracted decubitus takes place on the back, in all such cases the sores are inveterate, troublesome, and frequently break out again, unless particular attention be paid to the cure, along with much rest, as in all the cases attended with sphacelus. And cases of sphacelus connected with this cause, in addition to other inconveniences, are attended with great danger to the whole body. For they are apt to be attended with very acute fevers, of the continual type, accompanied with tremblings, hiccup, aberration of intellect, and which prove fatal within a few days: and there may be lividities of bloody veins,¹ with nausea, and gangrene from pressure;

happens, the bone of the heel is moved from its place, or if any inflammatory state is brought on, it is to be remedied by gentle extension and reduction, anti-inflammatory embrocations and secure bandages, the man being kept also in a quiet state until the part is restored." (VI, 120.) See the Commentary of Palladius on this passage of our author, p. 926, ed. Foës.

¹ By bloody veins is meant veins of a large size, as Galen explains. Contusions of such necessarily produce extravasation and hemorrhage, and the other bad consequences described by our author.

these diseases may occur, besides the sphacelus.¹ Those which have been described are the most violent contusions; but in general the contusions are mild, and no great care is required with regard to the treatment, and yet it must be conducted properly. But when the contusion appears to be severe, we must do as described above, making many turns of the bandage around the heel, sometimes carrying it to the extremity of the foot, sometimes to the middle, and sometimes around the leg; and, in addition, all the surrounding parts are to be bandaged in this direction and that, as formerly described; and the compression should not be made strong, but we should make use of many bandages, and it is better also to administer hellebore the same day or on the morrow; and the bandages should be removed on the third day and reapplied. And these are the symptoms by which we discover whether the case will get worse or not: when the extravasated blood, the lividities, and the surrounding parts become red and hard, there is danger of an exacerbation. But if there be no fever, we must give emetics, as has been said, and administer the other remedies which are applicable when the fever is not of a continual type; but if continual fever be present, we must not give strong medicines, but enjoin abstinence from solid food and soups, and give water for drink, and not allow wine but *oxyglyky*² (a

¹ That gangrene should have often supervened in such a case, as described by our author, need not appear surprising. It shows that Hippocrates had a wonderful talent for original observation when he was able to detect and describe such a case; and it ought to teach our profession a lesson of humility, in comparing our present state of knowledge with that of our forefathers, when we thus find that the "old man of Cos," twenty-two centuries ago, understood the nature of this accident better than many of us did not many years since. We are all too apt to flatter ourselves with the belief that we are possessed of all the knowledge which our forefathers had acquired, along with many valuable additions of our own. It is unfortunately but too certain that there is a tendency in the human mind, at certain times, to retrograde, as well as in others to advance, both in knowledge and in virtue.

"Sic omnia fatis

In pejus ruere et retro sublapsa referri.

Non aliter quam qui adverso vix flumine lembum

Remigiis subigit, si brachia forte remisit,

Atque illum in præceps prono rapit alveus amni."

Virgil, Georg. i.

² Galen states that if the *oxyglyky* be not at hand, oxymel may be used in its stead.

composition from vinegar and honey?). But if the case be not going to get worse, the ecchymosed and livid parts, and those surrounding them become greenish and not hard; for this is a satisfactory proof in all cases of ecchymosis, that they are not to get worse; but when lividity is complicated with hardness, there is danger that the part may become blackened. And we must so manage the foot as that it may be generally raised a little higher than the rest of the body. Such a patient will get well in sixty days if he keep quiet.

12. The leg consists of two bones, of which the one is much more slender than the other at one part, but not much more slender at another. These are connected together at the foot, and form a common epiphysis,¹ but they are not united together along the line of the leg; and at the thigh they are united together and form an epiphysis, and this epiphysis has a diaphysis;² but the other bone in a line with the little toe is a little longer. Such is the nature of the bones of the leg.

13. Sometimes the bones connected with the foot are displaced, sometimes both bones with their epiphysis; sometimes the whole epiphysis is slightly moved, and sometimes the other bone.³ These cases are less troublesome than the same accidents

¹ Galen states expressly, that although the tibia and fibula are described as being connected together at the foot, it is not to be understood that they form one bone, but merely that they are in close contact together. It would seem, then, that by epiphysis our author, in this place, meant the malleolus externus. We shall find many examples of its occurring in this sense in the present and two following works.

² Galen states in explanation, that the *epiphysis* or protuberance here described belongs principally to the tibia. By *diaphysis*, he says, is meant a ligamento-cartilaginous prominence connected with it; it appears therefore doubtful whether he applied it to the spinous process of the tibia, or to the semilunar cartilages, as Bosquillon supposes. M. Littré refers the term to the former; but Galen's description of the *diaphysis*, as being of a ligamento-cartilaginous nature, and not being to be met with in the skeleton, would seem to exclude this supposition.

³ If by epiphysis we understand the outer malleolus, the meaning of this passage will be, "The bones of the leg at the ankle may be completely dislocated along with the outer malleolus, or subluxated, in which case either the malleolus externus or the tibia may be partially displaced." This is pretty much the same interpretation as is given to this passage by Gardeil, as quoted by M. Littré (*Econ. Hip.*, tom. iii, p. 393), who, however, does not at all approve of it, but enters into a very elaborate disquisition on this passage, yet without bringing it to any very satisfactory conclusion. I need scarcely mention that partial dislocations have been frequently observed and described recently. See Sir Charles Bell's *Surgery*, p. 196; and the discussion on the luxations at the ankle given in the *Argument*.

at the wrist, if the patients will have resolution to give them rest. The mode of treatment is the same as that of the other, for the reduction is to be made, as of the other, by means of extension, but greater force is required, as the parts of the body concerned are stronger in this case. But, for the most part, two men will be sufficient, by making extension in opposite directions, but, if they are not sufficiently strong, it is easy to make more powerful extension in the following way : having fixed in the ground either the nave of a wheel, or any such object, something soft is to be bound round the foot, and then some broad thongs of ox-skin being brought round it, the heads of the thongs are to be fastened to a pestle or any other piece of wood, the end of which is to be inserted into the nave, and it, the pestle, is to be pulled away, while other persons make counter-extension by grasping the shoulders and the ham. It is also sometimes necessary to secure the upper extremity otherwise ; this if you desire to effect, fasten deeply in the ground a round, smooth piece of wood, and place the upper extremity of the piece of wood at the perineum, so that it may prevent the body from yielding to the pulling at the foot, and, moreover, to prevent the leg while stretched, from inclining downwards ; some person seated at his side should push back the hip, so that the body may not turn round with the pulling, and for this purpose, if you think fit, pieces of wood may be fastened about the armpits on each side, and they are to be stretched by the hands, and thus secured, while another person takes hold of the limb at the knee, and aids in thus making counter-extension. Or thus, if you prefer it : having bound other thongs of leather about the limb, either at the knee, or around the thigh, and having fastened another nave of a wheel in the ground above the head, and adjusted the thongs to some piece of wood adapted to the nave, extension may thus be made in the opposite direction to the feet. Or if you choose, it may be done thus : instead of the naves, lay a moderate-sized beam under the couch, and then having fastened pieces of wood in this beam, both before and behind the head, make counter-extension by means of thongs, or place windlasses at this extremity and that, and make extension by means of them. There are many other methods of making extension. But the best thing is, for any physician who practises in a large city, to have prepared a

proper wooden machine, with all the mechanical powers applicable in cases of fractures and dislocation, either for making extension, or acting as a lever. For this purpose it will be sufficient to possess a board in length, breadth, and thickness, resembling the quadrangular threshing-boards made of oak.¹

14. When you have made proper extension, it is easy to reduce the joint, for the displaced bone is thus raised into a line with the other. And the bones are to be adjusted with the palms of the hands, pressing upon the projecting bone with the one, and making counter-pressure below the ankle with the other. When you have replaced the bones, you must apply the bandages while the parts are upon the stretch, if you possibly can; but if prevented by the thongs, you must loose them, and make counter-extension until you get the bandages applied. The bandage is to be applied in the manner formerly described, the heads of the bandages being placed on the projecting part, and the first turns made in like manner, and so also with regard to the number of compresses and the compression; and turns of the bandages are to be brought frequently round on this and on that side of the ankle. But this joint must be bound more tight at the first dressing than in the case of the hand. But when you have applied the bandage, you must place the bandaged part somewhat higher than the rest of the body, and in such a position that the foot may hang as little as possible. The attenuation of the body is to be made proportionate to the magnitude of the luxation, for one luxation is to a small. and another to a great extent. But in general we must reduce more, and for a longer time, in injuries about the legs, than in those about the hands; for the former parts are larger and thicker than the latter, and it is necessary that the body should be kept in a state of rest, and in a recumbent position. There is nothing to prevent or require the limb to be bandaged anew on the third day. And all the treatment otherwise is to be conducted in like manner,

¹ These descriptions are remarkably clear and easily understood when illustrated by drawings, as they are by Vidus Vidius and M. Littré. All our author's modes of making extension and counter-extension appear to be very judicious. The board or bench (*scamnum Hippocratis*) is described in the work *On the Articulations*. The text in the conclusion of the paragraph is in a doubtful state. I have adopted the emendation of M. Littré.

as in the preceding cases. And if the patient have resolution to lie quiet, forty days will be sufficient for this purpose, if only the bones be properly reduced, but if he will not lie quiet, he will not be able to use the limb with ease, and he will find it necessary to wear a bandage for a long time. When the bones are not properly replaced, but there has been some defect in this respect, the hip, the thigh, and the leg become wasted, and if the dislocation be inwards, the external part of the thigh is wasted, and *vice versá*. But for the most part the dislocation is inwards.¹

15.² And when both bones of the leg are broken without a wound of the skin, stronger extension is required. We may make extension by some of the methods formerly described, provided the bones ride over one another to a considerable degree. But extension by men is also sufficient, and for the most part two strong men will suffice, by making extension and counter-extension. Extension must naturally be made straight in a line with the leg and thigh, whether on account of a fracture of the bones of the leg or of the thigh. And in both cases they are to be bandaged while in a state of extension, for the same position does not suit with the leg and the arm. For when the fractured bones of the arm or fore-arm are bandaged, the fore-arm is suspended in a sling, and if you bind them up while extended, the figures of the fleshy parts will be changed in bending the arm at the elbow, for the elbow cannot be kept long extended, since persons are not in the custom of keeping the joint long in this form, but in a bent position, and persons who have been wounded in the arm, and are still able to walk about, require to have the arm bent at the elbow-joint. But the leg, both in walking and standing, is habitually extended, either completely or nearly so, and is

¹ According to Galen, the cause why dislocation inwards is more common than outwards is, that the end of the fibula extends lower down than the inner malleolus, and that has a tendency to prevent dislocation outwards. All our best authorities at the present day are agreed that dislocation of the astragalus inwards is the most frequent form of luxation at the ankle-joint. See Bransby Cooper's Lectures, where the same reason is assigned for the greater frequency of this mode of displacement as that given by Galen: "This is the most frequent luxation, in consequence of the malleolus internus not descending so low as the external." (Med. Gaz., 1069.)

² The treatment of fracture of the bones of the leg, as given in this and the two following paragraphs, is deserving of much attention.

usually in a depending position from its construction, and in order that it may bear the weight of the rest of the body. Wherefore it readily bears to be extended when necessary, and even when in bed the limb is often in this position. And when wounded, necessity subdues the understanding, since the patients become incapable of raising themselves up, so that they neither think of bending the limb nor of getting up erect, but remain lying in the same position. For these reasons, neither the same position nor the same mode of bandaging applies to the arm and to the leg. If, then, extension by means of men be sufficient, we should not have recourse to any useless contrivances, for it is absurd to employ mechanical means when not required; but if extension by men be not sufficient, you may use any of the mechanical powers which is suitable. When sufficiently extended, it will be easy to adjust the bones and bring them into their natural position, by straightening and arranging them with the palms of the hand.

16. When the parts are adjusted, you should apply the bandages while the limb is in a stretched position, making the first turns to the right or to the left, as may be most suitable; and the end of the bandage should be placed over the fracture, and the first turns made at that place; and then the bandage should be carried up the leg, as described with regard to the other fractures. But the bandages should be broader and longer, and more numerous, in the case of the leg than in that of the arm. And when it is bandaged it should be laid upon some smooth and soft object, so that it may not be distorted to the one side or the other, and that there may be no protrusion of the bones either forwards or backwards; for this purpose nothing is more convenient than a cushion, or something similar, either of linen or wool, and not hard; it is to be made hollow along its middle, and placed below the limb. With regard to the canals (*gutters*?) usually placed below fractured legs, I am at a loss whether to advise that they should be used or not.¹ For they certainly are beneficial, but not to the

¹ I have given a summary of all the information which I could collect respecting the *canals* or *gutters*, used by the ancients for greater security to a fractured leg, in my annotations On the Surgery, and in the Commentary on PAULUS ÆGINETA, Book VI, 106. Galen mentions, in his Commentary on this part, that the more ancient authorities sometimes made use of a mechanical apparatus which he calls *glosso-*

extent which those who use them suppose. For the canals do not preserve the leg at rest as they suppose; nor, when the rest of the body is turned to the one side or the other, does the canal prevent the leg from following, unless the patient himself pay attention; neither does the canal prevent the limb from being moved without the body to the one side or the other. And a board is an uncomfortable thing to have the limb laid upon, unless something soft be placed above it. But it is a very useful thing in making any subsequent arrangements of the bed and in going to stool. A limb then may be well and ill treated with or without the canal. But the common people have more confidence, and the surgeon is more likely to escape blame, when the canal is placed under the limb, although it is not *secundum artem*. For the limb should by all means lie straight upon some level and soft object, since the bandaging must necessarily be overcome by any distortion in the placing of the leg, whenever or to whatever extent it may be inclined. The patient, when bandaged, should return the same answers as formerly stated, for the bandaging should be the same, and the same swellings should arise in the extremities, and the slackening of the bandages in like manner, and the new bandaging on the third day; and the bandaged part should be found reduced in swelling; and the new bandagings should be more tightly put on, and more pieces of cloth should be used; and the bandages should be carried loosely about the foot, unless the wound be near the knee. Extension should be made and the bones adjusted at every new bandaging; for, if properly treated, and if the swelling progress in a suitable manner, the bandaged limb will have become more slender and attenuated, and the bones will be more mobile, and yield more readily to extension. On the seventh, the ninth, or the eleventh day, the splints should be applied as described in treating of the other fractures. Attention should be paid to the position of the splints about the ankles and along the tendon of the foot which runs up the leg. The bones of the leg get

comum, a drawing of which is given in the Latin translation of Galen by Vidus Vidius (Venetiis apud Juntas, 1565); and a still better one in the *Institutiones Chirurgicæ* of Tagaultius (iv, 3). It would appear to me to be a most ingenious machine, and excellently adapted for the position required. It is so constructed, that extension and counter-extension are constantly kept up by a double set of pulleys.

consolidated in forty days, if properly treated. But if you suspect that anything is wanting to the proper arrangement of the limb, or dread any ulceration, you should loose the bandages in the interval, and having put everything right, apply them again.

17. But if the other bone (*fibula*?) of the leg be broken, less powerful extension is required, and yet it must not be neglected, nor be performed slovenly, more especially at the first bandaging. For in all cases of fracture this object should be attained then as quickly as possible. For when the bandage is applied tight while the bones are not properly arranged, the part becomes more painful. The treatment otherwise is the same.¹

18. Of the bones of the leg, the inner one, called the tibia, is the more troublesome to manage, and requires the greater extension; and if the broken bones are not properly arranged, it is impossible to conceal the distortion, for the bone is exposed and wholly uncovered with flesh; and it is much longer before patients can walk on the leg when this bone is broken. But if the outer bone be broken, it causes much less trouble, and the deformity, when the bones are not properly set, is much more easily concealed, the bone being well covered with flesh; and the patients speedily get on foot, for it is the inner bone of the leg which supports the most of the weight of the body. For along with the thigh, as being in a line with weight thrown upon the thigh, the inner bone has more work to sustain; inasmuch as it is the head of the thigh-bone which sustains the upper part of the body, and it is on the inner and not on the outer side of the thigh, being in a line with the tibia; and the other half of the body approximates more to this line than to the external one; and at the same time the inner bone is larger than the outer, as in the fore-arm the bone in the line of the little finger is the slenderer and longer. But in the joint of the inferior extremity, the disposition of the longer bone is not alike, for the elbow and the ham are bent differently.² For these reasons when the external bone is

¹ In this paragraph fracture of the fibula is treated of so distinctly, that no illustration of the text is needed.

² The analogy which our author describes between the bones of the upper and the lower extremity is very striking, and has been the subject of much discussion with

broken, the patients can soon walk about; but in fractures of the inner, it is a long time before they can walk.

19¹. When the thigh-bone is broken, particular pains should be taken with regard to the extension that it may not be insufficient, for when excessive, no great harm results from it. For, if one should bandage a limb while the extremities of the bone are separated to a distance from one another by the force of the extension, the bandaging will not keep them separate, and so the bones will come together again as soon as the persons stretching it let go their hold; for the fleshy parts (*muscles*?) being thick and strong, are more powerful than the bandaging, instead of being less so. In the case then which we are now treating of, nothing should be omitted in order that the parts may be properly distended and put in a straight line; for it is a great disgrace and an injury to exhibit a shortened thigh. For the arm, when shortened, might be concealed, and the

modern physiologists, especially those of the French school, namely, Vicq-d'Azyr, Cuvier, Cruveilhier, and Flourens. M. Littré gives some very interesting extracts from the works of these authors in his *Argument* to this treatise. The following passage, taken from the work of Flourens, contains a very lucid exposition of what I regard as the most rational view of the subject: "La longue indécision des anatomistes touchant les rapports réels des membres supérieurs et inférieurs ne tenait donc qu'à l'oubli, dans des comparaisons faites sur le squelette, du mécanisme vrai de la pronation de la main par la rotation du radius; et la simple restitution de ce mécanisme suffit pour rendre, comme je viens de le dire, à toutes les parties correspondantes une position semblable.—Or, dans cette position semblable de toutes les parties des extrémités du même côté, donnée par le mécanisme vrai de la pronation de la main, le radius répond au tibia, et le cubitus au péroné. C'est justement le contraire de ce qu'a pensé Vicq-d'Azyr, qui assimile le cubitus au tibia, et le radius au péroné. Mais, indépendamment de la raison décisive tirée du vrai mécanisme de la pronation de la main, combien d'autres raisons encore ne se présente-t-il pas contre l'opinion que je réfute, les unes prises de l'anatomie même de l'homme et les autres de l'anatomie comparée!—Dans l'homme, l'os essentiel de l'avant-bras, l'os qui continue le bras, l'os qui porte la main, est le radius; le cubitus n'est là que pour, d'une part, élargir la surface des insertions musculaires, et, de l'autre, prêter un appui solide au membre pendant la rotation de l'os principal, du radius. De même au membre inférieur, l'os essentiel de la jambe, l'os qui continue la cuisse, l'os qui porte le pied, est le tibia. Plus évidemment encore qu'au membre supérieur, le péroné n'est là que pour l'agrandissement des surfaces musculaires; il ne prend aucune part à l'articulation du fémur, il n'en prend qu'une latérale avec le pied." (Sur le Parallèle des Extrémités dans l'Homme et les Quadrupèdes.) The remarks made by Galen in his *Commentary* on the points of analogy between the elbow and the knee-joints are very pertinent.

¹ Fracture of the femur is elaborately treated of in this and the four following paragraphs.

mistake would not be great ; but a shortened thigh-bone would exhibit the man maimed. For when the sound limb is placed beside it, being longer than the other, it exposes the mistake, and therefore it would be to the advantage of a person who would be improperly treated that both his legs should be broken, rather than either of them ; for in this case the one would be of the same length as the other. When, then, proper extension has been made, you must adjust the parts with the palms of the hands, and bandage the limb in the manner formerly described, placing the heads of the bandages as was directed, and making the turns upwards. And the patient should return the same answers to the same questions as formerly, should be pained and recover in like manner, and should have the bandaging renewed in the same way ; and the application of the splints should be the same. The thigh-bone is consolidated in fifty days.

20. But this also should be known, that the thigh-bone is curved rather to the outside than to the inside, and rather forwards than backwards ; when not properly treated, then, the distortions are in these directions ; and the bone is least covered with flesh at the same parts, so that the distortion cannot be concealed. If, therefore, you suspect anything of this kind, you should have recourse to the mechanical contrivances recommended in distortion of the arm. And a few turns of the bandage should be brought round by the hip and the loins, so that the groin and the articulation near the perineum may be included in the bandage ; and moreover, it is expedient that the extremities of the splints should not do mischief by being placed on parts not covered with the bandages. The splints, in fact, should be carefully kept off the naked parts at both ends ; and the arrangement of them should be so managed, as that they may not be placed on the natural protuberances of the bone at the knee-joint, nor on the tendon which is situated there.

21. The swellings which arise in the ham, at the foot, or in any other part from the pressure, should be well wrapped in unscoured and carded wool, washed with wine and oil, and anointed with cerate, before bandaging ; and if the splints give pain they should be slackened. You may sooner reduce the swellings, by laying aside the splints, and applying plenty of bandages to them, beginning from below and rolling upwards ;

for thus the swellings will be most speedily reduced, and the humours be propelled to the parts above the former bandages. But this form of bandaging must not be used unless there be danger of vesications or blackening in the swelling, and nothing of the kind occurs unless the fracture be bound too tight, or unless the limb be allowed to hang, or it be rubbed with the hand, or some other thing of an irritant nature be applied to the skin.¹

22. More injury than good results from placing below the thigh a canal which does not pass farther down than the ham, for it neither prevents the body nor the leg from being moved without the thigh. And it creates uneasiness by being brought down to the ham, and has a tendency to produce what of all things should be avoided, namely, flexion at the knee, for this completely disturbs the bandages; and when the thigh and leg are bandaged, if one bend the limb at the knee, the muscles necessarily assume another shape, and the broken bones are also necessarily moved. Every endeavour then should be made to keep the ham extended.² But it appears to me, that a canal which embraces the limb from the nates to the foot is of use. And moreover, a shawl should be put loosely round at the ham, along with the canal, as children are swathed in bed; and then, if the thigh-bone gets displaced either upwards or to the side, it can be more easily kept in position by this means along with the canal.³ The canal then should be made so as to extend all along the limb or not used at all.

¹ The text of this paragraph, which is very corrupt in all the previous editions, is very ingeniously restored by M. Littré, so as to afford a meaning which exactly suits the context. No experienced surgeon will question the propriety of the practice here recommended; that is to say, when the splints are producing much pain, swelling, and irritation, to remove them for a time and trust entirely to bandages. The text of Galen's Commentary is remarkably corrupt. M. Littré attempts to restore it, but whether or not he was warranted in making so many conjectural emendations, I dare scarcely venture to express my opinion.

² From the text it will be seen how strongly our author disapproves of the half bent position in the treatment of a fractured leg. All the ancient authorities adopted his views in this case, with the exception of Rhazes, who approves of the limb being partially bent. (Contin. xxix.) See further PAULUS ÆGINETA, Book VI, 102.

³ Galen, in his Commentary, informs us that the mode in which the shawl or scarf was to be used had been differently understood, some supposing that the shawl was to be wrapped round the canal after it had been adjusted, and others holding that the shawl was to be wrapped round the limb at the ham, so as to secure immobility of the limb at the knee before applying the canal.

23. The extremity of the heel should be particularly attended to, so that it may be properly laid, both in fractures of the leg and of the thigh. For if the foot be placed in a dependent position, while the rest of the body is supported, the limb must present a curved appearance at the forepart of the leg; and if the heel be placed higher than is proper, and if the rest of the leg be rather too low, the bone at the forepart of the leg must present a hollow, more especially if the heel of the patient be naturally large. But all the bones get consolidated more slowly, if not laid properly, and if not kept steady in the same position, and in this case the callus is more feeble.

24. These things relate to cases in which there is fracture of the bones without protrusion of the same or wound of any other kind.¹ In those cases in which the bones are simply broken across, and are not comminuted, but protrude, if reduced the same day or next, and secured in their place, and if there be no reason to anticipate that any splintered bones will come away; and in those in which the broken bones do not protrude, nor is the mode of fracture such that there is reason to expect the splinters will come out, some physicians heal the sores in a way which neither does much good nor harm, by means of a cleansing application, applying pitch ointment, or some of the dressings for fresh wounds, or anything else which they are accustomed to do, and binding above them compresses wetted with wine, or greasy wool, or something else of the like nature. And when the wounds become clean and are new healed, they endeavour to bind up the limb with plenty of bandages, and keep it straight with splints. This treatment does some good, and never much harm. The bones, however, can never be equally well restored to their place, but the part is a little more swelled than it should be; and the limb will be somewhat shortened, provided both bones either of the leg or fore-arm have been fractured.

25. There are others who treat such cases at first with bandages, applying them on both sides of the seat of the injury, but

¹ Our author now proceeds to lay down the treatment of fractures complicated with a wound of the skin. In this paragraph he describes the first plan, which he does not much approve of, nor strongly condemns. It consists in applying suitable dressings to the wound until it is healed, and then attending to the fractured bones. The disadvantages of this system he has briefly stated, namely, that the fractured parts are apt to be swelled and the limb shortened.

omit them there, and leave the wound uncovered; and afterwards they apply to the wound some cleansing medicine, and complete the dressing with compresses dipped in wine and greasy wool. This plan of treatment is bad, and it is clear that those who adopt this mode of practice are guilty of great mistakes in other cases of fracture as well as these. For it is a most important consideration to know in what manner the head of the bandage should be placed, and at what part the greatest pressure should be, and what benefits would result from applying the end of the bandage and the pressure at the proper place, and what mischiefs would result from applying the head of the bandage and the pressure otherwise than at the proper place. Wherefore it has been stated in the preceding part of the work what are the results of either; and the practice of medicine bears witness to the truth of it, for in a person thus bandaged, a swelling must necessarily arise on the wound. For, if even a sound piece of skin were bandaged on either side, and a part were left in the middle, the part thus left unbandaged would become most swelled, and would assume a bad colour; how then could it be that a wound would not suffer in like manner? The wound then must necessarily become discoloured and its lips everted, the discharge will be ichorous and without pus, and the bones, which should not have got into a state of necrosis, exfoliate; and the wound gets into a throbbing and inflamed condition. And they are obliged to apply a cataplasm on account of the swelling, but this is an unsuitable application to parts which are bandaged on both sides, for a useless load is added to the throbbing which formerly existed in it. At last they loose the bandages when matters get very serious, and conduct the rest of the treatment without bandaging; and notwithstanding, if they meet with another case of the same description, they treat it in the same manner, for they do not think that the application of the bandages on both sides, and the exposure of the wound are the cause of what happened, but some other untoward circumstance. Wherefore I would not have written so much on this subject, if I had not well known that this mode of bandaging is unsuitable, and yet that many conduct the treatment in this way, whose mistake it is of vital importance to correct, while what is here said is a proof, that what was formerly written as to the circumstances under which bandages

should be tightly applied to fractures or otherwise has been correctly written.¹

26. As a general rule it may be said, that in those cases in which a separation of bone is not expected, the same treatment should be applied as when the fractures are not complicated with an external wound; for the extension, adjustment of the bones, and the bandaging, are to be conducted in the same manner. To the wound itself a cerate mixed with pitch is to be applied, a thin folded compress is to be bound upon it, and the parts around are to be anointed with white cerate. The cloths for bandages and the other things should be torn broader than in cases in which there is no wound, and the first turn of the bandage should be a good deal broader than the wound. For a narrower bandage than the wound binds the wound like a girdle, which is not proper, for the first turn should comprehend the whole wound, and the bandaging should extend beyond it on both sides. The bandage then should be put on in the direction of the wound, and should be not quite so tight as when there is no wound, but the bandage should be otherwise applied in the manner described above. The bandages should be of a soft consistence, and more especially so in such cases than in those not complicated with a wound. The number of bandages should not be smaller, but rather greater than those formerly described. When applied, the patient should have the feeling of the parts being properly secured, but not too tight, and in particular he should be able to say that they are firm about the wound. And the intervals of time during which the parts seem to be properly adjusted, and those in which they get loose, should be the same as those formerly described. The bandages should be renewed on the third day, and the after treatment

¹ The method of treating compound fractures, which our author has so fully described and so pointedly condemned, I have occasionally seen practised by surgeons who, I have no doubt, thought themselves too expert in the art of bandaging to take a lesson from the ancients; yet there can be no doubt that the plan deserves all the censure which Hippocrates bestows upon it. As he represents, by bandaging the surrounding parts, and leaving the wound uncovered, or not equally supported, great congestion and swelling, with all their attendant ill consequences, are produced in the wound. What he says against the use of poultices in such a case, I regard as being equally well founded. The method described and recommended by our author in the next paragraph I believe to be based upon most correct principles, and the best that can possibly be devised.

conducted in the same manner as formerly described, except that in the latter case the compression should be somewhat less than in the former. And if matters go on properly, the parts about the wound should be found at every dressing always more and more free of swelling, and the swelling should have subsided on the whole part comprehended by the bandages. And the suppurations will take place more speedily than in the case of wounds treated otherwise; and the pieces of flesh in the wound which have become black and dead, will sooner separate and fall off under this plan of treatment than any other, and the sore will come more quickly to cicatrization when thus treated than otherwise. The reason of all this is, that the parts in which the wound is situated, and the surrounding parts, are kept free of swelling. In all other respects the treatment is to be conducted as in cases of fracture without a wound of the integuments. Splints should not be applied. On this account the bandages should be more numerous than in the former case, both because they must be put on less tight, and because the splints are later of being applied. But if you do apply the splints, they should not be applied along the wound, and they are to be put on in a loose manner, especial care being taken that there may be no great compression from the splints. This direction has been formerly given. And the diet should be more restricted, and for a longer period, in those cases in which there is a wound at the commencement, and when the bones protrude through the skin; and, in a word, the greater the wound, the more severe and protracted should the regimen be.

27. The treatment of the sores is the same in those cases of fracture in which there was no wound of the skin at first, but one has formed in the course of treatment, owing to the pressure of the splints occasioned by the bandages, or from any other cause. In such cases it is ascertained that there is an ulcer, by the pain and throbbing; and the swelling in the extremities becomes harder than usual, and if you apply your finger the redness disappears, but speedily returns. If you suspect anything of the kind you must loose the dressing, if there be any itching below the under-bandages, or in any other part that is bandaged, and use a pitched cerate instead of the other. If there be nothing of that, but if the ulcer be found in an irri-

table state, being very black and foul, and the fleshy parts about to suppurate, and the tendons to slough away, in these cases no part is to be exposed to the air, nor is anything to be apprehended from these suppurations, but the treatment is to be conducted in the same manner as in those cases in which there was an external wound at first. You must begin to apply the bandages loosely at the swelling in the extremities, and then gradually proceed upwards with the bandaging, so that it may be tight at no place, but particularly firm at the sore, and less so elsewhere. The first bandages should be clean and not narrow, and the number of bandages should be as great as in those cases in which the splints were used, or somewhat fewer. To the sore itself a compress, anointed with white cerate, will be sufficient, for if a piece of flesh or nerve (*tendon*?) become black, it will fall off; for such sores are not to be treated with acrid, but with emollient applications, like burns. The bandages are to be renewed every third day, and no splints are to be applied, but rest is to be more rigidly maintained than in the former cases, along with a restricted diet. It should be known, that if any piece of flesh or tendon be to come away, the mischief will spread much less, and the parts will much more speedily drop off, and the swelling in the surrounding parts will much more completely subside, under this treatment, than if any of the cleansing applications be put upon the sore. And if any part that is to come away shall fall off, the part will incarnate sooner when thus treated than otherwise, and will more speedily cicatrize. Such are the good effects of knowing how a bandage can be well and moderately applied. But a proper position, the other parts of the regimen, and suitable bandages cooperate.

28. If you are deceived with regard to a recent wound, supposing there will be no exfoliation of the bones, while they are on the eve of coming out of the sore, you must not hesitate to adopt this mode of treatment; for no great mischief will result, provided you have the necessary dexterity to apply the bandages well and without doing any harm. And this is a symptom of an exfoliation of bone being about to take place under this mode of treatment; pus runs copiously from the sore, and appears striving to make its escape. The bandage must be renewed more frequently on account of the discharge, since otherwise

fevers come on; if the sore and surrounding parts be compressed by the bandages¹ they become wasted. Cases complicated with the exfoliation of very small bones, do not require any change of treatment, only the bandages should be put on more loosely, so that the discharge of pus may not be intercepted, but left free, and the dressings are to be frequently renewed until the bone exfoliate, and the splints should not be applied until then.

29. Those cases in which the exfoliation of a larger piece of bone is expected, whether you discover this at the commencement, or perceive subsequently that it is to happen, no longer require the same mode of treatment, only that the extension and arrangement of the parts are to be performed in the manner that has been described; but having formed doubled compresses, not less than half a fathom in breadth (being guided in this by the nature of the wound), and considerably shorter than what would be required to go twice round the part that is wounded, but considerably longer than to go once round, and in number what will be sufficient, these are to be dipped in a black austere wine; and beginning at the middle, as is done in applying the double-headed bandage, you are to wrap the part around, and proceed crossing the heads in the form of the bandage called "*ascia*."² These things are to be done at the wound, and on both sides of it; and there must be no compression, but they are to be laid on so as to give support to the wound. And on the wound itself is to be applied the pitched cerate, or one of the applications to recent wounds, or any other medicine which will suit with the embrocation. And if it be the summer season, the compresses are to be frequently damped with wine; but if the winter season, plenty of greasy wool, moistened with wine and oil, should be applied. And a goat's skin should be spread below, so as to carry off the fluids which run from the wound; these must be guarded against, and it should be kept in mind,

¹ The text in this place is in a very corrupt state, at least there are various readings, which involve considerable diversity of interpretation. I must own that I prefer the old reading in the edition of Foës, and in the Baslé edition of Galen, to that proposed by M. Littré.

² These bandages are described in the annotations on the Surgery. See also Galen, Meth. Med., vi, and his Commentary on this place.

that parts which remain long in the same position are subject to excoriations which are difficult to cure.¹

30. In such cases as do not admit of bandaging according to any of the methods which have been described, or which will be described, great pains should be taken that the fractured part of the body be laid in a right position, and attention should be paid that it may incline upwards rather than downwards. But if one would wish to do the thing well and dexterously, it is proper to have recourse to some mechanical contrivance, in order that the fractured part of the body may undergo proper and not violent extension; and this means is particularly applicable in fractures of the leg. There are certain physicians who, in all fractures of the leg, whether bandages be applied or not, fasten the sole of the foot to the couch, or to some other piece of wood which they have fixed in the ground near the couch. These persons thus do all sorts of mischief but no good; for it contributes nothing to the extension that the foot is thus bound, as the rest of the body will no less sink down to the foot, and thus the limb will no longer be stretched, neither will it do any good towards keeping the limb in a proper position, but will do harm, for when the rest of the body is turned to this side or that, the bandaging will not prevent the foot and the bones belonging to it from following the rest of the body. For if it had not been bound it would have been less distorted, as it would have been the less prevented from following the motion of the rest of the body. But one should sew two balls of Egyptian leather, such as are worn by persons confined for a length of time in large shackles, and the balls should have coats on each side, deeper towards the wound, but shorter towards the joints; and the balls should be well stuffed and soft, and fit well, the one above the ankles, and the other below the knee. Sideways it should have below two appendages, either of a single or double thong, and short, like loops, the one set being placed on either side of the ankle, and the other on the knee. And the other upper ball should have others of the same kind in the same line. Then taking four

¹ Galen, in illustration, refers to the ulcerations which occur over the os sacrum, and are often found very difficult to cure. See the last section of the Second Book of PAULUS ÆGINETA.

rods, made of the cornel tree, of equal length, and of the thickness of a finger, and of such length that when bent they will admit of being adjusted to the appendages, care should be taken that the extremities of the rods bear not upon the skin, but on the extremities of the balls. There should be three sets of rods, or more, one set a little longer than another, and another a little shorter and smaller, so that they may produce greater or less distension, if required. Either of these sets of rods should be placed on this side and that of the ankles. If these things be properly contrived, they should occasion a proper and equable extension in a straight line, without giving any pain to the wound; for the pressure, if there is any, should be thrown at the foot and the thigh. And the rods are commodiously arranged on either side of the ankles, so as not to interfere with the position of the limb; and the wound is easily examined and easily arranged. And, if thought proper, there is nothing to prevent the two upper rods from being fastened to one another; and if any light covering be thrown over the limb, it will thus be kept off from the wound. If, then, the balls be well made, handsome, soft, and newly stitched, and if the extension by the rods be properly managed, as has been already described, this is an excellent contrivance; but if any of them do not fit properly, it does more harm than good.¹ And all other mechanical contrivances should either be properly done, or not be had recourse to at all, for it is a disgraceful and awkward thing to use mechanical means in an unmechanical way.

31. Moreover, the greater part of physicians treat fractures, both with and without an external wound, during the first

¹ When illustrated by a good drawing, as it is in the edition of M. Littré, the description here given is easily understood, and the machine would appear to be an ingenious contrivance well adapted for the purpose of keeping the leg extended. It evidently consisted of two pairs of elastic rods running along the sides of the leg, and fastened to two pads, or, rather, air-bladders, applied at the knee and the ankle. The contrivance is distinctly described by Palladius in his Commentary on this work. By the way, I am at a loss to apprehend exactly the objections which M. Littré states to the drawings given by Vidus Vidius; indeed they appear to me to be in principle the same as his own, except that they are more rudely constructed. I have given both drawings, so that the reader may judge for himself. Though, as I have stated, the nature of this mechanical contrivance may be pretty clearly understood from the description, when compared with the drawings, it must be admitted that there is a good deal of difficulty in determining certain expressions contained in this paragraph.

days, by means of unwashed wool, and there does not appear to be anything improper in this. It is very excusable for those who are called upon to treat newly-received accidents of this kind, and who have no cloth for bandages at hand, to do them up with wool; for, except cloth for bandages, one could not have anything better than wool in such cases; but a good deal should be used for this purpose, and it should be well carded and not rough, for in small quantity and of a bad quality it has little power. But those who approve of binding up the limb with wool for a day or two, and on the third and fourth apply bandages, and make the greatest compression and extension at that period, such persons show themselves to be ignorant of the most important principles of medicine; for, in a word, at no time is it so little proper to disturb all kinds of wounds as on the third and fourth day; and all sort of probing should be avoided on these days in whatever other injuries are attended with irritation. For, generally, the third and fourth day in most cases of wounds, are those which give rise to exacerbations, whether the tendency be to inflammation, to a foul condition of the sore, or to fevers. And if any piece of information be particularly valuable this is; to which of the most important cases in medicine does it not apply? and that not only in wounds but in many other diseases, unless one should call all other diseases wounds. And this doctrine is not devoid of a certain degree of plausibility, for they are allied to one another in many respects. But those who maintain that wool should be used until after the first seven days, and then that the parts should be extended and adjusted, and secured with bandages, would appear not to be equally devoid of proper judgment, for the most dangerous season for inflammation is then past, and the bones being loose can be easily set after the lapse of these days. But still this mode of treatment is far inferior to that with bandages from the commencement; for, the latter method exhibits the patient on the seventh day free from inflammation, and ready for complete bandaging with splints; while the former method is far behind in this respect, and is attended with many other bad effects which it would be tedious to describe.¹

¹ This mode of treating recent fractures and other injuries would appear to be now entirely lost sight of, and yet I can well believe that, under peculiar circum-

31.¹ In those cases of fracture in which the bones protrude and cannot be restored to their place, the following mode of reduction may be practised :—Some small pieces of iron are to be prepared like the levers which the cutters of stone make use of, one being rather broader and another narrower; and there should be three of them at least, and still more, so that you may use those that suit best; and then, along with extension, we must use these as levers, applying the under surface of the piece of iron to the under fragment of the bone, and the upper surface to the upper bone; and, in a word, we must operate powerfully with the lever as we would do upon a stone or a piece of wood. The pieces of iron should be as strong as possible, so that they may not bend. This is a powerful assistance, provided the pieces of iron be suitable, and one use them properly as levers. Of all the mechanical instruments used by men, the most powerful are these three, the axis in peritrochio, the lever, and the wedge.² Without these, one or all, men could not perform any of their works which require great force. Wherefore, reduction with the lever is not to be despised, for the bones will be reduced in this way, or not at all. But if the upper fragment which rides over the other does not furnish a suitable point of support for the lever, but the protruding part is sharp, you must scoop out of the bone what will furnish a proper place for the lever to rest on. The lever, along with extension, may be had recourse to on the day of the accident, or next day, but by no means on the third, the fourth, and the fifth. For if the limb is disturbed on these

stances, as, for example, in military practice, it might be often found a very advantageous and useful method of treatment to bind a limb at first either, as our author mentions, with well-carded wool or with raw cotton. If disposed of in this way, and laid in the half-boot of pasteboard, which I have formerly mentioned as being used by myself in lieu of the ancient *canals*, I have no doubt but a fractured limb would lie very securely, and the patient in this state might be carried to a distance if required.

¹ *Bis.*

² From the terms in which our author expresses himself, it has been supposed that these are the only mechanical powers which were known in his day. But, considering the advances in the arts which had then been made, it is not likely that the Greeks could have been entirely unacquainted with the screw, although our author omits to mention it here as not being of any application to surgical practice. The pulley (*trochlea*) is mentioned in the work *On the Articulations*, § 43, and, if I recollect right, in other parts of the Hippocratic treatises; but, as we have already stated, it does not appear that it was used anciently in the reduction of dislocations.

days, and yet the fractured bones not reduced, inflammation will be excited, and this no less if they are reduced; for convulsions are more apt to occur if reduction take place, than if the attempt should fail. These facts should be well known, for if convulsions should come on when reduction is effected, there is little hope of recovery; but it is of use to displace the bones again if this can be done without trouble. For it is not at the time when the parts are in a particularly relaxed condition that convulsions and tetanus are apt to supervene, but when they are more than usually tense.¹ In the case we are now treating of, we should not disturb the limb on the aforesaid days, but strive to keep the wound as free from inflammation as possible, and especially encourage suppuration in it. But when seven days have elapsed, or rather more, if there be no fever, and if the wound be not inflamed, then there will be less to prevent an attempt at reduction, if you hope to succeed; but otherwise you need not take and give trouble in vain.

32. When you have reduced the bones to their place, the modes of treatment, whether you expect the bones to exfoliate or not, have been already described. All those cases in which an exfoliation of bone is expected, should be treated by the method of bandaging with cloths, beginning for the most part at the middle of the bandage, as is done with the double-headed bandage; but particular attention should be paid to the shape of the wound, so that its lips may gape or be distorted as little as possible under the bandage. Sometimes the turns of the bandage have to be made to the right, and sometimes to the left, and sometimes a double-headed bandage is to be used.

33. It should be known that bones, which it has been found impossible to reduce, as well as those which are wholly denuded of flesh, will become detached. In some cases the upper part of the bone is laid bare, and in others the flesh dies all around; and, from a sore of long standing, certain of the bones become carious, and some not, some more, and some less; and in some the small, and in others the large bones. From what has been said it will be seen, that it is impossible to tell in one word when the bones will separate. Some come away more quickly,

¹ We recognise here two terms, the *strictum* and *laxum*, which formed the groundwork of the whole system of the Methodists. See Cælius Aurelianus, *passim*.

owing to their smallness, and some from being merely fixed at the point; and some, from pieces not separating, but merely exfoliating, become dried up and putrid; and besides, different modes of treatment have different effects. For the most part, the bones separate most quickly in those cases in which supuration takes place most quickly, and when new flesh is most quickly formed, and is particularly sound, for the flesh which grows up below in the wound generally elevates the pieces of bone. It will be well if the whole circle of the bone separate in forty days; for in some cases it is protracted to sixty days, and in some to more; for the more porous pieces of bone separate more quickly, but the more solid come away more slowly; but the other smaller splinters in much less time, and others otherwise. A portion of bone which protrudes should be sawn off for the following reasons: if it cannot be reduced, and if it appears that only a small piece is required in order that it may get back into its place; and if it be such as that it can be taken out, and if it occasions inconvenience and irritates any part of the flesh, and prevents the limb from being properly laid, and if, moreover, it be denuded of flesh, such a piece of bone should be taken off. With regard to the others, it is not of much consequence whether they be sawed off or not. For it should be known for certain, that such bones as are completely deprived of flesh, and have become dried, all separate completely. Those which are about to exfoliate should not be sawn off. Those that will separate completely must be judged of from the symptoms that have been laid down.

34. Such cases are to be treated with compresses and vinous applications, as formerly laid down regarding bones which will separate. We must avoid wetting it at the beginning with anything cold; for there is danger of febrile rigors, and also of convulsions; for convulsions are induced by cold things, and also sometimes by wounds.¹ It is proper to know that the members are necessarily shortened in those cases in which the bones have been broken, and have healed the one across the other, and in those cases in which the whole circle of the bone has become detached.

35. Those cases in which the bone of the thigh, or of the

¹ See Aphorism v, 17, 20. Celsus renders this sentence as follows: "Frigus omni ratione vitandum," &c. (viii, 10.)

arm, protrudes, do not easily recover. For the bones are large, and contain much marrow; and many important nerves, muscles, and veins are wounded at the same time. And if you reduce them, convulsions usually supervene; and, if not reduced, acute bilious fevers come on, with singultus and mortification.¹ The chances of recovery are not fewer in those cases in which the parts have not been reduced, nor any attempts made at reduction.² Still more recover in those cases in which the lower, than those in which the upper part of the bone protrudes; and some will recover when reduction has been made, but very rarely indeed. For modes of treatment and peculiarity of constitution make a great difference as to the capability of enduring such an injury. And it makes a great difference if the bones of the arm and of the thigh protrude to the inside; for there are many and important vessels situated there, some of which, if wounded, will prove fatal; there are such also on the outside, but of less importance. In wounds of this sort, then, one ought not to be ignorant of the dangers, and should prognosticate them in due time. But if you are compelled to have recourse to reduction, and hope to succeed, and if the bones do not cross one another much, and if the muscles are not contracted (for they usually are contracted), the lever in such cases may be advantageously employed.

36. Having effected the reduction, you must give an emollient draught of hellebore³ the same day, provided it has been

¹ Modern experience has amply confirmed the opinion here expressed by our author as to the danger there is in all cases of compound fracture of the femur or humerus from tetanus and gangrene. In whatever way treated, whether the parts be let alone at first, or reduced, or amputation be practised, such cases commonly prove fatal.

² Paulus Ægineta, in reference to this passage, says: "Hippocrates, in fractures of the thigh and arm, dissuades from replacing at once the protruding bones, predicting danger from it, owing to the inflammation, or perhaps spasm of the muscles and nerves, which are apt to be brought on by the extension. But time has shown that the attempt will sometimes succeed." (VI, 107.) For the practice of the other ancient authorities in this case, see the Commentary, l. c.

³ Even Galen confesses himself unable to determine what is the exact meaning of the term (*μαλθακός*) here applied by our author, but supposes it probable that he means some gentle method of administering the hellebore. He mentions that he was in the practice of giving an infusion of radishes in oxymel with a few branches of hellebore in such cases, and that when thus administered the purgative operation of the hellebore was mild. The reader will remark our author's partiality to hellebore in all cases of a spasmodic nature, such as tetanus.

reduced on the day of the accident, but otherwise it should not be attempted. The wound should be treated with the same things as are used in fractures of the bones of the head, and nothing cold should be applied; the patient should be restricted from food altogether, and if naturally of a bilious constitution, he should have for diet a little fragrant *oxyglyky* sprinkled on water; but if he is not bilious, he should have water for drink; and if fever of the continual type come on, he is to be confined to this regimen for fourteen days at least, but if he be free of fever, for only seven days, and then you must bring him back by degrees to a common diet. To those cases in which the bones have not been reduced, a similar course of medicine should be administered, along with the same treatment of the sores and regimen; and in like manner the suspended part of the body should not be stretched, but should rather be contracted, so as to relax the parts about the wound. The separation of the bones is protracted, as also was formerly stated. But one should try to escape from such cases, provided one can do so honorably, for the hopes of recovery are small, and the dangers many; and if the physician do not reduce the fractured bones he will be looked upon as unskilful, while by reducing them he will bring the patient nearer to death than to recovery.

37. Luxations and subluxations at the knee are much milder accidents than subluxations and luxations at the elbow.¹ For the knee-joint, in proportion to its size, is more compact than

¹ The subject of dislocations at the knee- and elbow-joints is so important, that I have thought it necessary to enter into a pretty full discussion of it in the Argument. A few points, notwithstanding, will require consideration in this place. There is still great diversity of opinion respecting the nature of subluxations at the knee-joint, even after all the investigations which the subject has received from Hey of Leeds, Sir Astley Cooper, Mr. Liston, and Mr. Bransby Cooper. No doubt, partial displacements of the femur from the tibia do take place occasionally; but there appears good reason for suspecting that the accidents generally referred to this category have been displacements of the semilunar cartilages; with these it does not appear that Hippocrates or any other of the ancient authorities was acquainted. Partial dislocations from disease I have frequently seen. I am acquainted with a case of nearly complete luxation backward of the tibia, from the disease usually called white swelling; and yet, strange to say, the limb is still not much impaired either in its strength or motions. These cases of displacement from disease have probably been sometimes confounded with subluxations from accident; indeed I cannot but think that the ancient surgeons must have committed this mistake sometimes, otherwise

that of the arm, and has a more even conformation, and is rounded, while the joint of the arm is large, and has many cavities. And in addition, the bones of the leg are nearly of the same length, for the external one overtops the other to so small an extent as hardly to deserve being mentioned, and therefore affords no great resistance, although the external nerve (*ligament?*) at the ham arises from it; but the bones of the fore-arm are unequal, and the shorter is considerably thicker than the other, and the more slender (*ulna*) protrudes, and passes up above the joint, and to it (the *olecranon?*) are attached the nerves (*ligaments?*) which go downwards to the junction of the bones; and the slender bone (*ulna?*) has more to do with the insertion of the ligaments in the arm than the thick bone (*radius?*). The configuration then of the articulations, and of the bones of the elbow, is such as I have described. Owing to their configuration, the bones at the knee are indeed frequently dislocated, but they are easily reduced, for no great inflammation follows, nor any constriction of the joint. They are displaced for the most part to the inside, sometimes to the outside, and occasionally into the ham.¹ The reduction in all these cases is not difficult, but in the dislocations inwards and outwards, the patient should be placed on a low seat, and the thigh should be elevated, but not much. Moderate extension for the most part sufficeth, extension being made at the leg, and counter-extension at the thigh.

38. Dislocations at the elbow are more troublesome than those at the knee, and, owing to the inflammation which comes on, and the configuration of the joint, are more difficult to reduce if the bones are not immediately replaced. For the bones at the elbow are less subject to dislocation than those of the

they would not have represented this accident as being of so frequent occurrence as they describe it to be. As we have stated elsewhere, of all the joints of the human body this perhaps is the one which most rarely meets with dislocation. The description which our author gives of the ligaments connected with the elbow-joint is so curious, that I have inserted in the Argument to the next work Beclard's very ingenious observations on the subject.

¹ The Commentary of Galen is particularly valuable on this passage, as putting it beyond a doubt that, in dislocations at the knee, our author represents the femur as the bone which is displaced. In modern works the femur is generally considered as the fixed point. See Mr. Bransby Cooper's Lectures, and Mr. Liston's Practical Surgery.

knee, but are more difficult to reduce and keep in their position, and are more apt to become inflamed and ancylosed.¹

39. For the most part the displacements of these bones are small, sometimes towards the ribs, and sometimes to the outside; and the whole articulation is not displaced, but that part of the humerus remains in place which is articulated with the cavity of the bone of the fore-arm that has a protuberance (*ulna*?). Such dislocations, to whatever side, are easily reduced, and the extension is to be made in the line of the arm, one person making extension at the wrist, and another grasping the arm-pit, while a third, applying the palm of his hand to the part of the joint which is displaced, pushes it inwards, and at the same time makes counter-pressure on the opposite side near the joint with the other hand.²

40. The end of the humerus at the elbow gets displaced (*subluxated*?) by leaving the cavity of the ulna. Such luxations readily yield to reduction, if applied before the parts get inflamed. The displacement for the most part is to the inside, but sometimes to the outside, and they are readily recognised by the shape of the limb. And often such luxations are reduced

¹ No person possessed of a practical acquaintance with the subject can fail to perceive that, in the following descriptions of dislocation at the elbow-joint, our author comprises (and perhaps I may say confounds together) simple displacement of the trochlea of the humerus from the great sigmoid cavity of the ulna, and fractures of the humerus immediately above the epiphysis, accompanied with displacement of the bones of the fore-arm. See the Argument, and Dupuytren on Injuries of Bones, p. 102 &c., Sydenham Society edition. Dupuytren was well aware of the occurrence of abruption of the extremity of the humerus with displacement, although not without it. See § 46.

² The case here described would seem to be dislocation of the radius at its upper extremity, an accident which has been described by Duverney, Desault, Sir Astley Cooper, and many other modern authorities. It is distinctly noticed by Oribasius (*De Machinamentis*, xiii and xiv). Our author, upon this supposition, describes both the dislocations forwards and backwards. This is the explanation of the paragraph which Apollonius Citiensis would appear to sanction. (*Schol. in Hippocrat.*, tom. i, p. 15.) Galen, however, in his Commentary preserved by Cocchi, would seem to refer it to the incomplete lateral luxations of the arm. A third interpretation of the meaning has been advanced by Bosquillon, and to it M. Littré at last inclines, namely, that it is incomplete dislocation backwards. His observations on this point show the great pains which the French editor takes in elucidating the text of his author; but I cannot say that I think he and his countryman make out anything like a strong case in support of their opinion, and I still incline to agree with Apollonius in referring the case here described to dislocation of the radius. I leave the reader, however, to judge for himself.

without any powerful extension. In dislocations inwards, the joint is to be pushed into its place, while the fore-arm is brought round to a state of pronation. Such are most of the dislocations at the elbow.¹

41. But if the articular extremity of the humerus be carried to either side above the bone of the fore-arm, which is prominent, into the hollow of the arm (?), this rarely happens; but if it do happen, extension in the straight line is not so proper under such circumstances; for in such a mode of extension, the process of the ulna (*olecranon*?) prevents the bone of the arm (*humerus*?) from passing over it. In dislocations of this kind, extension should be made in the manner described when treating of the bandaging of fractured bones of the arm, extension being made upwards at the armpit, while the parts at the elbow are pushed downwards, for in this manner can the humerus be most readily raised above its cavity; and when so raised, the reduction is easy with the palms of the hand, the one being applied so as to make pressure on the protuberant part of the arm, and the other making counter-pressure, so as to push the bone of the fore-arm into the joint. This method answers with both cases. And perhaps this is the most suitable mode of reduction in such a case of dislocation. The parts may be reduced by extension in a straight line, but less readily than thus.²

42. If the arm be dislocated forwards—this rarely happens, indeed, but what would a sudden shock not displace? for many other things are removed from their proper place, notwithstanding a great obstacle,—in such a violent displacement the part (*olecranon*?) which passes above the prominent part of the bones is large, and the stretching of the nerves (*ligaments*?) is intense; and yet the parts have been so dislocated in certain cases.—The following is the symptom of such a displacement: the arm cannot be bent in the least degree at the elbow, and

¹ This would certainly appear to be incomplete lateral luxation of the fore-arm. See the Argument.

² This is evidently meant as a description of complete lateral luxation. Such a case of displacement is very uncommon; indeed, until lately, it was thought impossible. See Cooper's Surgical Dictionary, p. 391, Fifth edition, 1825. It is described, however, by Mr. Liston in the following terms: "Displacement of both bones laterally is met with, though rarely, the olecranon process being placed upon either the outer or inner condyle; in the latter case the head of the radius rests in the fossa on the posterior aspect of the humerus." (Practical Surgery, p. 124, Third edition.)

upon feeling the joint the nature of the accident becomes obvious. If, then, it is not speedily reduced, strong and violent inflammation, attended with fever, will come on, but if one happen to be on the spot at the time it is easily reduced. A piece of hard linen cloth (for a piece of hard linen, not very large, rolled up in a ball, will be sufficient) is to be placed across the bend of the elbow, and the arm is then to be suddenly bent at the elbow, and the hand brought up to the shoulder. This mode of reduction is sufficient in such displacements; and extension in the straight line can rectify this manner of dislocation, but we must use at the same time the palms of the hands, applying the one to the projecting part of the humerus at the bend of the arm for the purpose of pushing it back, and applying the other below to the sharp extremity of the elbow, to make counter-pressure, and incline the parts into the straight line. And one may use with advantage in this form of dislocation the method of extension formerly described, for the application of the bandages in the case of fracture of the arm; but when extension is made, the parts are to be adjusted, as has been also described above.¹

43. But if the arm be dislocated backwards (but this very rarely happens, and it is the most painful of all, and the most subject to bilious fevers of the continual type, which prove fatal in the course of a few days), in such a case the patient cannot extend the arm. If you are quickly present, by forcible extension the parts may return to their place of their own accord; but if fever have previously come on, you must no longer attempt reduction, for the pain will be rendered more intense by any such violent attempt. In a word, no joint whatever should be reduced during the prevalence of fever, and least of all the elbow-joint.²

44. There are also other troublesome injuries connected with

¹ This would seem to be dislocation of the fore-arm forwards. Whether or not it ever occurs without fracture of the olecranon, as our author's description seems to infer, I cannot pretend to determine. See the Argument.

² There can be no mistake about the nature of the accident described in this paragraph: it is evidently the ordinary luxation of the elbow-joint, namely, displacement of the bones of the fore-arm backward. The following description of its leading character agrees exactly with our author's account of it: "The fore-arm is in a state of half-flexion, and every attempt to extend it produces acute pain." (Cooper's Surgical Dictionary, p. 390, Fifth edition.)

the elbow-joint; for example, the thicker bone (*radius*?) is sometimes partially displaced from the other, and the patient can neither perform extension nor flexion properly. This accident becomes obvious upon examination with the hand at the bend of the arm near the division of the vein that runs up the muscle. In such a case it is not easy to reduce the parts to their natural state, nor is it easy, in the separation of any two bones united by symphysis, to restore them to their natural state, for there will necessarily be a swelling at the seat of the diastasis. The method of bandaging a joint has been already described in treating of the application of bandages to the ankle.¹

45. In certain cases the process of the ulna (*olecranon*?) behind the humerus is broken; sometimes its cartilaginous part, which gives origin to the posterior tendon of the arm, and sometimes its fore part, at the base of the anterior coronoid process; and when this displacement takes place, it is apt to be attended with malignant fever.² The joint, however, remains in place, for its whole base protrudes at that point. But when the displacement takes place where its head overtops the arm, the joint becomes looser if the bone be fairly broken across. To speak in general terms, all cases of fractured bones are less dangerous than those in which the bones are not broken, but the veins and important nerves (*tendons*?) situated in these places are contused; for the risk of death is more immediate in the latter class of cases than in the former, if continual fever come on. But fractures of this nature seldom occur.

46. It sometimes happens that the head of the humerus is fractured at its epiphysis; and this, although it may appear to be a much more troublesome accident, is in fact a much milder one than the other injuries at the joint.³

47. The treatment especially befitting each particular dislocation has been described; and it has been laid down as a rule, that immediate reduction is of the utmost advantage, owing to

¹ This seems to be lateral displacement of the radius. See the Argument.

² These are evidently fractures of the olecranon, near its extremity, and at its base, that is to say, at its connexion with the coronoid process. See Sir Astley Cooper's Lectures, and Cooper's Surgical Dictionary.

³ This, beyond all doubt, is abruption of the epiphysis or trochlea of the humerus. See the Argument.

the rapid manner in which inflammation of the tendons supervenes. For even when the luxated parts are immediately reduced, the tendons usually become stiffened, and for a considerable time prevent extension and flexion from being performed to the ordinary extent. All these cases are to be treated in a similar way, whether the extremity of the articulating bone be snapped off, whether the bones be separated, or whether they be dislocated; for they are all to be treated with plenty of bandages, compresses, and cerate, like other fractures. The position of the joint in all these cases should be the same, as when a fractured arm or fore-arm has been bound up. For this is the most common position in all dislocations, displacements, and fractures; and it is the most convenient for the subsequent movements, whether of extension or flexion, as being the intermediate stage between both. And this is the position in which the patient can most conveniently carry or suspend his arm in a sling. And besides, if the joint is to be stiffened by callus, it were better that this should not take place when the arm is extended, for this position will be a great impediment and little advantage; if the arm be wholly bent, it will be more useful; but it will be much more convenient to have the joint in the intermediate position when it becomes ankylosed. So much with regard to position.¹

48. In bandaging, the head of the first bandage should be placed at the seat of the injury, whether it be a case of fracture, of dislocation, or of diastasis (*separation*?), and the first turns should be made there, and the bandages should be applied most firmly at that place, and less so on either side. The bandaging should comprehend both the arm and the fore-arm, and on both should be to a much greater extent than most physicians apply it, so that the swelling may be expelled from the seat of the injury to either side. And the point of the fore-arm should be comprehended in the bandaging,² whether the injury be in that place or not, in order that the swelling may not collect there.

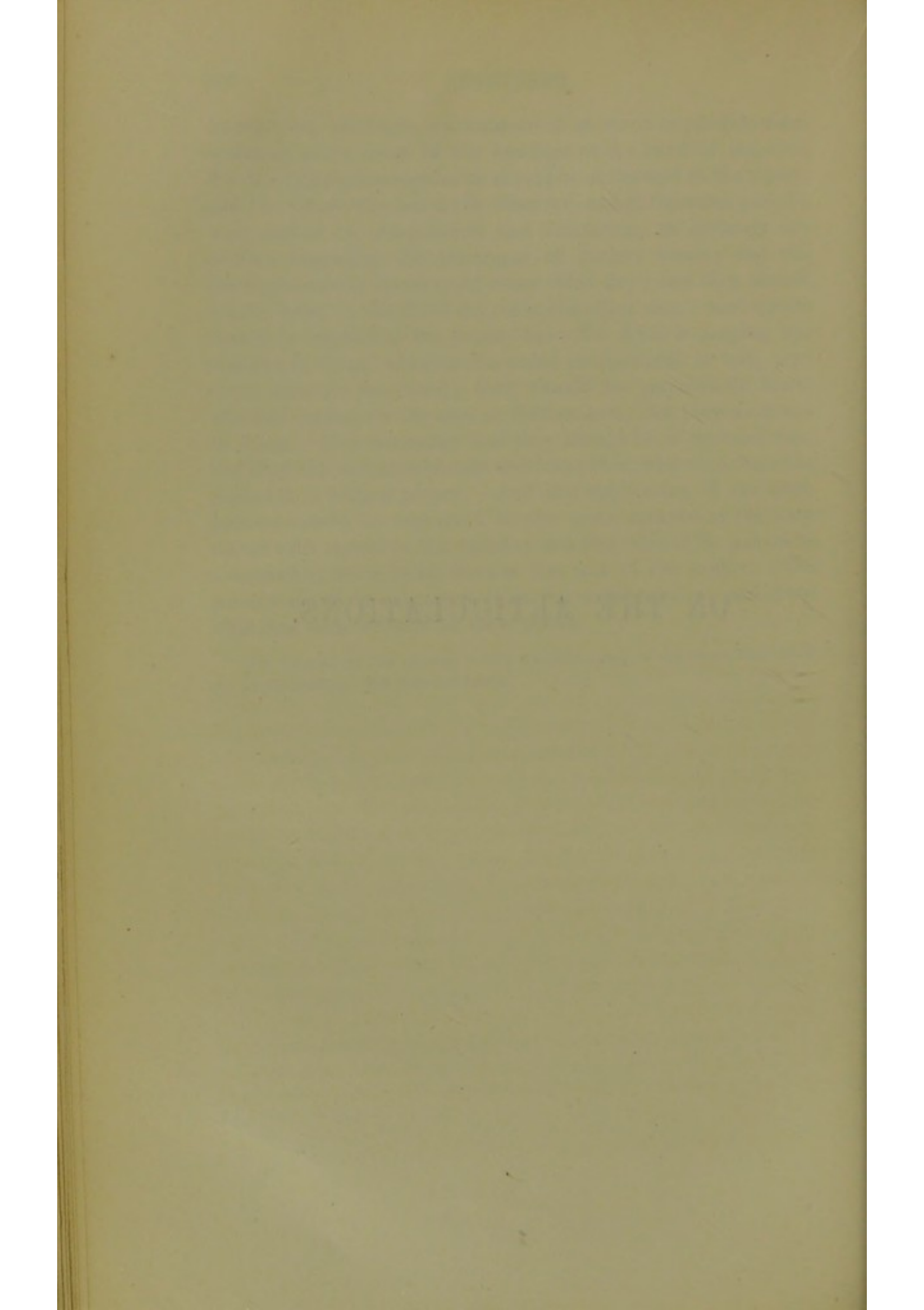
¹ These rules for the adjustment of the parts in injuries of the elbow-joint are most important and apposite. Whether in dislocation, subluxation, abruption of the epiphysis of the humerus, fracture of the olecranon, and, in fact, I believe in all injuries at the elbow-joint, the half-bent position at first will be found the best. See Sir Astley Cooper's Lectures, and all the best modern authorities.

² Meaning, no doubt, the olecranon.

In applying bandages, we must avoid as much as possible accumulating many turns of the bandage at the bend of the arm. For the principal compression should be at the seat of the injury, and the same rules are to be observed, and at the same periods, with regard to compression and relaxation, as formerly described respecting the treatment of broken bones; and the bandages should be renewed every third day; and they should appear loose on the third day, as in the other case. And splints should be applied at the proper time (for there is nothing unsuitable in them, whether the bones be fractured or not, provided there is no fever); they should be particularly loose, whether applied to the arm or the fore-arm,¹ but they must not be thick. It is necessary that they should be of unequal size, and that the one should ride over the other, whenever from the flexion it is judged proper. And the application of the compresses should be regulated in the same manner as has been stated with regard to the splints; and they should be put on in a somewhat more bulky form at the seat of the injury. The periods are to be estimated from the inflammation, and from what has been written on them above.

¹ The meaning in this passage is very doubtful, owing to the uncertainty about the proper reading. See Foës and Littré.

ON THE ARTICULATIONS.



ON THE ARTICULATIONS.

THE ARGUMENT.

THE author commences the work with an elaborate dissertation on dislocations at the shoulder-joint, of which he decidedly recognises only one form, namely, dislocation downwards, or into the armpit, but he does not positively deny the possibility of dislocations upwards, outwards, and forwards, only he states that he had never met with any instance of them. He concludes § 1 with some general remarks on this accident. He then describes various modes of reduction:—with the hand, § 2;—with the heel, § 3;—with the shoulder introduced into the patient's armpit, § 4;—with a pestle or pole introduced into the armpit, § 5;—with a ladder, § 6;—or with the machine called the ambe, § 7. In § 8 are contained some remarks on the general subject of luxations, in which place mention is made of the occurrence of this accident in cattle when in a lean condition. In § 8 the after-treatment is accurately laid down. In § 10 some very important and acute remarks are made on the method of avoiding mistakes in treating these dislocations; and in § 11 the surgical treatment in cases which show a great tendency to relapse is minutely treated of. The consequent effects on the limb when the reduction is not accomplished are circumstantially described in § 12.

In § 13 is given a description of abruption of the acromion, by which is probably meant dislocation of the clavicle from the acromion, complicated, perhaps, with fracture of the latter.

The subject of fracture of the clavicle is next taken up, and it is treated of through §§ 14, 15, 16, where everything relating to the symptoms and treatment of this accident is given with remarkable precision.

The subject of luxations and subluxations at the elbow,

which had been treated of in the work 'On Fractures,' is here resumed, and is fully discussed in §§ 17, 18, 19, 20, 21, 22, 23, 24, 25.

Luxations at the wrist, and their consequences, are given in §§ 26, 27, 28.

Luxations of the fingers are briefly treated of in § 29.

Luxations of the lower jaw, with all their varieties and consequences, are described in §§ 30, 31.

Fracture of the same, without displacement, is given in § 32, and with displacement, in § 33. Fracture of the lower jaw, at its symphysis, is treated of in § 34.

Fractures and contusions of the nose are elaborately treated of in §§ 35, 36, 37, 38, 39.

Fractures of the ear are treated of in § 40.

Incurvation of the spine is treated of in § 41, and the application of the process of succussion by means of a ladder, for the cure of it, is minutely described in §§ 42, 43, 44. In § 45, the spinal vertebræ, ligaments, and nerves are minutely described. Inferences from their anatomical structure are given at considerable length in § 46. The methods of treating incurvations of the spine by a mechanical process are minutely described in § 47. Curvature forwards is described in § 48.

Fracture of the ribs is treated of in § 49, and contusion of them in § 50. It is worthy of remark that contusions are held to be more dangerous than fractures.

The symptoms of dislocations at the hip-joint, whether congenital or otherwise, and whether occasioned by external violence or disease, are described with extraordinary minuteness and accuracy of detail in §§ 51, 52, 53, 54, 55, 56, 57, 58, 59, 60. In § 61 are given some general reflections on the subject of luxations.

In § 62, congenital displacement of the bones of the ankle-joint, that is to say, congenital club-foot, is treated of with great precision.

Luxation of the bones of the ankle-joint, with protrusion of them through the skin, that is to say, compound luxation, is treated of in § 63.

Compound luxations at the wrist are described in § 64.

Compound luxations at the knee are treated of in § 65.

Compound luxations at the elbow are treated of in § 66.

Compound luxations of the bones of the fingers are accurately treated of in § 67.

Resection of the bones of a joint in compound luxations is the subject treated of in § 68.

The subject of gangrene supervening in cases of fracture and other severe accidents is treated of in § 69.

Reduction of dislocations at the hip-joint is minutely described in §§ 70, 71, 72, 73, 74, 75, 76, 77, 78.

In § 79 are given some general observations on the articulations and their dislocations.

Simple dislocations of the joints of the fingers are treated of in § 80.

Some general rules for the management of luxations are given in § 81; after which our author proceeds to the consideration of luxations at the knee, in § 82.

Luxations at the ankle-joint are briefly described in § 83.

Luxations of the bones of the foot are noticed in a succinct style in § 84.

Luxations, as it would appear, of the tarsal bones are obscurely noticed in § 85.

Displacement of the os calcis, followed by gangrene, with the treatment of the same when connected with other causes, is given in § 86.

The work concludes with a paragraph on the treatment of dislocations at the ankle-joint, § 87.

From this statement of its contents it will be readily seen that this work, like the preceding one, treats both of luxations and fractures; but with this difference, that as fractures constitute the groundwork of the other, so luxations form the principal subject of this treatise, the matter relating to fractures being introduced most probably for the sake of diagnosis. Altogether, there is not in all antiquity a medical treatise which contains more interesting materials than the present one, or that deserves to be more carefully studied.

Several sections of the work are perfect masterpieces, such, for example, as the parts which relate to dislocations at the shoulder and the hip-joint, and more especially the latter, in which, as it appears to me, he has given a fuller and more complete history of everything relating to the subject than is to be found in any single work, even at the present day. Thus, not

only does he describe the four ordinary forms of dislocation now recognised, namely, dislocation upwards, downwards, forwards, and backwards, but he gives what is omitted by all our modern authorities, a very minute description of the appearances which the limb presents when the luxated bone has been left unreduced. And, moreover, he describes congenital luxations and luxations from disease. Now, I repeat, no systematic writer on surgery has given so comprehensive a view of the subject of dislocations in all its bearings as what is here given by Hippocrates. The reader, however, will find it very interesting to compare the excellent account of this subject given in the recent publication of Chelius, illustrated by the valuable notes of Mr. South. Among the older of our modern authorities on surgery, Paré is the one who approaches the nearest to Hippocrates in the fulness with which he treats of luxations at the hip-joint, but even he is much less complete in regard to congenital dislocations, and those connected with disease.¹ On one statistical point alone do modern authorities controvert his opinion, and even in this case Hippocrates has a high modern authority on his side—I mean the comparative frequency of the different forms of dislocation; he, and all the ancient authorities after him, having stated that dislocation inwards is the most frequent, whereas Sir Astley Cooper and all our late authorities hold that dislocation upwards is the most frequent. It is deserving of remark, however, that if Cooper be against Hippocrates, Paré is upon his side, and I need scarcely remark that he is not one who bows servilely to ancient authority, but was an original observer, and thought for himself; and, moreover, his experience was on a very large scale.

¹ Chelius ranks Paré, along with Hippocrates and Avicenna, among the authorities on congenital dislocation at the hip-joint; but if Paré really treats of congenital dislocations, it is not in the place where luxations in general are treated of. Although somewhat out of place, I may here be excused in saying a few words on the nature of congenital dislocations. Some of our modern authorities look upon them as being connected with arrested development of the bones, but I must say that, judging of them from what I know of congenital club-foot, I am rather inclined to consider them as being originally produced by retraction of the muscles. This is the theory of Guérin (*Gazette Médicale*, 1841), and it appears to me most probable. I should state, however, that, although I have seen cases of congenital impediment at the hip-joint at a very early age, I never had an opportunity of ascertaining their nature by actual dissection.

On another point connected with this class of accidents, it is worthy of remark, that it was only the other day that an eminent anatomist in London decided that Hippocrates was right, and that all our modern authorities were wrong; I mean with respect to the situation of the head of the femur in the fourth form of dislocation. Sir Astley Cooper, Mr. Liston, Sir Charles Bell, Mr. Samuel Cooper, and, in a word, all our best authorities of late years, maintained that the head of the bone in this form is lodged in the ischiatic notch; but Mr. Richard Quain has lately determined, by actual dissection, that the bone is lodged where it is described to be by Hippocrates, namely, behind the acetabulum in the nates.—See the note on *Articulations*, § 57.

The methods of reduction, too, which our author describes, are all based on the most correct principles, and some of them might, perhaps, be held preferable to those now in use. He does not appear, indeed, to have been acquainted with the use of pulleys in the treatment of this accident, but the axles which he describes as being attached to the bench which bears his name (*Scamnum Hippocratis*) must have been quite capable of exercising a degree of force fully adequate to effect the desired purpose.¹ The method, too, according to which the patient was placed astride upon a cross-beam, and with a weight attached to the injured limb, would seem to be one admirably adapted to wear out the strength of the contracted muscles, and in this way facilitate the adjustment of the bone.

But in all the works on ancient surgery, I verily believe there is not a more wonderful chapter than the one which relates to *Club-foot*, § 62. In it he has not only stated correctly the true nature of this malformation, but he has also given very sensible directions for rectifying the deformity in early life. Now it appears to me a lamentable reflection, as proving that valuable knowledge after being discovered may be lost again to the world for many ages, that not only did subsequent authorities, down to a very recent period, not add any thing to the stock of valuable information which he had given on the subject, but the important knowledge which he had revealed to the pro-

¹ The reader will see the machine and the process of reduction figured in the *Armamentarium Chirurgicum* of Scultet, Tab. xxv; in the edition of Galen's Works by the Juntas; and in Littré's edition of Hippocrates. I have given the last two; and the first is scarcely at all different from the second.

fession came to be disregarded and lost sight of, so that, until within these last few years, *talipes* was regarded as one of the "opprobria medicinæ." I cannot omit this opportunity of mentioning, however, that some centuries ago certain individuals would appear to have practised successfully the treatment of club-foot on the principles laid down by Hippocrates. To give an instance in point, Arcæus, who, in his work 'De Curandis Vulneribus,' (Amstel. 1658,) has given a chapter on the treatment of club-foot, not only describes the process correctly, but actually gives the form of two mechanical contrivances for reducing the derangement of the foot, and keeping it *in situ*. The former of these contrivances is evidently the original of Scarpa's apparatus, now very generally used in the adjustment of club-foot; and the other is as evidently the very same as the boot delineated in Syme's 'System of Surgery,' and which I myself have often used in the treatment of club-foot. As a matter of curiosity, I shall give drawings of them. That the author (I mean Arcæus) was very successful in the treatment of congenital club-foot appears obvious, from the terms in which he speaks of the results of his experience in this way: "Sæpe accidit, ut infans nascatur aut altero aut utroque pede distorto, aut incurvo, aut repando, ita ut ægrè admodum possit incedere. Eâ de causâ hoc loco volui methodum tradere, qua plurimos valde claudos liberavi, inter quos unus curatu difficillimus," &c. The whole process of cure is most circumstantially described, and the author concludes with the very proper advice, that the patient should be made to wear the boot for six months after the parts have been restored. All this shows, that although our author's excellent instructions for the management of this deformity were long lost to the profession at large, there were not wanting individuals who knew how to appreciate their value.

With regard to the description of the mode of bandaging a distorted limb in club-foot, as given by our author, I have little to add to what is stated in my annotations on the passage. Though there be certain obscurities in some of the expressions which occur in it, its general meaning is sufficiently obvious; and I can attest from ample experience recently acquired in the treatment of this surgical case, that the rules of treatment here laid down by our author are very judicious, and I have no

doubt would be found amply sufficient for restoring a recent case of talipes. The reader will remark, that our author concludes his account of club-foot with the declaration, that treated in this way it may be cured sooner than one would have thought, "without burning or cutting, or any other complicated method." And here I cannot deny myself the pleasure of quoting the very candid reflections which Dr. Little, in his work 'On Club-foot' makes on the account of talipes given by Hippocrates. He says, "Hippocrates describes the bandages to which he resorted for the cure of varus, and his success may be estimated from the encomiums he bestows on them,—'citius enim talia medicinæ obtemperant, quam quis putarit.' The candour displayed throughout the writings of the Father of Medicine leaves little doubt that he has not exaggerated the success which he experienced; and we may conclude that, by commencing the treatment at the earliest period of life, aided by his unremitting perseverance, many of these distortions were remedied. An observation, which would have passed unheeded prior to the introduction of the division of the tendo Achillis, follows the last quotation: 'atque hæc quidem est curatio, et neque sectione, neque ustione, neque aliâ varietate quicquam opus habet,'—of the import of which, doubts may now be entertained. Whether Hippocrates, or any of his contemporaries, had discovered the means of curing this distortion by section of tendons, but preferring the application of bandages, nevertheless rejected it, or whether he employed this observation with a different meaning, cannot at the present day be decided. It is possible that Hippocrates, being accustomed to cure external disorders by the knife or cautery, may have adduced his treatment of this disease as an exception to the more severe methods so frequently resorted to in other affections; whilst it would not be surprising if, by his great ingenuity and skill, he had detected the possibility of removing the obstacles to a cure by a division of the tendons. He may have apprehended suppurations and other unfavorable symptoms from the section of so important a tendon as that of Achilles; or, having been unsuccessful in his first attempts, he may have been deterred from a repetition," (Introduction, p. 48.)

The description which our author gives of luxations at the wrist, *Articulations* §§ 26, 27, 28, and *Mochlicus* §§ 16, 17, 18, is

attended with peculiar difficulties, and hence it has given rise to a good deal of confusion and misapprehension from the time of Paré¹ down to Malgaigne and Littré. His usage of the terms "inwards" and "outwards" is somewhat vague; but it appears to me that we need have little hesitation in deciding them to apply to the modern acceptation of "forwards" and "backwards." But the great puzzle is, does he mean that the bones of the carpus are displaced from those of the fore-arm? or does he recognise the carpus as the fixed point? His language would certainly apply most naturally to the interpretation that the bones of the hand were the parts which he understood to be displaced; but yet M. Malgaigne holds, that our author understood the bones of the fore-arm to be the moveable part. We shall examine the question somewhat more narrowly. One of the best of our recent authorities on dislocations lays it down as a rule, that in dislocation of the carpus *backwards* there is permanent *flexion* of the hand, and in dislocation *forwards*, that there is permanent *extension*. (See Mr. B. Cooper's Lectures, Med. Gaz. 1065.) Now, according to Hippocrates, in luxation *inwards* (meaning, as stated above, *forwards*), the patient cannot *bend* his fingers (this, then, agrees with the character of dislocation of the carpus *forwards*), and in luxation *outwards* (meaning, in modern language, *backwards*), that he cannot extend them; this case, then, would seem to agree with the characters of dislocation *backwards*, agreeably to modern views. All this would lead us to the conclusion, that Hippocrates agreed with our recent authorities in regarding the bones of the hand as the part which is displaced. Moreover, it is difficult to understand Celsus, who, it is probable, translated the words of Hippocrates, in any other sense: he says, "Manus quoque in omnes quatuor partes prolabitur. Si in posteriorem partem excidit, porrigi digiti non possunt" (Mr. B. Cooper's description of dislocation of the carpus *backwards* is, "permanent *flexion* of the hand")—"si in priorem non inclinatur" (Mr. Cooper's description of dislocation *forwards* is, "it is characterised by permanent *extension* of the hand") viii. 17. Still, however, I believe, that not only is the

¹ The disagreement between Paré and the ancient authorities (especially Hippocrates and Galen) in the use of the terms which he applies to the parts in describing dislocations at the wrist, is adverted to in the marginal notes to all the old editions. See Book XV.

literature of this subject perplexed by an ill-defined nomenclature, but that the nature of the accidents which befall the bones of the wrist is far from being satisfactorily determined even at the present day. For my own part, after full thirty years' experience in treating these and other surgical cases, I must say that I never saw a distinct and decided case of dislocation at the wrist, and that I incline with Baron Dupuytren¹ and Professor Syme in regarding most of the accidents which have been set down for luxations as having been in reality fractures of the bones of the fore-arm in the vicinity of the joint. And in conclusion, I beg leave to state it as my decided opinion, that with regard to the accidents which befall the elbow, the wrist, and the ankle-joints, much misapprehension still prevails. While a certain creed is established on any given professional subject, most people are disposed to see the phenomena connected with it as they fancy that they should see them, and independent thought and original observation are talents rarely vouchsafed to any one. Professional men of late have been impressed with the idea, that by entirely renouncing the authority of the ancients, they show themselves to be original observers; but such persons are more the slaves of established modes of thought and conventional opinions, than if they were familiarly acquainted with all the authorities in medicine from the earliest time down to the present day; for it is only when possessed of this knowledge, that a man of a well-constituted mind feels that he is fully warranted to exercise an independent judgment of his own. In literature, as in warfare, it is knowledge which confers true self-reliance.

A very interesting subject handled by our author in this work is the treatment of compound luxations. One can readily perceive, that he had correctly estimated the dangers of this very grave class of accidents; and accordingly, in one place, he makes it a consideration, whether or not the surgeon should incur the

¹ See the Syd. Soc. edition of his works. I perceive, from the note given on Chelius's chapter "On Dislocations at the Wrist," that the opinions of Dupuytren have been controverted by Voillemier, who thinks he has shown the existence of such dislocations by the most careful examination of a complete displacement of the wrist backwards, and of the bones of the fore-arm forwards. Now I do not pretend to deny the actual possibility of such an occurrence; but I must say that my own experience leads me to the conclusion that a case of dislocation without fracture must be extremely rare indeed.

responsibility of undertaking the charge of them. As a general rule, he forbids reduction, unless in the case of the smaller joints, such as those of the hands and feet. Now it is curious to remark, that in the time of Celsus and Galen, this rule of practice was still adhered to, but Paulus Ægineta ventures for once to rebel against the authority of the Coan sage. In the section "On dislocations with a wound," he says, "Wherefore Hippocrates, by all means, forbids us to apply reduction and strong bandaging to them, and directs us to use only anti-inflammatory and soothing applications to them at the commencement; for that, by this treatment, life may be sometimes preserved. But what he recommends for the fingers alone, we would attempt to do for all the other joints: at first, and while the part remains free from inflammation, we would reduce the dislocated joint by moderate extension; and, if we succeed in our object, we may persist in using the anti-inflammatory treatment only." (vi. 121.) All the Arabian authorities follow the rule of practice here laid down by Paulus Ægineta. See the Commentary, l. c. Syd. Soc. ed. I need scarcely remark, that this mode of treatment is that now followed by the profession. It will further be remarked, that at § 68, our author treats of resection of the bones in compound luxation of the bones of the hands, feet, ankle, and wrist; and that, upon the whole, he approves of the practice. In the annotations on that section, I have briefly adverted to modern experience in the application of this method of treatment; and in this place I shall merely add the rule of practice as laid down by Chelius, which the reader will find it interesting to remark, is very little different from that recommended by Hippocrates, except that Chelius, in all cases, approves of attempts at reduction: "If the reduction of the head of the bone, protruded through the soft parts, be in no way possible, even after proper enlargement of the wound in the skin, nothing remains but to saw off the protruding bone, by which the stretching and tearing of the muscles are relieved, and the joint can be brought to its natural position; after which the symptoms, in general, soon and considerably diminish. When the reduction of a bone protruding through the soft parts is not immediately possible, it is still less so when the inflammation runs into suppuration; the symptoms continue increasing, and amputation may be rendered necessary by gangrene, and by

progressive destruction, if the head of the bone have not been removed at the proper time." (Vol. i, p. 769, Engl. edition.)

In the brief annotations which I have given on the first paragraph, I have brought forward certain passages in this and the other works of our author, which seem to prove beyond all doubt, that he must have had more or less acquaintance with Human Anatomy from actual dissection. On this point I have long been confident, and the more I become familiar with his admired works, the stronger my impression is that his anatomical knowledge must have been far from contemptible; in fact, I do not at present recollect a single instance of mistake committed by him in any of his anatomical descriptions, if we except that with regard to the sutures of the head, and even in that case I have endeavoured to show that the meaning of the passage is very equivocal. His descriptions of the vertebræ, with all their processes and ligaments, and his general characters of the internal viscera, would not have been so free from error as they are, if his knowledge had been all derived from the dissection of the inferior animals. Indeed, I am of opinion that Hippocrates and the other medical authorities of antiquity had practised *inspectiones cadaverum* more frequently than they durst publicly acknowledge, for fear of suffering from popular prejudice; but even that would appear to have been overrated, for, as it is proved beyond all possibility of doubt, that the human body was openly dissected in the anatomical schools of Alexandria, considerably less than 100 years after the death of Hippocrates,¹ it is highly probable that the practice had prevailed before that time, although to an inferior extent. Such a taste was not likely to have sprung up all at once under the Ptolemies. Indeed, that Aristotle, who was almost contemporary with Hippocrates, and who was dead before the distinguished Alexandrian period, had seen the human body dissected, will not be questioned by any one who has read his admirable works 'On the Parts of Animals,' and 'The History of Animals.' See, in particular, the last chapter of the First Book of the latter work; also, *ibid.* i, 11; ii, 5; de Respiratione, 15; de Partibus Animalium, iii, 4. In fact, he does not hesitate to declare, that certain things must be learned from dissection. (H. A. i, 11, and vi, 10.)

¹ See the authorities quoted in Marx's Life of Herophilus.

In addition to the observations on this interesting subject, which will be found at the place above indicated, I now beg leave to quote from M. Littré's notes on § 37 of the work 'On Fractures,' the very ingenious remarks of M. Bécларd on the description of the parts connected with the elbow-joint, both because they appear to me very interesting, as illustrating the meaning of our author, and further as proving irrefragably, that Hippocrates must have had considerable acquaintance with human anatomy.

"Le passage d'Hippocrate est très bref, et à cause de cela il peut paraître obscur à ceux qui n'auraient pas présente à l'esprit la disposition anatomique. La description suivante de l'articulation du coude, donnée par Bécларd, servira de complément, et montrera que la phrase d'Hippocrate suppose une connaissance très précise de la disposition de cette articulation: 'L'articulation du coude est maintenue par quatre ligaments, un antérieur, un postérieur, un externe, et un interne. Les ligaments, quoique très distincts par leur disposition les uns des autres, se confondent par leurs bords voisins, de manière à entourer l'articulation circulairement. L'antérieur et le postérieur sont membraneux et minces, surtout le second; les latéraux sont beaucoup plus forts. Le ligament antérieur s'attache, en haut, au-dessus des enfoncements qui surmontent la petite tête et la poulie, et au devant des tubérosités de l'humérus; en bas, à l'apophyse coronoïde du cubitus et au ligament annulaire du radius; ses fibres latérales sont obliques, les moyennes verticales et séparées en haut, par des intervalles cellulaires qui les rendent très apparentes. Le ligament postérieur fixé, en haut, au bord de la cavité olécrânienne de l'humérus et à la partie supérieure des tubérosités s'attache, en bas, au sommet et au bord externe de l'olécrâne; ses fibres forment deux bandes obliques qui se confondent et se croisent en partie en descendant l'une vers l'autre. Le ligament externe est attaché, par son extrémité supérieure, au bas de la tubérosité externe de l'humérus; ses fibres descendent de là en divergeant: les moyennes et les antérieures s'unissent au ligament annulaire du radius tandis que les postérieures passent sur ce ligament, et parviennent au côté externe du cubitus, où elles se fixent: ces dernières sont confondues par en haut avec le ligament postérieur. Le ligament interne est plus large que le précédent,

auquel il ressemble d'ailleurs assez bien ; il naît de la tubérosité interne, dont il embrasse toute la partie inférieure, et se termine, d'une part, au côté interne de l'apophyse coronoïde du cubitus, de l'autre, au bord interne de l'olécrâne, en sorte que les fibres forment deux faisceaux distincts par leur situation et leur direction.¹ On voit qu'en effet la plus grande partie des fibres ligamenteuses s'attache au cubitus. La connaissance d'un détail aussi précis dans les rapports qu'ont les ligaments avec les os de l'avant bras ne peut pas avoir été, chez Hippocrate, le résultat de l'anatomie des animaux. *On est en droit de la citer comme une présomption qui, jointe à plusieurs autres, porte à croire que les Hippocratiques ont disséqué des corps humains.*"²

I shall only add further in conclusion, that Ruffus Ephesius and Galen, whose works that are still extant bear undoubted marks of their having possessed a very considerable acquaintance with human anatomy, uniformly refer to Hippocrates with great deference as one of the best of the ancient authorities on this subject. See Ruffus Ephesius (de Part. Hom., pluries), and Galen (de Dissect. Vulvæ, 9).

¹ Dictionnaire de Médecine, 2^e édit., tom. ix, p. 207 ; Paris, 1835.

² Voyez tom. i, p. 236.

ON THE ARTICULATIONS.

1. I am acquainted with one form in which the shoulder-joint is dislocated, namely, that into the armpit; I have never seen it take place upwards nor outwards; and yet I do not positively affirm whether it might be dislocated in these directions or not, although I have something which I might say on this subject. But neither have I ever seen what I considered to be a dislocation forwards.¹ Physicians, indeed, fancy that dislocation is very apt to occur forwards, and they are more particularly deceived in those persons who have the fleshy parts about the joint and arm much emaciated; for, in all such cases, the head of the arm appears to protrude forwards. And I in one case of this kind having said that there was no dislocation, exposed myself to censure from certain physicians and common people on that account, for they fancied that I alone was ignorant of what everybody else was acquainted with, and I could not convince them but with difficulty, that the matter was so. But if one will strip the point of the shoulder of the fleshy parts, and where the muscle (*deltoid*?) extends, and also lay bare the

¹ Our author, it will be remarked, states modestly the results of his own experience regarding the modes of dislocation at the shoulder; he had never seen any other dislocation than that downwards, but he does not positively say that dislocations upwards, forwards, and outwards may not occur, although he had never met with them. May I be allowed to remark, that thirty years' practice of the art of surgery in my locality has brought me to the same conclusions as Hippocrates; I have seen many, very many dislocations downwards, but I never saw what could, strictly speaking, be called a dislocation either forwards or backwards. I suppose, however, there can be no reason to question the occurrence of such displacements, after the statements of Galen and so many other surgical authorities, both ancient and modern. Galen relates that in the course of his life he had met with five instances of the two uncommon forms of dislocation, and accounts for the different results of his experience and that of Hippocrates from having exercised his profession in a populous city like Rome, which Polemo the Rhetorician had pronounced to be "the compendium, as it were, of the inhabited world," and from his having been frequently called in by his brethren to see rare cases in surgery. Most of the ancient authorities after Galen admit the reality of these rarer forms of luxation. See PAULUS ÆGINETA, B. VI, 114. Celsus describes the dislocation forwards, but does not seem to have admitted the reality of dislocation backwards. (viii, 15.) I may mention that, in the course of thirty-eight years' practice of his profession, Sir Astley Cooper states that he had met with only two dislocations backwards, but that he had seen several cases of dislocation forwards. (On Dislocations, p. 416.)

tendon that goes from the armpit and clavicle to the breast (*pectoral muscle* ?), the head of the humerus will appear to protrude strongly forwards, although not dislocated, for the head of the humerus naturally inclines forwards, but the rest of the bone is turned outwards.¹ The humerus is connected obliquely with the cavity of the scapula, when the arm is stretched along the sides ; but when the whole arm is stretched forwards, then the head of the humerus is in a line with the cavity of the humerus, and no longer appears to protrude forwards. And with regard to the variety we are now treating of, I have never seen a case of dislocation forwards ; and yet I do not speak decidedly respecting it, whether such a dislocation may take place or not. When, then, a dislocation into the armpit takes place, seeing it is of frequent occurrence, many persons know how to reduce it, for it is an easy thing to teach all the methods by which physicians effect the reductions, and the best manner of

¹ The language of our author in this place puts it beyond all doubt that human dissection was practised in his age. It may be interesting to see Galen's Commentary on this important passage. After giving an accurate description of the bones connected with the shoulder-joint, he goes on to say that Hippocrates, in this place, illustrates his views from anatomy, directing us to lay the acromion bare of its flesh, *that is to say, to dissect with a scalpel down to the bones which form the articulation, and to lay bare the tendon which is situated there, and to lay bare the tendon in the armpit.* He adds, there are three muscles situated there : first, that which derives its origin from the scapula and clavicle, called the deltoid, the fleshy part of which covers the whole joint, and the tendon of which is inserted down the arm ; then the pectoral, inserted near the situation of the humeral vein ; and, last, the biceps, which arises by two heads, the one from the anchor-shaped apophysis of the scapula (the coracoid ?), and the other from the high margin of the neck of the scapula (the glenoid cavity ?). Our author's description of the brain in the treatise, *On the Sacred Disease*, is such as could not have been given by a person wholly unacquainted with human dissection. It is to this effect : the brain in man, as in all other animals, is double, and is separated in the middle by a thin membrane (the falx ?).—Vol. i, p. 595, ed. Kühn. The construction of the human heart is also briefly adverted to in the small treatise, *On the Heart*. Obscure allusions to the internal structure of the human body are also to be met with in other of the Hippocratic treatises, such as *De Venis*, tom. i, p. 276, ed. Lind. ; *de Ossibus*, *ibid.* ; *de Carnibus*, tom. i, p. 123. Now, even if it were denied that these works are genuine, it cannot be questioned that they are the productions of the age immediately succeeding Hippocrates, and preceding the brilliant epoch of the famous Alexandrian anatomists ; so that it appears to me impossible to avoid the conclusion that human dissection had been practised in the age of Hippocrates ; and if in his age, we are sure it was not neglected by him, who was the greatest ornament of the profession in his own days. On this subject see further the *Argument*.

applying them. The strongest of those methods should be used when the difficulty of reduction is particularly great. The strongest is the method to be last described.

2. Those who are subject to frequent dislocations at the shoulder-joint, are for the most part competent to effect the reduction themselves; for, having introduced the knuckles of the other hand into the armpit, they force the joint upwards, and bring the elbow towards the breast. The physician might reduce it in the same manner, if having introduced his fingers into the armpit on the inside of the dislocated joint, he would force it from the ribs, pushing his own head against the acromion, in order to make counter-pressure, and with his knees applied to the patient's elbow pushing the arm to the sides. It will be of advantage if the operator has strong hands, or the physician may do as directed with his head and hands, while another person brings the elbow towards the breast. Reduction of the shoulder may also be effected by carrying the fore-arm backwards to the spine, and then with the one hand grasping it at the elbow, to bend the arm upwards, and with the other to support it behind at the articulation. This mode of reduction, and the one formerly described, are not natural, and yet by rotating the bone of the joint, they force it to return.¹

3. Those who attempt to perform reduction with the heel,

¹ The methods of reducing dislocations at the shoulder-joint are, in general, described by Hippocrates so clearly and fully, that no one who reads the text carefully can have much difficulty in understanding the descriptions; or if he has, he need only refer to the drawings which accompany the Latin translation of Galen's works by Vidus Vidius. They are also illustrated by the very full and sensible Commentary of Apollonius Citiensis, published by the late Dr. Dietz, Königsburg, 1834. I shall only make a few remarks occasionally in explanation of any passage which may appear somewhat obscure, or in order to call attention to any subject of peculiar interest. Galen and Apollonius explain the reason why our author calls the method described in this paragraph not natural, to be, because the extension is rotatory and not direct. I may further mention in this place, that if the modern reader have any difficulty in comprehending the application of the different modes of reduction described by our author, he will find much illustration of the subject given by Desault in his *Surgical Journal*, vol. ii, p. 134, English edition. He gives a very interesting history of all the known methods of reduction, from Hippocrates down to his own time. The use of the pulleys, in this surgical case, would appear to be a modern invention; Ambrose Paré, according to Desault, was the first to use them. The application of them is certainly distinctly described and delineated in his works. Petit joined the pulley to the ambe, and in this way formed a very powerful machine for reducing dislocations.

operate in a manner which is an approach to the natural. The patient must lie on the ground upon his back, while the person who is to effect the reduction is seated on the ground upon the side of the dislocation ; then the operator, seizing with his hand the affected arm, is to pull it, while with his heel in the armpit he pushes in the contrary direction, the right heel being placed in the right armpit, and the left heel in the left armpit. But a round ball of a suitable size must be placed in the hollow of the armpit ; the most convenient are very small and hard balls, formed from several pieces of leather sewed together. For without something of the kind the heel cannot reach to the head of the humerus, since, when the arm is stretched, the armpit becomes hollow, the tendons on both sides of the armpit making counter-contraction so as to oppose the reduction. But another person should be seated on the other side of the patient to hold the sound shoulder, so that the body may not be dragged along when the arm of the affected side is pulled ; and then, when the ball is placed in the armpit, a supple piece of thong sufficiently broad is to be placed round it, and some person taking hold of its two ends is to seat himself above the patient's head to make counter-extension, while at the same time he pushes with his foot against the bone at the top of the shoulder. The ball should be placed as much on the inside as possible, upon the ribs, and not upon the head of the humerus.¹

4. There is another method of reduction performed by the shoulder of a person standing. The person operating in this way, who should be taller than the patient, is to take hold of his arm and place the sharp point of his own shoulder in the patient's armpit, and push it in so that it may lodge there, and having for his object that the patient may be suspended at his back by the armpit, he must raise himself higher on this shoulder than the other ; and he must bring the arm of the suspended

¹ The method of reduction here described is much commended by Sir Astley Cooper. He, however, generally tied a handkerchief immediately above the elbow, by which he made extension, and thereby found he could effect his purpose with less exertion than when he pulled by the arm. The advantage of pulling by something attached above the elbow is, that it allows the biceps to be relaxed by bending the fore-arm to a right angle with the os humeri. Verduc calls this method emphatically "very good." (A Treatise on Fractures, &c.) Some modern authorities who practise this method still prefer pulling by the hand.

patient as quickly as possible to his own breast. In this position he should shake the patient when he raises him up, in order that the rest of the body may be a counterpoise to the arm which is thus held. But if the patient be very light, a light child should be suspended behind along with him. These methods of reduction are all of easy application in the palestra, as they can all be performed without instruments, but they may also be used elsewhere.¹

5. Those who accomplish the reduction by forcibly bending it round a pestle, operate in a manner which is nearly natural. But the pestle should be wrapped in a soft shawl (for thus it will be less slippery), and it should be forced between the ribs and the head of the humerus. And if the pestle be short, the patient should be seated upon something, so that his arm can with difficulty pass above the pestle. But for the most part the pestle should be longer, so that the patient when standing may be almost suspended upon the piece of wood. And then the arm and fore-arm should be stretched along the pestle, whilst some person secures the opposite side of the body by throwing his arms round the neck, near the clavicle.²

6. But the method with a ladder is another of the same kind, and still better, since by it the body can be more safely counterpoised on this side; and that, while in the method with the piece of wood resembling a pestle, there is danger of the body tumbling to either side. But some round thing should be tied upon the step of the ladder which may be fitted to the armpit, whereby the head of the bone may be forced into its natural place.³

¹ This method is simple, but cannot have been very efficacious. It is not mentioned in our late works on surgery. It is described by Verduc, however, in nearly the same terms as those of our author, and therefore I need not quote his description of it. (A Treatise on Fractures, &c., p. 344.)

² This method consists in fixing a strong pole, here called a pestle (*ὑπερον*), in the ground, and having wrapped its upper extremity with some soft substance, to apply it to the armpit of the patient and pull the affected arm along it. It should be so long as that the patient's armpit can barely get into it, and the arm is to be pulled along the pole. The pole or pestle, in this case, performs the same office as the heel of the surgeon in the other case. In a well-known line of Hesiod's Works and Days, the pestle of the domestic mortar is described as being three cubits in length (l. 421).

³ This is evidently a very simple and ingenious method of accomplishing the reduction. Desault thus describes the methods with the pestle and the ladder: "The

7. The following, however, is the strongest of all the methods of reduction. We must get a piece of wood, five, or at least four inches broad, two inches in thickness, or still thinner, and two cubits in length, or a little less; and its extremity at one end should be rounded, and made very narrow and very slender there, and it should have a slightly projecting edge (*ambe*) on its round extremity, not on the part that is to be applied to the side, but to the head of the humerus, so that it may be adjusted in the armpit at the sides under the head of the humerus; and a piece of soft shawl or cloth should be glued to the end of the piece of wood, so as to give the less pain upon pressure. Then having pushed the head of this piece of wood as far inwards as possible between the ribs and the head of the humerus, the whole arm is to be stretched along this piece of wood, and is to be bound round at the arm, the fore-arm, and the wrist, so that it may be particularly well secured; but great pains should be taken that the extremity of this piece of wood should be introduced as far as possible into the armpit, and that it is carried past the head of the humerus. Then a cross-beam is to be securely fastened between two pillars, and afterwards the arm with the piece of wood attached to it is to be brought over this cross-beam, so that the arm may be on the one side of it and the body on the other, and the cross-beam in the armpit; and then the arm with the piece of wood is to be forced down on the one side of the cross-beam, and the rest of the body on the other. The cross-beam is to be bound so high that the rest of the body may be raised upon tip-toes. This is by far the most powerful method of effecting reduction of the shoulder; for one thus operates with the lever upon the most correct principles, provided only the piece of wood be placed as much as possible within the head of the humerus, and thus also the counterbalancing weights will be most properly adjusted, and safely applied to the bone of the arm. Wherefore recent cases in this way may be reduced more quickly than could be believed, before

pestle was nothing else but the instrument of that name, or simply a stick, one end of which rested on the ground, or on a table; whilst the other, well guarded with linen, was placed in the cavity of the axilla, and served to push up the head of the bone; an extension was made on the arm, while an assistant kept the trunk fixed, pushing the shoulder down at the same time. The ladder was employed on the same plan, after an eminence was formed, and sufficiently guarded to be adapted to the cavity of the axilla." (Surgical Journal, vol. ii, p. 134, English edition.)

even extension would appear to be applied; and this is the only mode of reduction capable of replacing old dislocations, and this it will effect, unless flesh has already filled up the (glenoid) cavity, and the head of the humerus has formed a socket for itself in the place to which it has been displaced; and even in such an old case of dislocation, it appears to me that we could effect reduction (for what object would a lever power properly applied not move?), but it would not remain in its place, but would be again displaced as formerly.¹ The same thing may be effected by means of the ladder, by preparing it in the same manner. If the dislocation be recent, a large Thessalian chair may be sufficient to accomplish this purpose; the wood, however, should be dressed up as described before; but the patient should be seated sideways on the chair, and then the arm, with the piece of wood attached to it, is to be brought over the back of the chair, and force is to be applied to the arm, with the wood on the one side, and to the body on the other side. The same means may be applied with a double door.² One should always use what happens to be at hand.³

¹ This description, to any person who understands the construction of the ambe, must be so plain, that it would be superfluous to attempt any further explanation of it. Of late years the ambe has fallen completely into disuse, and none of the various modifications of it are now to be seen but in the cabinets of the curious.

² On the nature of the double doors of the ancients, the curious reader may find it interesting to consult the annotations of the editors of Erotian, under *δικλείδες*. See the edition of Frantzius; also Galen's Glossary.

³ These methods by a chair or a door are very simple, and from a late trial of the former I can declare it to be the most easy and effectual plan of reduction which I have ever tried. It would appear that this method of reduction, with a slight modification, is still practised at the Bristol Infirmary, the surgeons of which declare that they have found it almost uniformly successful, as I can well believe, from my own experience of the method as recommended by Hippocrates. It is thus described in a late number of the Provincial Medical and Surgical Journal, July 26, 1848: "Without any preliminary treatment, the patient is seated sideways on a firm chair, with his arm hanging over the back, which is well padded; one end of a double or reel-towel is passed through the other end, so as to form a noose, which is applied to the arm above the elbow. The loose depending part of the towel forms a stirrup, into which the surgeon places his foot, and gradually brings his whole weight to bear on the towel, as an extending power. One or two assistants are useful to press back the acromion, and keep the patient firmly in his seat. The reduction is effected almost immediately, and if due precaution be observed in properly padding the chair and the arm when the towel is applied, little or no pain is felt, nor any subsequent inconvenience from the pressure."

8. Wherefore it should be known that one constitution differs much from another as to the facility with which dislocations in them may be reduced, and one articular cavity differs much from another, the one being so constructed that the bone readily leaps out of it, and another less so; but the greatest difference regards the binding together of the parts by the nerves (*ligaments?*) which are slack in some and tight in others. For the humidity in the joints of men is connected with the state of the ligaments, when they are slack and yielding; for you may see many people who are so humid (*flabby?*) that when they choose they can disarticulate their joints without pain, and reduce them in like manner. The habit of the body also occasions a certain difference, for in those who are in a state of embonpoint and fleshy the joint is rarely dislocated, but is more difficult to reduce; but when they are more attenuated and leaner than usual, then they are more subject to dislocations which are more easily reduced. And the following observation is a proof that matters are so; for in cattle the thighs are most apt to be dislocated at the hip-joint, when they are most particularly lean, which they are at the end of winter, at which time then they are particularly subject to dislocations,¹

¹ Upon making inquiry, I find that it is still a popular belief, in the rural districts of Scotland, that cattle are very subject to dislocations at the hip-joint when first turned out to graze in spring. I have been told by old farmers, who certainly would not intentionally have deceived me, that they have known such cases frequently occur. I have reason to think, however, that what they took for dislocations were most probably diseases of the joint; for an experienced farrier informs me that actual dislocation at the hip-joint is very rarely met with in cattle. When cattle are very lean and feeble, the bones at the hip-joint protrude very much, so as to give them the appearance of having slipped out of the joint. M. Littré's inquiries have led him to nearly the same conclusions; having addressed a letter on the subject to Dr. Bixio, the publisher of the *Journal d'Agriculture Pratique*, he received from him the following answer: "Il arrive souvent que les animaux de l'espèce bovine sont atteints d'une claudication des membres postérieurs, qui simule, à tromper parfaitement les yeux, une luxation de l'articulation coxo-fémorale. Cette claudication est due au déplacement d'un muscle; on rétablit instantanément la liberté des mouvements par la section de la branche musculaire déplacée. C'est sans doute cet accident fréquent qu'Hippocrate aura observé et confondu avec la luxation. Je ne sais rien dans les membres antérieurs qui soit semblable; la luxation de l'articulation scapulo-humérale est très-rare et n'est simulée par rien. Maintenant la claudication du membre postérieur est-elle plus piquante chez les bœufs maigres que chez les bœufs gras? Je ne sais, mais je suis porté à le croire; l'état de vacuité des interstices musculaires devant nécessairement permettre un déplacement plus facile de leurs faisceaux." (*Œuvr. d'Hippocrat.*, tom. iv, p. 14.)

(if I may be allowed to make such an observation while treating of a medical subject); and therefore Homer has well remarked, that of all beasts oxen suffer the most at that season, and especially those employed at the plough, as being worked in the winter season. In them, therefore, dislocations happen most frequently, as being at that time most particularly reduced in flesh. And other cattle can crop the grass when it is short, but the ox cannot do so until it becomes long; for, in the others, the projection of the lip is slender, and so is the upper lip, but in the ox the projection of the lip is thick, and the upper jaw is thick and obtuse, and therefore they are incapable of seizing short herbs. But the *solidungula* as having prominent teeth in both their front jaws, can crop the grass and grasp it with their teeth while short, and delight more in short grass than in rank; for, in general, short grass is better and more substantial than rank, as having not yet given out its fructification. Wherefore the poet has the following line:

“As when to horned cattle dear the vernal season comes,”¹

because rank grass appears to be most sought after by them. But otherwise in the ox, this joint is slacker than in other animals, and, therefore, this animal drags his foot in walking more than any other, and especially when lank and old. For all these reasons the ox is most particularly subject to dislocations; and I have made the more observations respecting him, as they confirm all that was said before on this subject. With regard, then, to the matter on hand, I say that dislocations occur more readily, and are more speedily reduced in those who are lean than in those who are fleshy; and in those who are humid and lank there is less inflammation than in such as are dry and fleshy, and they are less compactly knit hereafter, and there is more mucosity than usual in cases not attended with inflammation, and hence the joints are more liable to luxations; for, in the main, the articulations are more subject to mucosities in those who are lean than in those who are fleshy; and the flesh of lean persons who have not been reduced by a proper course of discipline abounds more with

¹ It is certain that there is no such line in the works of Homer as they have come down to us, and it is singular that Galen takes no notice of it, so that it is impossible to explain how our author came to use it.

mucosity than that of fat persons. But in those cases in which the mucosity is accompanied with inflammation, the inflammation binds (*braces*?) the joint, and hence those who have small collections of mucosities are not very subject to dislocations, which they would be if the mucosity had not been accompanied with more or less inflammation.

9. In cases of dislocation those persons who are not attacked with inflammation of the surrounding parts, can use the shoulder immediately without pain, and do not think it necessary to take any precautions with themselves; it is therefore the business of the physician to warn them beforehand that dislocation is more likely to return in such cases than when the tendons have been inflamed. This remark applies to all the articulations, but particularly to those of the shoulder and knee, for these are the joints most subject to luxations. But those who have inflammation of the ligaments cannot use the shoulder, for the pain and the tension induced by the inflammation prevent them. Such cases are to be treated with cerate, compresses, and plenty of bandages; but a ball of soft clean wool is to be introduced into the armpit, to fill up the hollow of it, that it may be a support to the bandaging, and maintain the joint *in situ*. The arm, in general, should be inclined upwards as much as possible, for thus it will be kept at the greatest possible distance from the place at which the head of the humerus escaped. And when you bandage the shoulder you must fasten the arms to the sides with a band, which is to be carried round the body. The shoulder should be rubbed gently and softly. The physician ought to be acquainted with many things, and among others with friction; for from the same name the same results are not always obtained; for friction could brace a joint when unseasonably relaxed, and relax it when unseasonably hard; but we will define what we know respecting friction in another place. The shoulder, then, in such a state, should be rubbed with soft hands; and, moreover, in a gentle manner, and the joint should be moved about, but not roughly, so as to excite pain. Things get restored sometimes in a greater space of time, and sometimes in a smaller.

10. A dislocation may be recognised by the following symptoms:—Since the parts of a man's body are proportionate

to one another, as the arms and the legs, the sound should always be compared with the unsound, and the unsound with the sound, not paying regard to the joints of other individuals (for one person's joints are more prominent than another's), but looking to those of the patient, to ascertain whether the sound joint be unlike the unsound. This is a proper rule, and yet it may lead to much error; and on this account it is not sufficient to know this art in theory, but also by actual practice; for many persons from pain, or from any other cause, when their joints are not dislocated, cannot put the parts into the same positions as the sound body can be put into; one ought therefore to know and be acquainted beforehand with such an attitude.¹ But in a dislocated joint the head of the humerus appears lying much more in the armpit than it is in the sound joint; and also, above, at the top of the shoulder, the part appears hollow, and the acromion is prominent, owing to the bone of the joint having sunk into the part below; there is a source of error in this case also, as will be described afterwards, for it deserves to be described; and also, the elbow of the dislocated arm is farther removed from the ribs than that of the other; but by using force it may be approximated, though with considerable pain; and also they cannot, with the elbow extended, raise the arm to the ear, as they can the sound arm, nor move it about as formerly in this direction and that. These, then, are the symptoms of dislocation at the shoulder. The methods of reduction and the treatment are as described.

11. It deserves to be known how a shoulder which is subject to frequent dislocations should be treated. For many persons owing to this accident have been obliged to abandon gymnastic exercises, though otherwise well qualified for them; and from the same misfortune have become inept in warlike practices, and have thus perished.² And this subject deserves to be noticed,

¹ As Galen remarks in his Commentary, our author adverts to this subject in his work *On Fractures*. It is, no doubt, a very important practical observation that, although inability to place the limb in its accustomed attitudes be an inseparable symptom of dislocations, it sometimes happens that patients, from pains or other causes, lose this faculty without there being any displacement of the bone. The symptoms of dislocation at the shoulder-joint, as given in the remainder of the paragraph, are remarkably accurate.

² Our author, it will be recollected, applies this remark to the Nomadic Scythians, in his work *On Airs, Waters, &c.*

because I have never known any physician treat the case properly; some abandon the attempt altogether, and others hold opinions and practise the very reverse of what is proper. For many physicians have burned the shoulders subject to dislocation, at the top of the shoulder, at the anterior part where the head of the humerus protrudes, and a little behind the top of the shoulder; these burnings, if the dislocation of the arm were upwards, or forwards, or backwards, would have been properly performed; but now, when the dislocation is downwards, they rather promote than prevent dislocations, for they shut out the head of the humerus from the free space above. The cautery should be applied thus: taking hold with the hands of the skin at the armpit, it is to be drawn into the line, in which the head of the humerus is dislocated; and then the skin thus drawn aside is to be burnt to the opposite side. The burnings should be performed with irons, which are not thick nor much rounded, but of an oblong form, (for thus they pass the more readily through,) and they are to be pushed forwards with the hand; the cauteries should be red-hot, that they may pass through as quickly as possible; for such as are thick pass through slowly, and occasion eschars of a greater breadth than convenient, and there is danger that the cicatrices may break into one another; which, although nothing very bad, is most unseemly, or awkward. When you have burnt through, it will be sufficient, in most cases, to make eschars only in the lower part; but if there is no danger of the ulcers passing into one another, and there is a considerable piece of skin between them, a thin spatula is to be pushed through these holes which have been burned, while, at the same time, the skin is stretched, for otherwise the instrument could not pass through; but when you have passed it through you must let go the skin, and then between the two eschars you should form another eschar with a slender iron, and burn through until you come in contact with the spatula. The following directions will enable you to determine how much of the skin of the armpit should be grasped; all men have glands in the armpit greater or smaller, and also in many other parts of the body. But I will treat in another work of the whole constitution of the glands, and explain what they are, what they signify, and what are

their offices.¹ The glands, then, are not to be taken hold of, nor the parts internal to the glands ; for this would be attended with great danger, as they are adjacent to the most important nerves. But the greater part of the substances external to the glands are to be grasped, for there is no danger from them. And this, also, it is proper to know, that if you raise the arm much, you will not be able to grasp any quantity of skin worth mentioning, for it is all taken up with the stretching ; and also the nerves, which by all means you must avoid wounding, become exposed and stretched in this position ; but if you only raise the arm a little, you can grasp a large quantity of skin, and the nerves which you ought to guard against are left within, and at a distance from the operation. Should not, then, the utmost pains be taken in the whole practice of the art to find out the proper attitude in every case ? So much regarding the armpit, and these contractions will be sufficient, provided the eschars be properly placed. Without the armpit there are only two places where one might place the eschars to obviate this affection ; the one before and between the head of the humerus and the tendon at the armpit ; and then the skin may be fairly burnt through, but not to any great depth, for there is a large vein adjacent, and also nerves, neither of which must be touched with the heat. But externally, one may form another eschar considerably above the tendon at the armpit, but a little below the head of the humerus ; and the skin must be burnt fairly through, but it must not be made very deep, for fire is inimical to the nerves. Through the whole treatment the sores are to be so treated, as to avoid all strong extension of the arm, and this is to be done moderately, and only as far as the dressing requires ; for thus they will be less cooled (for it is of importance to cover up all sorts of

¹ I need scarcely remark here that the work, *On the Glands*, which we now possess, is not the promised work of our author. See an analysis of the other work in the second section of the Preliminary Discourse. Galen, in his Commentary on this passage, states distinctly that the work which is contained in the Hippocratic Collection is supposititious, and unworthy of our author. Those, he adds, who made out the Tables (of the Hippocratic treatises) do not recognise it. I may be allowed to remark again in this place, that if our author had not practised human dissection he could not have been so well acquainted, as he here shows him to be, with the situation of the blood-vessels, nerves, and glands, situated in the axillary region.

burns if one would treat them mildly), and then the lips of them will be less turned aside; there will be less hemorrhage and fear of convulsions. But when the sores have become clean, and are going on to cicatrization, then by all means the arm is to be bound to the side night and day; and even when the ulcers are completely healed, the arm must still be bound to the side for a long time; for thus more especially will cicatrization take place, and the wide space into which the humerus used to escape will become contracted.¹

12. When attempts to reduce a dislocated shoulder have failed, if the patient be still growing, the bone of the affected arm will not increase like the sound one, for although it does increase in so far it becomes shorter than the other; and those persons called *weasel-armed*,² become so from two accidents, either from having met with this dislocation *in utero*,³ or from

¹ For the other ancient authorities on this operation, see PAULUS ÆGINETA, B. VI, 42.

² Galen professes not to think it worth his while to determine whether or not the term which is here translated *weasel-armed* (γαλιάγκωνες) be derived from γαλήνη, (*mustela vulgaris*?) He adds there can be no doubt that it signifies "*short-armed*."

³ Our author here evidently alludes to congenital dislocation at the shoulder-joint, a malformation which we know does occur, although I never met with a case of it. I have seen cases, however, of congenital dislocation at the hip-joint, and several such have been described of late years. Dr. Heine, of Stuttgart, has observed nine cases in female, and two in male children. See Forbes's British and Foreign Medical Review, No. xxxii, p. 489. Baron Dupuytren has also treated of this subject with his usual ability, in his work, On Fractures and Dislocations, lately reprinted by the Sydenham Society. In this work, he gives an interesting case of congenital dislocation of the upper extremity of the radius on the humerus (p. 117). He makes no mention, however, of congenital dislocation at the shoulder-joint. By far the most interesting and instructive account of this subject which we possess, is that given by Dr. R. W. Smith, in the Dublin Journal, Vol. xv, p. 236. He notices two kinds of congenital dislocation, viz. the *subcoracoid* and the *subacromial* dislocation. A few extracts from his description of the former of these, will show how well it agrees with that given by Hippocrates. "In the *congenital subcoracoid* dislocation, the head of the upper-arm bone, when the arm hangs down on the side, is situated beneath the coracoid process, and the outer part of the glenoid cavity can be felt beneath the projecting *acromion*; if the elbow be drawn forward over the chest, the head of the upper-arm bone slips backwards over the *acromion*, and completely leaves the unnatural part of the articular surface, which can now be distinctly felt; the shoulder has not its natural rounded form, but is flattened. The muscles of the shoulder and arm are much shrunk, and also the muscles passing from the chest to the blade-bone and upper-arm, only the *m. trapezius* shows the least of this, and seems to be almost the only muscle, which still acts upon and moves the blade-bone, the diseased arm is nearly half an inch shorter. The motions of the arm are very much reduced;

another accident, which will be described afterwards. But those who while they were children have had deep-seated suppurations about the head of the bone, all become weasel-armed; and this, it should be well known, will be the issue, whether the abscess be opened by an incision or cautery, or whether it break spontaneously. Those who are thus affected from birth are quite able to use the arm, yet neither can they raise the arm to the ear, by extending the elbow, but they do this much less efficiently than with the sound arm. But in those who have had the shoulder dislocated after they were grown up, and when it has not been reduced, the top of the shoulder becomes much less fleshy, and the habit of body at that part is attenuated; but when they cease to have pain, whatever they attempt to perform by raising the elbow from the sides obliquely, they can no longer accomplish as formerly; but whatever acts are performed by carrying the arm around by the sides, either backwards or forwards, all those they can perform; for they can work with an auger or a saw, or with a hatchet, and can dig, by not raising the elbow too much, and do all other kinds of work which are done in similar attitudes.

13. In those cases where the acromion has been torn off, the bone which is thus separated appears prominent. The bone is the bond of connexion between the clavicle and scapula, for in this respect the constitution of man is different from that of other animals; physicians are particularly liable to be deceived in this accident (for as the separated bone protrudes, the top of the shoulder appears low and hollow), so that they make preparations as if for dislocation of the shoulder; for I have known many physicians, otherwise not inexpert at the art, who have done much mischief by attempting to reduce such shoulders, thus supposing it a case of dislocation; and they did not desist until they gave over hopes of succeeding,

elevation and abduction are not possible, and even the forward and backward motions cannot be performed without a correspondent movement of the blade-bone." See, further, Chelius's *System of Surgery*, (Vol. I, p. 786.) The same subject is treated of in a very ingenious and interesting manner by Dr. R. M. Smith, in his recent publication '*A Treatise of Fractures in the Vicinity of Joints*,' Dublin, 1847. He gives the histories of several cases of congenital luxation at the shoulder-joint, which, in the main, agree very well with the characters of this abnormal conformation as given by Hippocrates. M. Guerin has also recently written on this interesting subject. (*Recherches sur les Luxations Congénitales*.)

or committed the mistake of supposing that they had reduced the shoulder. The treatment, in these cases, is similar to that which is applicable in others of a like kind, namely, cerate, compresses, and suitable bandaging with linen cloths. The projecting part must be pushed down, and the greater number of compresses are to be placed on it, and most compression is to be applied at that part, and the arm being fastened to the side is to be kept elevated; for thus the parts which had been torn asunder are brought into closest proximity with one another. All this should be well known, and if you choose you may prognosticate safely that no impediment, small or great, will result from such an injury at the shoulder, only there will be a deformity in the place, for the bone cannot be properly restored to its natural situation, but there must necessarily be more or less tumefaction in the upper part. For neither can any other bone be made exactly as it was, which having become incorporated with another bone, and having grown to it as an apophysis, has been torn from its natural situation. If properly bandaged, the acromion becomes free of pain in a few days.¹

¹ This subject has been so fully treated of in the Commentary on PAULUS ÆGINETA (B. VI, 113), that I need not say much upon it in this place. See, further, Eustachius (Oss. Exam. p. 175); Riolanus (Comment. de Oss. p. 503). Apparently the case must have been dislocation of the scapular end of the clavicle from the acromion, which all our best authorities on surgery describe as being an accident of occasional occurrence. See Sir Astley Cooper and Liston's works. It is marked by a projection of the end of the clavicle, under the skin covering the acromion, and a depression of the shoulder. All our modern authorities confirm Galen's statement, and our author's, as to the difficulty of treating this case without leaving some deformity. Mr. Liston says "the cure is slow and imperfect." The bone, however, in time, contracts adhesions, and the limb regains its power and mobility." See, also, Cooper's Surgical Dictionary (p. 382), fifth edition. Galen, who met with this accident in his own person while wrestling in the palestra, made a complete recovery without deformity; but he says he had rarely found this to be the case except in young persons. (t. v, p. 594, ed. Basil.) While upon this subject, I shall quote what is said on this accident which befel Galen, by Verduc, who may be called the *Simia Hippocratis*, and therefore his views are interesting, as they tend to confirm those which I had adopted before meeting with his work. "Though the channel-bones are articulated with the acromion-process of the shoulder-blade and the sternum by very close and tight cartilages and ligaments, yet Galen says that he underwent a dislocation of the clavicle, which created insufferable pain; that he bore such a tight bandage as no man else could have borne; and after having the bandage upon him for a long while, was cured at last." (A Treatise on Fractures,

14. When a fractured clavicle is fairly broken across it is more easily treated, but when broken obliquely it is more difficult to manage. Matters are different in these cases from what one would have supposed; for a bone fairly broken across can be more easily restored to its natural state, and with proper care the upper part may be brought down by means of suitable position and proper bandaging, and even, if not properly set, the projecting part of the bone is not very sharp. But in oblique fractures the case is similar to that of bones which have been torn away, as formerly described; for they do not admit of being restored to their place, and the prominence of the bone is very sharp. For the most part, then, it should be known, no harm results to the shoulder or to the rest of the body from fracture of the clavicle, unless it sphacelate, and this rarely happens. A deformity, however, may arise from fracture of the clavicle, and in these cases it is very great at first, but by and by it becomes less.¹ A fractured clavicle, like all other spongy bones, gets speedily united; for all such bones form callus in a short time. When, then, a fracture has recently taken place, the patients attach much importance to it, as supposing the mischief greater than it really is, and the physicians bestow great pains in order that it may be properly bandaged; but in a little time the patients, having no pain, nor finding any impediment to their walking or eating, become negligent; and the physicians finding they cannot make the parts look well, take themselves off, and are not sorry at the neglect of the patients, and in the mean time the callus is quickly formed.² The method of dressing which is

p. 339.) It remains to be mentioned, as further tending to illustrate the case now under consideration, that dislocation of the clavicle, at its outer extremity, is sometimes complicated with the fracture of the acromion. This variety is described by Sir Charles Bell, Sir Astley Cooper, and by Chelius, in his late publication (Vol. i, p. 548). All agree that it has a great resemblance to dislocation of the humerus.

¹ As stated by Galen, in his Commentary, this is no doubt an important remark, as a person unacquainted with this fact would be liable to overrate the deformity on its first appearance. How often have I benefited by the knowledge thus derived from Hippocrates, more especially in the case of children, in being able to assure parents, and others interested in the matter, that a deformity, which at the time was creating great uneasiness, would disappear in the course of a few months!

² What our author here says regarding neglected cases of fractured clavicle, is entirely consonant to my own experience. I have known persons who, having met with the accident, gave themselves no trouble, applied no bandages, and even con-

most appropriate, is similar to that used in ordinary cases, consisting of cerate, compresses, and bandages; and it should be most especially known in this operation, that most compresses should be placed on the projecting bone, and that the greatest pressure should be made there. There are certain physicians who make a show of superior skill by binding a heavy piece of lead on the part in order to depress the projecting bone; but this mode of treatment does not apply to the clavicle, for it is impossible to depress the projecting part to any extent worth mentioning. There are others who, knowing the fact that the bandages are apt to slip off, and that they do not keep the projecting parts in their place, apply compresses and bandages like the others, and then having girt the patient with a girdle, where it is usually applied with most effect, they make a heap of the compresses upon the projecting bone when they apply them, and having fastened the head of the bandage to the girdle in front, they apply it so as to bring the turns of it into the line of the clavicle, carrying them to the back, and then bringing them around the girdle they carry them to the fore part and again backwards. There are others who do not apply the bandage round the girdle, but carry the rounds of it by the perineum and anus, and along the spine, so as to compress the fracture. To an inexperienced person these methods will appear not far from natural, but when tried, they will be found of no service; for they do not remain firm any length of time, even if the patient keep his bed, although in this position they answer best; and yet even when lying in bed, should he bend his leg, or should his trunk be bent, all the bandages will be displaced; and, moreover, the bandaging is inconvenient, inasmuch as the

tinued their work as agricultural labourers, and yet it was surprising how well they got round. Having stated this to the late Mr. Liston, he confirmed what I said, by mentioning similar cases which he had known. M. Velpeau, in like manner, holds that the fears generally entertained of the pieces of bone not uniting regularly, are quite unfounded. Our author's account of the symptoms and treatment of fractured clavicle bespeak an intimate acquaintance with the subject. The lapse of more than twenty centuries has added nothing to our knowledge of it. If the reader will compare the account of this accident given by Chelius, and his English editor, South, with what our author has written on the subject, he will admit the truth of this remark. Yet it is lamentable, even at the present day, to see how some *fashionable* doctors torment their patients, in cases of fractured clavicle, with tight bandages, which, after all, have little or no power in keeping the bones *in situ*.

anus is comprehended by it, and many turns of the bandage are crowded there in a narrow space. And in the method with the girdle, the girdle cannot be so firmly girt around, but that the turns of the bandage force the girdle to ascend, and hence of necessity all the other bandages must be slackened. He would seem to me to come nearest his purpose, although after all he effects but little, who would take a few turns round the girdle, but would use the bandage principally to secure the former bandaging; for in this manner the bandages would be most secure, and would mutually assist one another. Everything now almost has been said which applies to fracture of the clavicle. But this also should be known, that in fractures of the clavicle, it is the part attached to the breast which is uppermost, and that the piece attached to the acromion is the lowermost. The cause of this is, that for the most part the breast can neither be depressed nor raised, there being but a slight movement of the joint at the breast, for the sternum is connected together on both sides with the spine. The clavicle admits of most motion at the joint of the shoulder, and this arises from its connexion with the acromion. And, moreover, when broken, the part which is connected with the sternum flies upwards, and is not easily forced downwards; for it is naturally light, and there is more room for it above than below. But the shoulder, the arm, and the parts connected with them, are easily moved from the sides and breast, and, on that account, they admit of being considerably elevated and depressed. When, therefore, the clavicle is broken, the fragment attached to the shoulder inclines downwards, for it inclines much more readily with the shoulder and arm downwards than upwards. Matters being as I have stated, they act imprudently who think to depress the projecting end of the bone. But it is clear that the under part ought to be brought to the upper, for the former is the moveable part, and that which has been displaced from its natural position. It is obvious, therefore, that there is no other way of applying force to it (for the bandages no more force it to than they force it from); but if one will push the arm when at the sides as much as possible upwards, so that the shoulder may appear as sharp as possible, it is clear that in this way it will be adjusted to the fragment of the bone connected with the breast from which it was torn. If one

then will apply a bandage, *secundum artem*, for the purpose of promoting a speedy cure, and will reckon everything else of no value, except the position as described, he will form a correct opinion of the case, and will effect a cure in the speediest and most appropriate manner. It is of great importance, however, that the patient should lie in a recumbent posture. Fourteen days will be sufficient if he keep quiet, and twenty at most.

15. But if the clavicle be fractured in the opposite manner (which does not readily happen), so that the fragment of bone connected with the breast is depressed, while the piece connected with the acromion is raised up and rides over the other, this case does not require much management, for if the shoulder and arm be let go, the fragments of the bone will be adjusted to one another, and an ordinary bandage will suffice, and the callus will be formed in the course of a few days.

16. If the fracture be not thus, but if it incline either forwards or backwards, it may be restored to its natural position, by raising the shoulder with the arm as formerly described, and brought back to its natural place, when the cure will be speedily accomplished. Most of the varieties of displacement may be rectified by raising the arm upwards. When the upper bone is displaced laterally or downwards, it would favour the adaptation of the parts if the patient would lie on his back, and if some elevated substance were placed between the shoulder-blades, so that the breast may be depressed as much as possible upon the two sides; and if, while another person raised the arm extended along the sides, the physician, applying the palm of the one hand to the head of the bone, would push it away, and with the other would adjust the broken bones, he would thus reduce the parts most readily to their natural position. But, as formerly stated, the upper bone (*sternal fragment?*) is rarely depressed downwards. In most cases, after the bandages have been applied, that position is beneficial in which the elbow is fixed to the same side, and the shoulder is kept elevated; but in certain cases, the shoulder is to be raised, as has been directed, and the elbow is to be brought forward to the breast, and the hand laid on the acromion of the sound side. If the patient has the resolution to lie in bed, something should be placed so as to support the shoulder, and keep it as much elevated as possible. But if he walk about, the arm should be slung

in a shawl, which embraces the point of the elbow, and is passed round the neck.

17. When the elbow-joint is displaced or dislocated to the side or outwards, while its sharp point (*olecranon*?) remains in the cavity of the humerus, extension is to be made in a straight line, and the projecting part is to be pushed backwards and to the side.¹

18. In complete dislocations towards either side, extension is to be made as in bandaging fracture of the arm; for thus the rounded part of the elbow will not form an obstacle to it. Dislocation, for the most part, takes place towards the sides (*inwardly*?). Reduction is to be effected by separating (the bones) as much as possible, so that the end (of the humerus) may not come in contact with the olecranon, and it is to be carried up, and turned round, and not forced in a straight line, and, at the same time, the opposite sides are to be pushed together, and propelled into their proper place. It will further assist if rotation of the fore-arm be made at the elbow, sometimes turning it into a supine position, and sometimes into a prone. The position for the treatment consists in keeping the hand a little higher than the elbow, and the arm at the sides; then it may either be suspended or laid at rest, for either position will answer; and nature and the usage of common means will accomplish the cure, if the callus does not form improperly: it is formed quickly. The treatment is to be conducted with bandages according to the rule for bandaging articulations, and the point of the elbow is to be included in the bandage.²

19. Dislocations at the elbow give rise to the most serious

¹ This would seem to be partial dislocation of the elbow-joint, with displacement of the radius either to the side or behind. It is to be borne in mind, that our author always supposes the arm in a state intermediate between pronation and supination. Outwards, then, with him, has the same sense as backwards in the modern interpretation, where the arm is supposed to be in a state of supination. The description of the method of reduction is obscure, and the Commentaries of Apollonius Citiensis and Galen throw little or no light on it. There is a considerable difference between M. Littre's mode of interpreting this passage and my own, as I have stated in my Notes, § 39 Of Fractures.

² This is evidently complete lateral luxation of the fore-arm. The same subject is resumed in the § 22. Though there are some obscurities in particular expressions which occur in this paragraph, the directions, in the main, must be quite intel-

consequences, such as fevers, pain, nausea, vomitings of pure bile, and more especially when the humerus is displaced backwards from pressure on the nerve, which occasions numbness; next to it is the dislocation forwards; the treatment is the same; reduction in dislocation backwards is by extension and adaptation; the symptom of this variety—loss of the power of extension; of dislocation forwards—loss of the power of flexion, and in this case reduction is to be accomplished by placing a hard ball [in the bend of the elbow], and bending the forearm about it, along with sudden extension.¹

20. Diastasis of the bones may be recognised by examining the part where the vein that runs along the arm divides.²

21. In those cases callus is quickly formed. In congenital dislocations the bones below the seat of the injury are shorter than natural, and, mostly, those nearest to the place; namely, the bones of the fore-arm, next those of the hand; and, third, those of the fingers. The arm and shoulder are stronger, owing to the nourishment which they receive, and the other arm, from the additional work which it has to perform, is still more strong. Wasting of the flesh takes place on the inside if the dislocation be on the outside; or otherwise, on the side opposite the dislocation.³

22. When the elbow is dislocated either inwards or outwards, extension is to be made with the fore-arm at a right angle to the arm; the arm, suspended by means of a shawl passed through the armpit, and a weight attached to the extremity of the elbow; or force may be applied with the hands; when the articular extremity has been cleared, the displaced

ligible to any person who is acquainted with the construction of parts concerned in the dislocation. The principal object which the surgeon must keep in view while attempting to effect the reduction, evidently is to prevent the end of the ulna from getting entangled in the condyle of the humerus while passing over to its place. See below, § 22, where the same directions are repeated.

¹ This would seem to be complete luxation of the fore-arm, forwards and backwards. The symptoms and treatment, though apparently laid down correctly, are given with such brevity as to create considerable obscurity. See On Fractures, § 39, 40, 41.

² This is evidently an abridgment of § 44 of the work On Fractures, and applies principally to the separate luxation of the radius. Apollonius Citiensis mentions the separate dislocation of the radius, but throws no light on it.

³ In the note on § 12 reference is made to an interesting case of congenital luxation of the radius, related by Dupuytren. See p. 117 of the Syd. Soc. edition of his works.

parts are to be rectified with the palms of the hand, as in dislocations of the hands. It is to be bandaged, suspended in a sling, and placed while in this attitude.¹

23. Dislocations backwards are to be rectified by the palms of the hands, along with sudden extension; the two acts are to be performed together, as in other cases of the kind. But in dislocation forwards the arm is to be bent around a ball of cloth of proper size, and at the same time replaced.²

24. But if the displacement be on the other side, both these operations are to be performed in effecting the adjustment. For conducting the treatment, the position and bandaging are the same as in the other cases. But all these cases may be reduced by ordinary distension.³

25. Of the methods of reduction, some operate by raising up the part, some by extension, and some by rotation: the last consists in rapidly turning the fore-arm to this side and that.⁴

26. The joint of the hand is dislocated either inwards or outwards, most frequently inwards. The symptoms are easily recognised: if inwards, the patient cannot at all bend his fingers; and if outwards, he cannot extend them. With regard to the reduction,—by placing the fingers above a table, extension and counter-extension are to be made by other persons, while with the palm or heel of the hand on the projecting bone one pushes forward, and another from behind on the other bone; some soft substance is to be applied to it, and the arm is to be turned to the prone position if the dislocation was forwards, but to the supine, if backwards. The treatment is to be conducted with bandages.⁵

¹ Compare § 18.

² This is much the same as § 19.

³ This is the same as the accident described in § 17. This passage is very obscure, and may be referred either to sub-luxations of the fore-arm backwards, or luxation of the radius persisting after dislocation of the whole arm backwards, or luxation of the radius forwards or backwards. The last appears to me the most plausible conjecture.

⁴ This enumeration of the methods of reduction is evidently incomplete. By raising up the part, he would appear to allude to the process of raising up the end of the ulna, so that the olecranon may not get entangled with the extremity of the humerus. This process is particularly alluded to in § 19.

⁵ M. Littré inclines, after mature consideration of the subject, to refer the case here described to sub-luxations of the carpal bones. Now, although such accidents have been described, even in recent times, I must say that I look upon them as being, in a great measure, ideal. Unless by sub-luxation is meant the lateral subluxations, I can scarcely conceive how such an accident can occur at all.

27. The whole hand is dislocated either inwards or outwards, or to this side or that, but more especially inwards; and sometimes the epiphysis is displaced, and sometimes the other of these bones is separated.¹ In these cases strong extension is to be applied, and pressure is to be made on the projecting bone, and counter-pressure on the opposite side, both at the same time, behind and at the sides, with the hands upon a table, or with the heel. These accidents give rise to serious consequences and deformities; but in the course of time the part gets strong, and admits of being used. The cure is with bandages, which ought to embrace both the hand and fore-arm; and splints are to be applied as far as the fingers; and when they are used they should be more frequently unloosed than in fractures, and more copious affusions of water should be used.²

28. In congenital dislocations (at the wrist) the hand becomes shortened, and the atrophy of the flesh occurs, for the most part, on the side opposite to the dislocation. In an adult the bones remain of their natural size.³

29. Dislocation at the joint of a finger is easily recognised. Reduction is to be effected by making extension in a straight line, and applying pressure on the projecting bone, and counter-pressure on the opposite side of the other. The treatment is

¹ The case here treated of, in the latter clause of this sentence, would appear to me to be dislocations of the radius, and of the ulna forwards and backwards. See Oribasius, de Machin. (xiv). The dislocation forwards is distinctly described by Sir Astley Cooper, but he was unacquainted with the other. (On Dislocations, p. 503.) Dislocation backwards is described by Desault (t. i). I do not mean to dispute the reality of this accident; but I must say, that judging from what I have observed in my own practice, I am much inclined to agree with Dupuytren in thinking that many of the cases which have been taken for dislocation of the radius, or of the hand, have been fractures of the lower extremity of the radius. Nothing is more common than fracture, and nothing more rare than dislocation, in that part of the body.

² That complete dislocations of the hand at the wrist are here meant to be described seems quite evident. Most of the other ancient authorities only admitted the reality of dislocations forwards and backwards. See the authorities quoted at PAULUS ÆGINETA B. VI, 116, Syd. Soc. edition. All the four varieties here described by our author are recognised by our latest authorities, but those to the side are held to be partial. See Mr. Bransby Cooper's Lectures and the Argument.

³ The most interesting account which I have met with of congenital dislocation at the wrist-joint, is that given by Dr. R. Smith. The drawings which he gives of this monstrosity are very curious. (On Fractures, &c., p. 239.) Nothing can show more remarkably the attention which our author must have paid to this subject, than his being acquainted with a case of such rarity as the present one.

with bandages. When not reduced, callus is formed outside of the joint. When the dislocation takes place at birth, during adolescence the bones below the dislocation are shortened, and the flesh is wasted rather on the opposite than on the same side with the dislocation. When it occurs in an adult the bones remain of their proper size.¹

30. The jaw-bone, in few cases, is completely dislocated, for the zygomatic process formed from the upper jaw-bone (*malar*?) and the bone behind the ear (*temporal*?) shuts up the heads of the under jaw, being above the one (*condyloid process*?), and below the other (*coronoid process*?). Of these extremities of the lower jaw, the one, from its length, is not much exposed to accidents, while the other, the coronoid, is more prominent than the zygoma, and from both these heads nervous tendons arise, with which the muscles called temporal and masseter are connected; they have got these names from their actions and connexions; for in eating, speaking, and the other functional uses of the mouth, the upper jaw is at rest, as being connected with the head by synarthrosis, and not by diarthrosis (*enarthrosis*?): but the lower jaw has motion, for it is connected with the upper jaw and the head by enarthrosis. Wherefore, in convulsions and tetanus, the first symptom manifested is rigidity of the lower jaw; and the reason why wounds in the temporal region are fatal and induce coma, will be stated in another place.² These are the reasons why complete dislocation does not readily take place, and this is another reason, because there is seldom a necessity for swallowing so large pieces of food as would make a man gape more than he easily can, and dislocation could not take place in any other position than in great gaping, by which the jaw is displaced to either side. This circumstance, however, contributes to dislocation there; of nerves (*ligaments*?) and muscles around joints, or connected with joints, such as are frequently moved in using the member are the most yielding to extension, in the same manner as

¹ This is only an abridgment of the fuller exposition of the subject given in § 80. Apollonius, in his Commentary on this passage, mentions that Diocles, in commenting upon it, describes four varieties of dislocation at the joints of a finger, and directs them to be reduced by wrapping a cord or string round the ends of the fingers, and making counter-extension with the hand.

² He seems to allude here to the work, On Injuries of the Head, § 13.

well-dressed hides yield the most. With regard, then, to the matter on hand, the jaw-bone is rarely dislocated, but is frequently slackened (*partially displaced?*) in gaping, in the same manner as many other derangements of muscles and tendons arise.¹ Dislocation is particularly recognised by these symptoms: the lower jaw protrudes forwards, there is displacement to the opposite side, the coronoid process appears more prominent than natural on the upper jaw, and the patient cannot shut his lower jaw but with difficulty. The mode of reduction which will apply in such cases is obvious: one person must secure the patient's head, and another, taking hold of the lower jaw with his fingers within and without at the chin, while the patient gapes as much as he can, first moves the lower jaw

¹ Galen, in his Commentary on this passage, explains it as applying to displacement of the muscles. It would seem to be the species of incomplete displacement described by Sir Astley Cooper. M. Bérard, however, as quoted by M. Littré, gives a somewhat different explanation of the case, as follows: "L'expression de luxation incomplète ne peut jamais s'appliquer aux déplacements de la mâchoire. Il ne semble pas possible, en effet, que le condyle de la mâchoire s'arrête sur le rebord de la cavité glénoïde, c'est-à-dire sur la racine transverse de l'arcade zygomatique; il doit ou retomber dans la cavité, ou passer au-devant de cette saillie. Cependant A. Cooper (*Œuvres Chirurgicales*, traduction de MM. Chassaignac et Michelot, p. 127) admet une luxation incomplète, due au transport du condyle au-dessous de la racine transverse, tandis que le ménisque inter-articulaire reste au fond de la cavité glénoïde. Ce genre de luxation reconnaît pour cause le relâchement des ligaments; les symptômes en sont: un écartement léger des mâchoires, l'impossibilité de fermer la bouche, qui survient brusquement et s'accompagne d'une légère douleur du côté luxé. D'ordinaire, de simples efforts musculaires suffisent pour en amener la réduction; néanmoins A. Cooper l'a vue persister très-longtemps; et cependant, dit-il, la mobilité de la mâchoire, ainsi que la faculté de fermer la bouche, ont été recouvrées. Cette description est trop peu détaillée pour qu'on puisse se former une bonne idée du genre d'accident dont parle A. Cooper. Mais, comme aucun fait anatomique n'est invoqué en faveur de la manière de voir du célèbre chirurgien anglais, nous conservons de très-grands doutes sur la cause que A. Cooper assigne aux désordres fonctionnels dont il parle. Le relâchement des ligaments est une chose bien rare, et qui ne se comprend guère à l'articulation temporo-maxillaire; quant au glissement du condyle sur le ménisque inter-articulaire, la chose nous paraît tout-à-fait impossible. On sait que le tendon du muscle ptérygoïdien externe se fixe à la fois sur le col du condyle et sur le cartilage inter-articulaire, de telle sorte que ces deux parties se meuvent toujours simultanément lors des glissements du condyle de la mâchoire sur l'os temporal. (A. Bérard, *Dict. de Médecine*, art. *Mâchoire*, 2^e éd. t. 18, p. 409.) Both Chelius and his English editor, South, admit a case "of subluxation of the lower-jaw, when, from great laxity of the ligaments, the condyles escape over the edge of the inter-articular cartilages in the sockets of the temporal bones, and fix the jaw with the mouth somewhat open." (Vol. i, p. 772.)

about for a time, pushing it to this side and that with the hand, and directing the patient himself to relax the jaw, to move it about, and yield as much as possible; then all of a sudden the operator must open the mouth, while he attends at the same time to three positions: for the lower jaw is to be moved from the place to which it is dislocated to its natural position; it is to be pushed backwards, and along with these the jaws are to be brought together and kept shut. This is the method of reduction, and it cannot be performed in any other way. A short treatment suffices, a waxed compress is to be laid on, and bound with a loose bandage. It is safer to operate with the patient laid on his back, and his head supported on a leather cushion well filled, so that it may yield as little as possible, but some person must hold the patient's head.

31. When the jaw is dislocated on both sides, the treatment is the same. The patients are less able to shut the mouth than in the former variety; and the jaw protrudes farther in this case, but is not distorted; the absence of distortion may be recognised by comparing the corresponding rows of the teeth in the upper and lower jaws. In such cases reduction should be performed as quickly as possible; the method of reduction has been described above. If not reduced, the patient's life will be in danger from continual fevers, coma attended with stupor (for these muscles, when disordered and stretched preternaturally, induce coma); and there is usually diarrhœa attended with bilious, unmixed, and scanty dejections; and the vomitings, if any, consist of pure bile, and the patients commonly die on the tenth day.¹

32. In fracture of the lower jaw, when the bone is not fairly broken across, and is still partially retained, but displaced, it should be adjusted by introducing the fingers at the side of the tongue, and making suitable counter-pressure on the outside; and if the teeth at the wound be distorted and loosened, when the bone is adjusted, they should be connected together, not only two, but more of them, with a gold thread, if possible, but otherwise, with a linen thread, until the bone be consoli-

¹ Our author's description of dislocation of the lower jaw is copied by all the subsequent authorities in ancient times. See the Commentary on PAULUS ÆGINETA, B. VI, 112, where I mention a case which proved fatal in consequence of reduction not being performed in time.

dated,¹ and then the part is to be dressed with cerate, a few compresses, and a few bandages, which should not be very tight, but rather loose. For it should be well known that in fracture of the jaw, dressing with bandages, if properly performed, is of little advantage, but occasions great mischief if improperly done. Frequent examinations should be made about the tongue, and prolonged pressure should be applied with the fingers, in order to rectify the displaced bone.² It would be best if one could do so constantly, but that is impossible.

33. But if the bone be fairly broken across (this, however, rarely happens), it is to be set in the manner now described. When adjusted, the teeth are to be fastened together as formerly described, for this will contribute much towards keeping the parts at rest, especially if properly fastened, and the ends of the thread secured with knots. But it is not easy to describe exactly in writing the whole manipulation of the case; but the reader must figure the thing to himself from the description given. Then one must take a piece of Carthaginian leather; if the patient be a younger person, it will be sufficient to use the outer skin, but if an adult, the whole thickness of the hide will be required; it is to be cut to the breadth of about three inches, or as much as will be required, and having smeared the jaw with a little gum (for thus it sticks more pleasantly), the end of the skin is to be fastened with the glue near the fractured part of the jaw, at the distance of an inch or a little more, from the wound. This piece is to be applied below the jaw; but the thong should have a cut in it, in the direction of the chin, so that it may go over the sharp point of the chin. Another piece of thong like this, or somewhat broader, is to be glued to the upper part of the jaw, at about the same distance from the wound, as the other thong; this thong should be so cut as to

¹ Chelius says, respecting this practice: "Wallner applies (as did previously Hippocrates, Ryff, and others), in fracture of the lower jaw, instead of the usual apparatus, a silver thread around the front teeth, which, without inconveniencing the patient, may be continued for three weeks, till the divided parts are perfectly united." (Vol. i, p. 530.) I once used a strong silk thread in a case of severe fracture of the lower jaw, in which it was found difficult to keep the parts *in situ*. In general, however, these accidents are very easily managed without the ligature or any complex bandaging. Professor Syme's observations on the treatment of this accident are very much to the purpose.

² Galen, in his Commentary, explains that our author means all this is to be done by the patient, and not by the physician.

encircle the ear. The thongs should be sharp-pointed at the part where they unite, and in glueing them, the flesh of the thong should be turned to the patient's skin, for in this way it will be more tenacious; then we must stretch this thong, but still more so the one at the chin, in order to prevent the fragments of the jaw from riding over each other, and the thongs are to be fastened at the vertex, and then a bandage is to be bound round the forehead, and a proper apparatus is to be put over all, to prevent the bandages from being displaced. The patient should lie upon the sound side of the jaw, not resting upon the jaw, but upon the head. He is to be kept on a spare diet for ten days, and then nourished without delay. If there be no inflammation during the first days, the jaw is consolidated in twenty days; for callus quickly forms in this, as in all the other porous bones, provided there be no sphacelus (*exfoliation?*). But much remains to be said on the sphacelus of bones in another place. This method of distension with glued substances is mild, of easy application, and is useful for many dislocations in many parts of the body. Those physicians who have not judgment combined with their dexterity, expose themselves in fractures of the jaws, as in other cases, for they apply a variety of bandages to a fractured jaw-bone, sometimes properly, and sometimes improperly. For all such bandaging of a fractured jaw-bone has a tendency rather to derange the bones connected with the fracture, than to bring them into their natural position.

34. But if the lower jaw be disjoined at its symphysis in the chin (there is but one symphysis in the lower jaw, but there are several in the upper; but I am unwilling to digress from the subject, as these matters will have to be touched upon in other kinds of disease)—if, then, the symphysis be separated at the chin, it is the work which anybody can perform, to rectify it; for the part which protrudes is to be pushed inwards by pressure with the fingers, and the part that inclines inwards is to be forced outwards by pushing with the fingers from within. It is after having applied extension to separate the fragments that this is to be done, for they will thus be more easily restored to their natural position, than if one should bring them together by using force. This is proper to be known as applying to all such cases. When you have set the parts, you must fasten the teeth on both sides to one another, as formerly directed. The treatment

is to be accomplished with cerate, a few compresses, and bandages. This part, in particular, requires a short but complex (?) bandaging, for it is nearly cylindrical, though not exactly so; but the turn of the bandage is to be made, if the right jaw was dislocated, to the right hand (that is said to be to the right hand when the right hand conducts the bandaging); but if the other jaw be the seat of the dislocation, the bandaging is to be made in the other direction. And if matters be properly adjusted, and the patient keep quiet, there will be a speedy recovery, and the teeth will be uninjured; but if not, the recovery will be more protracted, the teeth will be distorted, will give trouble, and become useless.

35. Of fractures of the nose there are more than one variety, but those who, without judgment, delight in fine bandagings,¹ do much mischief, most especially in injuries about the nose. For this is the most complex of all the forms of bandaging, having most of the turns of the bandage called "ascia," and rhomboidal intervals and uncovered spaces of the skin.² As has been said, those who practise manipulation without judgment are fond of meeting with a case of fractured nose, that they may apply the bandage. For a day or two, then, the physician glories in his performance, and the patient who has been bandaged is well pleased, but speedily the patient complains of the incumbrance of the bandage, and the physician is satisfied, because he has had an opportunity of showing his skill in applying a complex bandage to the nose. Such a bandaging does everything the very reverse of what is proper; for, in the first place, those who have their nose flattened by

¹ Galen properly remarks, that our author here speaks ironically. The forms of bandaging here noticed are briefly described in the work, *On the Surgery*. The terms are further explained in the *Commentary of Galen*. I need scarcely remark that, in the account which our author gives of fracture of the nose, he surpasses all the medical authorities ancient and modern. He had, no doubt, ample opportunities of seeing cases of injuries of the nose and ears in the persons of the *athletæ*, who boxed with the *cestus*. But why this account of fractures of the bones of the nose is inserted here, and not in the treatise *On Fractures*, I am at a loss to explain. Indeed why the subject-matters of these two works are so mixed up together has always been reckoned a puzzle. See the *Argument*.

² On the meaning of the terms which occur in this passage, the reader may find it advantageous to consult the note of Frantzius, in his edition of Erotian, under *διαποχάς*.

the fracture, will clearly have the part rendered still more flat, if pressure above be applied to it; and further, those cases in which the nose is distorted to either side, whether at the cartilage or higher up, will evidently derive no benefit from bandaging above it, but will rather be injured; for it will not admit of having compresses properly arranged on either side of the nose, and indeed, persons applying this bandage do not seek to do this.

36. This bandaging would appear to me to answer best when the skin surrounding the bone is contused on its ridge near the middle, or if the bone itself have sustained some injury, but not a great one, in such cases, redundant callus forms in the nose, and the part becomes a little too prominent; and yet, even in these cases, the bandaging need not require much trouble, if, indeed, any bandage be applied at all; for it is enough if one lay a waxed compress on the contusion, and then apply the double-headed bandage, thus taking one turn with it. The best application to such accidents is a small cataplasm of wheaten flour, washed, and mixed up into a viscid mass. If the flour be made from good wheat, and if it be glutinous, it should be used alone for all such cases, but if it be not very glutinous, a little of the manna of frankincense, well pulverised, is to be moistened with water, and the flour is to be mixed up with it, or a very little gum may be mixed in like manner.¹

37. In those cases in which the fractured portions are depressed and flattened, if it is depressed in front at the cartilage, something may be introduced into the nostrils to rectify the parts. If not, all such deformities may be restored by introducing the fingers into the nostrils, if this can be managed, but if not, a thick spatula² is to be introduced with the fingers,

¹ Galen gives an interesting account of the grain here recommended as an ingredient in the paste to be applied to a fractured nose, and of the mode of preparing it here described by our author. For all practical purposes, it is sufficient to know that the preparation was a sort of glutinous paste made of flour, with the addition of some fine frankincense and gum.

² Galen, in his Commentary, informs us that these spatulae were of all shapes and sizes, to suit for a variety of purposes. I need scarcely remark that a female catheter is the instrument recommended in modern works for this purpose. As explained by Galen, any instrument used on the occasion is for the purpose of acting as a lever in raising a depressed part of bone.

not to the fore part of the nose, but to the depressed portion, and the physician is to take hold of the nose externally on both sides, and at the same time raise it up. And if the fracture be much in the fore part one may introduce into the nostrils as already stated, either caddis scraped from a linen towel, or something such wrapped up in a piece of cloth, or rather stitched in Carthaginian leather, and moulded into a shape suitable to the place into which it is to be introduced. But if the fracture be at a greater distance, it is not possible to introduce anything within, for if it was irksome to bear anything of the kind in the fore part, how is it not to be so when introduced farther in?¹ At first, then, by rectifying the parts from within, and sparing no pains upon them from without, they are to be brought to their natural position, and set. A fractured nose may be readily restored to shape, especially on the day of the accident, or even a little later, but the physicians act irresolutely, and touch it more delicately at first than they should; for the fingers should be applied on both sides along the natural line of the nose, and it is to be pushed downwards, and thus, with pressure from within, the displacement is to be rectified. But for these purposes no physician is equal to the index-fingers of the patient himself, if he will pay attention and has resolution, for they are the most natural means. Either of the fingers is to be placed firmly along the whole nose, and thus it is to be gently held, and steadily, if possible, until it become firm, but if not, he himself is to hold it for as long a time as possible, in the manner described; or if he cannot, a child or woman should do it, for the hands ought to be soft. Thus may a fracture of the nose, attended with depression, and not with displacement to the side, but in a straight line, be most properly treated. I have never seen a case of fractured nose which could not be rectified when attempted, before callus is formed, provided the treatment be properly applied. But although men would give a great price

¹ I may mention that most modern authorities disapprove of introducing any substances into the nostrils to support the broken bone, as fancying that they are a source of irritation, and that they are not required. See Bell's *Operative Surgery*, vol. ii, p. 222. Chelius admits them only in cases in which the broken ends are again displaced. (*Surgery*, vol. i, p. 527.) Like our author, he disapproves of bandages. On the caddis, see the note on the Mochlicus.

to escape being deformed, yet at the same time they do not know how to take care, nor have resolution, if they do not experience pain, nor fear death, although the formation of callus in the nose speedily takes place, for the part is consolidated in ten days, provided sphacelus do not take place.

38. When the fractured bone is displaced laterally, the treatment is the same, but it is obvious that the reduction is to be made, not by applying equal force on both sides, but by pushing the displaced portion into its natural position, and pressing on it from without, and introducing something into the nostrils, and boldly rectifying the fragments which incline inwards, until the whole be properly adjusted, well knowing that if you do not restore the parts at once, it is impossible but that the nose must be distorted. But when you restore the parts to their natural position, either the patient himself, or some other person, is to apply one finger or more to the part which protrudes, and keep it in position until the fracture be consolidated; but the little finger is, from time to time, to be pushed into the nostril, to rectify the parts which incline inwards. When any inflammation supervenes, dough must be used, but attention must still be equally paid to the application of the fingers, although the dough be on the part. But if the fracture be in the cartilage, with lateral displacement, the end of the nose must necessarily be distorted. In such cases some of the aforementioned means of reduction, or whatever suits, is to be introduced into the nostril; but there are many convenient things to be found which have no smell, and are appropriate in other respects; thus, on one occasion, I introduced a slice of sheep's lung, as it happened to be at hand; for sponges, if introduced, imbibe humidities. Then the outer skin of Carthaginian leather is to be taken, and a piece of the size of the thumb, or what will answer, is to be cut off and glued to the outside of the nostril which is turned aside, and then this piece of thong is to be stretched to the proper degree, or rather a little more than what will be sufficient to make the nose straight and regular.¹ Then (for the thong

¹ The use of the piece of skin in bandaging a fractured nose is adverted to by Paulus Ægineta; but, he says, it was not much approved of by recent authorities in his time. (B. VI, 92, Syd. Soc. edit.) See the authorities there quoted. Celsus describes the mode of treatment recommended by Hippocrates in the following terms:—

must be long) it is to be brought below the ear and round the head, and the end of the thong may either be glued to the forehead, or a still longer one may be carried all round the head, and secured. This is a natural mode of setting the nose, is of easy application, and is calculated to enable the counter-extension on the nose to be made greater or less, as you may incline. In a case where the fractured nose is turned to the side, the treatment is to be conducted otherwise, as already described; and in most of them the thong ought to be glued to the end of the nose, in order to make extension in the opposite direction.

39. When the fracture is complicated with a wound, one need not be troubled on that account, but pitch-cerate or any of the applications for fresh wounds is to be applied to the sores; for, in general, they admit of easy cure, even when there is reason to apprehend that pieces of bone will come out. The parts, at first, are to be adjusted fearlessly, taking care that nothing is omitted, and, subsequently, they are also to be adjusted with the fingers; more softly, indeed, but still it must be done; and of all parts of the body the nose is modelled with the greatest ease. And there is nothing to prevent us from having recourse to the practice of glueing on the thongs, and drawing the nose to the opposite side, even if there be a wound or the parts be inflamed, for these thongs give no pain.

40. In fractures of the ear all sorts of bandages do harm.¹ For one would not think of applying it quite loose, and if applied more tightly, it only does the more harm, for even the sound ear, when confined with a bandage, becomes painful,

"Extrinsecus autem circumdanda habena est mollis, medio illita mistis inter se simila et thuris fuligine, eaque ultra aures ducenda, et fronti duobus capitibus agglutinanda est. Id enim corpori quasi gluten inhærescit, et cum induruit, nares commode continet." viii, 5.

¹ I have stated under a former head, that fractures of the nose and ears were very common in ancient times, as the necessary results of the boxing-matches with the formidable cestus. It consisted of thongs of leather studded with large iron nails, with which the hands of the boxers were firmly bound. That the combat with the cestus was a favorite *amusement* of the ancients, is obvious from its being described by their greatest and most popular poets; for example, by Homer, Apollonius Rhodius, Theocritus, Virgil, and Valerius Flaccus. Indeed this may be said to have been one of the *loci communes* of the ancient poets. That a blow about the ears was reckoned

throbs, and gets into a febrile state. With regard to cataplasms, the heaviest, on the whole, are the worst; but almost all kinds are bad, form abscesses, occasion an increase of humours, and afterwards troublesome suppurations; and a fractured ear stands in less need of such applications than any other part; the most ready, if required, is the paste of meal, but neither should it have weight. It should touch as little as possible; for it is a good remedy sometimes to apply nothing at all, both to the ear and to many other cases. Attention must be paid to the patient's position during sleep. And the body must be reduced, more especially if there be danger lest the ear suppurate; it will also be better to open the bowels, and if the patient can be readily made to vomit, this may be accomplished by means of the *syrmaïsm*.¹ If the part come to suppuration, it should not be hastily opened; for often when matter appears to be formed it is absorbed again, even when no cataplasm is applied. But if forced to open it, the part will get soonest well if transfixed with a cautery, and yet it should be well understood that the ear gets maimed, and is less than the other if burned through. If not burnt through, an incision, and not a very small one, should be made on the upper side; for the pus is found to be surrounded with a thicker covering than one would have supposed; and it may be said, in general, that all parts of a mucous nature and which form mucus, as being all viscid, when touched, slip from below the fingers to either side; and

a master-stroke is evident from Theocritus's description, who represents Amycus, when he appears in the *ring* with Pollux, as being

Δεινὸς ἰδεῖν, σκληραῖσι τεθλασμένος ὄνατα πυγμαῖς. (Idyll. 22.)

And Apollonius Rhodius describes Amycus as having received the fatal stroke at last in the same region:

Κόψε μεταίγδην ὑπὲρ ὀνατος ὅστ' ἔϊσω
 'Ρῆξεν ὁ δ' ἄμ' ὀδύνη γνῆξ ἥριπεν· οἱ δ' ἰάχῃσαν
 "Ἡρώες Μινύαι τοῦ δ' ἀθρόος ἔκχυτο θυμός. (Argonaut. ii, 95.)

Plato makes allusion in his *Gorgias* to persons with fractured ears, from the *sports* of the *palæstra*.

¹ By *syrmaïsm* was meant the process of producing vomiting by loading the stomach with heavy things, such as honey and strong hydromel, along with radishes and the bulbous roots of the narcissus, when these were found necessary. The subject is fully discussed in the *Commentary on PAULUS ÆGINETA*, B. I, 42. One may further consult the editors of *Erotian*, as given in the edition of his works by *Frantzius*, under ἀπὸ συρμαΐσμοῦ. All their learned discussions, however, amount to no more than what we have given above in few words.

on that account the physician, in such cases, finds that he has to pass his instrument through a thicker substance than he supposed; and in certain ganglionic cases, when the skin is flabby and mucous, many physicians open them, expecting to find a collection in them; here the physician forms a wrong judgment, but by such a procedure no great harm results to the patient from having had the part opened. But with regard to watery parts, and such as are filled with mucus, and which are situated in regions where every one of the parts, if opened, will occasion death or some other injury, these will be treated of in another work. When, therefore, incision is made in the ear, all sorts of cataplasms and pledgets should be avoided, and it is to be treated either with applications for recent wounds, or anything else which is neither heavy nor will occasion pain, for if the cartilage be laid bare and abscesses form, the case will be troublesome;¹ this happens from such modes of treatment. In all aggravated cases, the most effectual remedy is the transfixing of the part with a hot iron.

41.² The vertebræ of the spine when contracted into a hump behind from disease, for the most part cannot be remedied, more especially when the gibbosity is above the attachment of the diaphragm to the spine. Certain of those below the diaphragm are carried off by varices in the legs, more especially by such as occur in the vein at the ham; and in those cases where the gibbosities are removed, the varices take place also in the groin; and some have been carried off by a dysentery when it becomes chronic.³ And when the gibbosity occurs in youth before the

¹ M. Littré certainly improves the text in this place. See the *Lectiones variantes*.

² In addition to his Commentary, Galen gives many important remarks on the paragraph relating to curvatures of the spine in his work, *De Locis Affectis* (iv, 6). As he remarks, Hippocrates divides curvatures of the spine into gibbosity or the posterior projection, the anterior projection, and the lateral curvature. His terms *cyphosis*, *lordosis*, and *scoliosis*, are adopted by modern authorities, as, for example, Chelius. It is proper to remark that our author, however, does not restrict *scoliosis* to lateral curvature, but sometimes applies it indiscriminately to the others.

³ It does not appear clear what has led our author to consider varices in the lower extremities as being a natural cure of curvature of the spine. Perhaps his opinion had originated in observing that the compression of the veins at the top of the thigh had given rise to enlargement of the veins below. Those cases in which the disease is said to be carried off by dysentery were, no doubt, of a rheumatic nature, and not connected with organic disease of the vertebræ. Galen, in his Commentary, refers the cure to metastasis of the morbid humours to the veins, in the one case, and to the intestinal canal in the other.

body has attained its full growth, in these cases the body does not usually grow along the spine, but the legs and the arms are fully developed, whilst the parts (about the back) are arrested in their development. And in those cases where the gibbosity is above the diaphragm, the ribs do not usually expand properly in width, but forwards, and the chest becomes sharp-pointed and not broad, and they become affected with difficulty of breathing and hoarseness; for the cavities which inspire and expire the breath do not attain their proper capacity. And they are under the necessity of keeping the neck bent forwards at the great vertebra,¹ in order that their head may not hang downwards; this, therefore, occasions great contraction of the pharynx by its inclination inwards; for, even in those who are erect in stature, dyspnœa is induced by this bone inclining inwards, until it be restored to its place. From this frame of body, such persons appear to have more prominent necks than persons in good health, and they generally have hard and unconcocted tubercles in the lungs,² for the gibbosity and the distension are produced mostly by such tubercles, with which the neighbouring nerves communicate. When the gibbosity is below the diaphragm, in some of these cases nephritic diseases and affections of the bladder supervene, but abscesses of a chronic nature, and difficult to cure, occur in the loins and groins, and neither of these carries off the gibbosity;³ and in these cases the hips are more emaciated than when the gibbosity is seated higher up; but the whole spine is more elongated in them than in those who have the gibbosity seated higher up, the hair of the pubes and chin is of slower growth and less developed, and they are less capable of generation than those who have the gibbosity higher up.⁴ When the gibbosity seizes persons who have already attained their full growth, it usually occasions a

¹ By the great vertebra, in this place, our author appears to mean the second, or *vertebra dentata*. See Galen's Commentary.

² Galen shrewdly remarks, that when the curvature is high up in the spine, the evacuation of matter usually takes place in the lungs.

³ The reader will readily remark that psoas and lumbar abscesses are here described. It is well known that, as represented by our author, these cases are of a very intractable nature.

⁴ Galen ascribes these symptoms to sympathy with the spine. This may naturally be supposed to vary according to the seat of the disease in the vertebral column.

crisis of the then existing disease, but in the course of time some of them attack, as in the case of younger persons, to a greater or less degree; but, for the most part, all these diseases are less malignant. And yet many have borne the affection well, and have enjoyed good health until old age, more especially those persons whose body is inclined to be plump and fat; and a few of them have lived to beyond sixty years of age, but the most of them are more short-lived. In some cases the curvature of the spine is lateral, that is to say, either to the one side or the other; the most of such cases are connected with tubercles (*abscesses*?) within the spine; and in some, the positions in which they have been accustomed to lie co-operate with the disease.¹ But these will be treated of among the chronic affections of the lungs;² for these the most suitable prognostics of what will happen in these cases are given.

42. When the spine protrudes backwards, in consequence of a fall, it seldom happens that one succeeds in straightening it. Wherefore succussion on a ladder has never straightened anybody, as far as I know, but it is principally practised by those physicians who seek to astonish the mob—for to such persons these things appear wonderful, for example, if they see a man suspended or thrown down, or the like; and they always extol such practices, and never give themselves any concern whatever may result from the experiment, whether bad or good. But the physicians who follow such practices, as far as I have known them, are all stupid. The device, however, is an old one, and I give great praise to him who first invented this, and any other mechanical contrivance which is according to nature. For neither would I despair, but that if succussion were properly gone about, the spine, in certain cases, might be thereby rectified. But, indeed, for my own part, I have been ashamed to treat all such cases in this way,

¹ It is now well ascertained that position and habit have much to do with the formation of lateral curvature of the spine. See Hare on Spinal Disease (c. iv), and Chelius (vol. ii, p. 160). Zint, in particular, maintains strongly that position in bed is the main cause of lateral curvature of the spine. See British and Foreign Medical Review, vol. xix, p. 370.

² Galen, in his Commentary, states that this portion of the work, if ever written, had not been preserved; but that this disease is treated of in the work, On the Affections, and in the work, On Diseases. He does not add whether he regards these as genuine or not.

because such modes of procedure are generally practised by charlatans.

43. Those cases in which the gibbosity is near the neck, are less likely to be benefited by these succussions with the head downwards, for the weight of the head, and tops of the shoulders, when allowed to hang down, is but small; and such cases are more likely to be made straight by succussion applied with the feet hanging down, since the inclination downwards is greater in this way. When the hump is lower down, it is more likely in this case that succussion with the head downwards should do good. If one, then, should think of trying succussion, it may be applied in the following manner:—The ladder is to be padded with leather or linen cushions, laid across, and well secured to one another, to a somewhat greater extent, both in length and breadth, than the space which the man's body will occupy; he is then to be laid on the ladder upon his back, and the feet, at the ankles, are to be fastened, at no great distance from one another, to the ladder, with some firm but soft band; and he is further to be secured, in like manner, both above and below the knee, and also at the nates; and at the groins and chest loose shawls are to be put round in such a fashion as not to interfere with the effect of the succussion; and his arms are to be fastened along his sides to his own body, and not to the ladder. When you have arranged these matters thus, you must hoist up the ladder, either to a high tower or to the gable-end of a house; but the place where you make the succussion should be firm, and those who perform the extension should be well instructed, so that they may let go their hold equally to the same extent, and suddenly, and that the ladder may neither tumble to the ground on either side, nor they themselves fall forwards. But, if the ladder be let go from a tower, or the mast of a ship, fastened into the ground with its cordage, it will be still better, so that the ropes run upon a pulley or axletree. But it is disagreeable even to enlarge upon these matters; and yet, by the contrivances now described, the proper succussion may be made.¹

¹ The description of succussion upon a ladder, here given, is remarkably lucid, especially when compared with a proper drawing, as given by Vidus Vidius in the Venice edition of the works of Galen. A copy of V. Vidius's drawing is given among Plates at the end of this volume.

44. But if the hump be situated very high up, and if succussion be by all means to be used, it will be better to do it with the feet downwards, as has been said, for the force downwards will be the greater in this case. The patient is to be well fastened to the ladder by cords at the breast, at the neck by means of a very loose shawl so as merely to keep the part properly on the ladder, and the head is to be fastened to the ladder at the forehead, the arms are to be stretched along and attached to the patient's body, and not to the ladder, and the rest of the body is not to be bound, except so as to keep it in place by means of a loose shawl wrapped round it and the ladder; attention, moreover, should be paid that these ligatures do not interfere with the force of the succussion, and the legs are not to be fastened to the ladder, but should be placed near one another, so as to be in line with the spine. These matters should be thus arranged, if recourse is to be had at all to succussion on a ladder; for it is disgraceful in every art, and more especially in medicine, after much trouble, much display, and much talk, to do no good after all.

45. In the first place, the structure of the spine should be known, for this knowledge is requisite in many diseases.¹ Wherefore, on the side turned to the belly (*the anterior?*) the vertebræ are in a regular line, and are united together by a pulpy and nervous band of connexion, originating from the cartilages, and extending to the spinal marrow.² There are certain other nervous cords which decussate, are attached (*to the vertebræ?*), and are extended from both sides of them.³ But we will describe in another work the connexions of the veins and arteries, their numbers, their qualities, their origins, their functional offices in particular parts, in what sort of sheaths the spinal marrow is inclosed, where they arise, where they

¹ Galen, in his Commentary on this passage, inveighs against the Empirics, who claimed Hippocrates as belonging to their sect, while in truth he avails himself on all proper occasions of logic, and, as in the present occasion, of anatomy, to the study of which he was much devoted.

² By this description is meant, apparently, the intervertebral substance, which is of a fibro-cartilaginous nature, and retains all the vertebræ together.

³ Galen, in his Commentary, understands by "nervous cords" the spinal nerves. M. Littré, however, understands by them the anterior common ligament and the posterior common ligament.

terminate, how they communicate, and what their uses.¹ On the opposite side (*behind?*) the vertebræ are connected together by a ginglymoid articulation. Common cords (*nerves?*) are extended to all parts, both those within and without.² There is an osseous process from the posterior part of all and each of the vertebræ, whether greater or smaller; and upon these processes there are cartilaginous epiphyses, and from them arise nervous productions (*ligaments?*), akin to the external nerves (*τόνοι*).³ The ribs are united to them, having their heads inclining rather to the inside than the out, and every one of them is articulated with the vertebræ; and the ribs in man are very curved, and, as it were, arched.⁴ The space between the ribs and the processes of the vertebra is filled on both sides by muscles, which arise from the neck and extend to the loins. (?)⁵ The spine, longitudinally, is a straight line slightly curved; from the os sacrum to the great vertebra which is connected with the articulation of the femur, the spine inclines backward, for the bladder, the organs of generation, and the loose portion of the rectum, are situated there.⁶ From this, to the attachment of the diaphragm, the spine inclines inwards, and this portion alone, from the internal parts, gives origin to muscles, which are called *psoæ*.

¹ It will be remarked, from this passage, that our author had devoted an especial work to anatomy. How singular, after all this, that he should have been represented as being both ignorant and regardless of anatomical science!

² Ruffus Ephesius divides the nerves into classes, as follows: *Νεῦρα μὲν, τὰ μὲν ἀπ' ἐγκεφάλου καὶ νωτιαίου, πρακτικὰ καὶ αἰσθητικὰ, καὶ προαιρετικὰ, καὶ τόνοι.* (De Part. Homin.) He makes a distinction, then, between the nerves of election (*voluntary motion?*) and the *τόνοι*. Galen, however, in his Commentary, rather inclines to the opinion that they are the same.

³ Some parts of this description are obscure, and unfortunately the Commentary of Galen is imperfect.

⁴ According to Galen, the ribs in man are more curved than in any other animal, and next to man those of the monkey. The reading in the latter clause of this sentence is in a very unsettled state. See Galen, Littré, and Foës.

⁵ Galen finds considerable difficulty in reconciling this description with the actual appearances on dissection. As far as I can see, after weighing the remarks of Galen and Littré, the description applies to the muscles of the back, which run along the spine.

⁶ By the great vertebra would seem to be meant the fifth lumbar vertebra. See Galen's Commentary, and Littré's note on this passage. Mention is made of it also in the Mochlicus. On other matters connected with this sentence, the philological reader may find it interesting to consult Erotian, under *γωνή*, in the edition of Frantzius.

From this to the great vertebra (*seventh cervical?*) which is above the tops of the shoulders, it is convex behind lengthways; but it is more in appearance than it really is, for the spinous processes are highest in the middle, and less so above and below.¹ The region of the neck is convex before.

46. In cases of displacement backward along the vertebræ, it does not often happen, in fact, it is very rare, that one or more vertebræ are torn from one another and displaced. For such injuries do not readily occur, as the spine could not easily be displaced backwards but by a severe injury on the fore part through the belly² (which would prove fatal), or if a person falling from a height should pitch on the nates, or shoulders (and even in this case he would die, but not immediately); and it also would not readily happen that such a displacement could take place forwards, unless some very heavy weight should fall upon it behind; for each of the posterior spinal processes is so constructed, that it would sooner be broken than undergo any great inclination forwards from a force which would have to overcome the ligaments and the articulations mutually connecting them. And the spinal marrow would suffer, if from the displacement of a vertebra it were to be bent even to a small extent; for the displaced vertebra would compress the spinal marrow, if it did not break it; and if compressed and strangled, it would induce insensibility of many great and important parts, so that the physician need not give himself any concern about rectifying the displacement of the vertebra, accompanied, as it is, by many other ill consequences of a serious nature. It is evident, then, that such a case could not be reduced either by succussion or by any other method, unless one were to cut open the patient, and then, having introduced the hand into one of the great cavities, were to push outwards from within, which one might do on the dead body, but not at all on the living.³ Wherefore, then, do I write all this? Because certain persons fancy that they have cured patients in

¹ The great vertebra above the tops of the shoulders can mean only the seventh cervical vertebra.

² The term *belly* (κοιλίη) is applied by our author both to the thoracic and abdominal cavity. See Erotian, *in voce* κοιλίη; and Th. Bartholinus, *Anatom.* ii.

³ From the manner in which our author here expresses himself, it must be pretty obvious that he had no repugnance to human dissection.

whom the vertebra had undergone complete dislocation forwards. Some, indeed, suppose that this is the easiest of all these dislocations to be recovered from, and that such cases do not stand in need of reduction, but get well spontaneously. Many are ignorant, and profit by their ignorance, for they obtain credit from those about them. These are deceived in this way, for they suppose the spinous processes to be the vertebræ themselves, because every one of them appears round to the touch, not knowing that these bones are processes from the vertebræ, as formerly stated; but the vertebræ are at a considerable distance before them; for of all animals, man, in proportion to his bulk, has the belly (*internal cavity?*) the narrowest from behind to before, especially at the breast. When, therefore, any of these processes are severely fractured, whether one or more, the part there appears lower than on either side, and for that reason they are deceived, supposing that the vertebræ are displaced inwards. And the attitudes of the patient contribute also to deceive them; for if they attempt to put themselves into a bent position, they are pained, from the skin being stretched at the seat of the injury, and at the same time the fragments of the bones wound the skin still more; but if they bend forwards, they feel easier, for the skin at the wound is thus relaxed, and the bones are less disposed to hurt them; and if touched, they shrink and bend forwards, and the part which is touched appears empty and soft. All the circumstances now mentioned contribute to deceive the physician. Such patients speedily get well without any bad effects, for callus readily forms in all such bones as are porous.¹

47. There are many varieties of curvature of the spine even in persons who are in good health; for it takes place from natural conformation and from habit, and the spine is liable to be bent from old age, and from pains. Gibbosities (*or* projections backwards) from falls generally take place when one

¹ It is singular that recent authorities are divided in opinion respecting the comparative frequency of fracture of the spinous processes, and of the body of the vertebræ. Thus Chelius, like Hippocrates, holds that the spinous processes are most subject to fracture; while his English editor, Mr. South, maintains, on the other hand, that fracture of the processes alone is of much less frequency than fracture of the body of the vertebræ. I have seen both, but cannot pretend to decide as to their comparative frequency.

pitches on the nates, or falls on the shoulders. In this case some one of the vertebræ must necessarily appear higher than natural, and those on either side to a less degree; but yet no one generally has started out of the line of the others, but every one has yielded a little, so that a considerable extent of them is curved. On this account the spinal marrow easily bears such distortions, because they are of a circular shape, and not angular. The apparatus for the reduction in this case must be managed in the following manner:¹ a strong and broad board, having an oblong furrow in it, is to be fastened in the ground, or, in place of the board, we may scoop out an oblong furrow in the wall, about a cubit above the floor, or at any suitable height, and then something like an oaken bench, of a quadrangular shape, is to be laid along (the wall?) at a distance from the wall, which will admit of persons to pass round if necessary, and the bench is to be covered with robes, or anything else which is soft, but does not yield much; and the patient is to be stoved with vapour, if necessary, or bathed with much hot water, and then he is to be stretched along the board on his face, with his arms laid along and bound to his body; the middle, then, of a thong which is soft, sufficiently broad and long, and composed of two cross straps of leather, is to be twice carried along the middle of the patient's breast, as near the armpits as possible, then what is over of the thongs at the armpits is to be carried round the shoulders, and afterwards the ends of the thong are to be fastened to a piece of wood resembling a pestle; they are to be adapted to the length of the bench laid below the patient, and so that the pestle-like piece of wood resting against this bench may make extension. Another such band is to be applied above the knees and the ankles, and the ends of the thongs fastened to a similar piece of wood; and another thong, broad, soft, and strong, in the form of a swathe, having breadth and length sufficient, is to be bound tightly round the loins, as near the hips as possible; and then what remains of this swathe-like thong, with the ends of the thongs, must be fastened to the piece of wood placed at the patient's feet, and extension in this fashion is to be made upwards and downwards, equally and

¹ The description here given of the process of applying extension and counter-extension to the spine is remarkably clear, and easily understood when illustrated by a proper drawing. See Vidus Vidius and Littré; also PAULUS ÆGINETA, B. VI, 117.

at the same time, in a straight line. For extension thus made could do no harm, if properly performed, unless one sought to do mischief purposely. But the physician, or some person who is strong, and not uninstructed, should apply the palm of one hand to the hump, and then, having laid the other hand upon the former, he should make pressure, attending whether this force should be applied directly downwards, or towards the head, or towards the hips. This method of applying force is particularly safe; and it is also safe for a person to sit upon the hump while extension is made, and raising himself up, to let himself fall down again upon the patient. And there is nothing to prevent a person from placing a foot on the hump, and supporting his weight on it, and making gentle pressure; one of the men who is practised in the palestra would be a proper person for doing this in a suitable manner. But the most powerful of the mechanical means is this: if the hole in the wall, or in the piece of wood fastened into the ground, be made as much below the man's back as may be judged proper, and if a board, made of lime-tree, or any other wood, and not too narrow, be put into the hole, then a rag, folded several times or a small leather cushion, should be laid on the hump; nothing large, however, should be laid on the back, but just as much as may prevent the board from giving unnecessary pain by its hardness; but the hump should be as much as possible on a line with the hole made in the wall, so that the board introduced into it may make pressure more especially at that spot. When matters are thus adjusted, one person, or two if necessary, must press down the end of the board, whilst others at the same time make extension and counter-extension along the body, as formerly described. Extension may also be made with axles, which may either be fastened in the ground beside the bench, or the post of the axles may be attached to the bench itself, if you will make them perpendicular and overtopping (*the bench?*) a little at both ends, or at either end of the bench. These powers are easily regulated, so as to be made stronger or weaker, and they are of such force, that if one were to have recourse to them for a mischievous purpose, and not as a remedy, they would operate strongly in this way also; for by making merely extension and counter-extension longitudinally, without any additional force, one might make sufficient extension; and if, without making

extension at all, one were only to press down properly with the board, sufficient force might be applied in this way. Such powers, then, are excellent which admit of being so regulated, that they can be made weaker and stronger as required. And the forces are applied in the natural way; for the pressure above forces the displaced parts into their place. Natural extension restores parts which have come too near one another to their natural position. I, then, am acquainted with no powers which are better or more appropriate than these; for extension along the spine downwards has no proper hold at the bone called the os sacrum; and extension upwards, along the neck and head, has indeed a hold; but extension thus made is unseemly to behold, and, besides, if increased, may occasion much mischief otherwise. I once made trial of the following plan. Having placed the patient on his back, I put below the hump a bladder, not inflated, and afterwards introduced air into the bladder by means of a brass pipe connected with it. But the experiment did not succeed; for, when the man was fairly extended, the bladder yielded, and the air could not be forced into it; and, besides, the hump of the patient was apt to slip off the distended bladder when they were pressed together. But when I did not extend the man strongly, the bladder was swelled up by the air, and the man became more bent forward than proper. I have written this expressly; for it is a valuable piece of knowledge to learn what things have been tried and have proved ineffectual, and wherefore they did not succeed.¹

48. In curvatures forwards of the vertebræ from a fall, or from some heavy body falling upon them, in general no one of them is displaced far beyond the others, but if one or more be so displaced, the case proves fatal; but, as formerly stated, the displacement is circular, and not angular. In such cases, then, the urine and fæces are more apt to be retained than in displacement outwards, the feet and the whole inferior extremities are colder, and the symptoms are more fatal than in the former

¹ This is another example of our author's great candour in proclaiming his own mistakes for the benefit of posterity. It puts one in mind of our Sydenham's *naïve* admission in his treatise on Dropsy, that he, on one occasion, fairly committed himself by adhering too exclusively to the *Rhamnus catharticus* in the cure of that disease.

case; and if they do survive, they are more subject to retention of the urine, and to loss of strength, and to torpor in their legs. But if the displacement be in the upper part, they experience loss of strength and torpor of the whole body. I know no mechanical contrivance by which such a displacement could be reduced, unless that one might be benefited by succussion on a ladder, or any other similar plan of treatment, such as extension, as formerly described. I am not aware of any mode of pressure which might be applied along with the extension, like that of the board in displacement backwards; for how could one apply pressure from before through the belly? (*internal cavity?*) The thing is impossible. But neither coughing nor sneezing has any power so as to cooperate with the extension, nor would the injection of air into the bowels have any effect. And to apply large cupping-instruments, with the view of drawing back the vertebræ which have protruded forwards, shows a great error of judgment; for they rather propel than attract, and those who apply them are not aware even of this fact, for the greater will be the inclination forwards the greater the instrument applied, the skin being forcibly drawn into the cupping-instrument. I could tell of other modes of succussion than those formerly described, which one might fancy would be more applicable in such an affection; but I have no great confidence in them, and therefore I do not describe them. On the main, it should be known, respecting the accidents which I have briefly described, that displacements forwards are of a fatal and injurious nature; but that displacements backwards, for the most part, do not prove fatal, nor occasion retention of urine nor torpor of the limbs, for they do not stretch the ducts leading towards the intestines, nor occasion obstruction of the same; but displacements forwards produce both these bad effects, and many others in addition. And truly they are more apt to lose the power of their legs and arms, to have torpor of the body, and retention of urine, who experience no displacement either forwards or backwards, but merely a violent concussion along the spine, while those who have displacement backwards are least subject to these symptoms.¹

¹ The subject of dislocations of the vertebræ is still obscure, notwithstanding the labours of recent authorities in illustration of it. See in particular the surgical works

49.¹ And one might observe many other instances in medicine, of considerable injuries not proving serious, but producing a crisis in some affection, while less considerable injuries prove more serious, give rise to chronic diseases, and extend their effects to the whole system. Now something similar may happen in fracture of the ribs; for in fracture of one or more ribs, in general, if the fractured bones are not driven inwards, nor are laid bare, fever rarely supervenes, neither does it often happen that there is hæmoptysis, empyema, any suppurating sores, which require treatment with pledgets, nor necrosis of the bones; and in these cases the ordinary regimen is sufficient. For, unless they be seized with continual fever, a strict diet does more harm than good, by inducing inanition, and increasing the pain, fever, and cough; for moderate fulness of the intestines has a tendency to replace the ribs, while evacuation leads to suspension of the ribs, and suspension induces pain. Ordinary bandaging, externally, is sufficient in such cases; the bandages should be applied moderately tight, along with cerate and compresses, or a pad of wool may be applied. The rib is consolidated in twenty days, for callus soon forms in such bones.

50. But when there is contusion of the flesh about the ribs, either from a blow, or a fall, or a bruise, or any like cause, there is often copious vomiting of blood, for there are canals stretched along the vacuity of each rib (*intercostal space?*), and nerves proceeding from the most important parts of the body have their origin there.² Many of these, therefore, are troubled with coughs, tubercles, empyema, external suppurations, and sphacelus of the ribs. And even when no such symptoms

of Mr. Samuel Cooper, Sir Charles Bell, and Chelius. It will be remarked that our author still sticks to his favorite opinion, that fractures of bones in all parts of the body are less formidable than contusions.

¹ Our author now enters upon the treatment of injuries of the chest; and here again the professional reader will be struck with the similarity of his views respecting them to those laid down by him on the subject of injuries of the head. Thus severe contusions of the chest are held to be more dangerous than fractures attended with displacement of the fractured portions of bone.

² By canals (*or passages*), Galen says our author meant arteries and veins. These he adds, have their origin from "a most important part," namely, the heart; while the nerves (*τόνοι*) are derived from the corresponding part of the spinal marrow, and are further connected with another class of nerves derived from the brain.

supervene from contusion of the skin about the ribs, still in such cases there is, generally, more continued pain than in fractures of the ribs, and relapses of pain in the seat of the injury are more apt to occur. Wherefore some physicians pay much less attention to such injuries, than where the rib is fractured, whereas, if they were wise, they would treat such cases with far greater care than the other; for it is proper that the diet should be restricted, that the patients should remain at rest as much as possible, and abstain from venery, from fat articles of food, from such as excite cough, and from everything strong; they should be bled in the arm, speak as little as possible, should have the contused part bound round with folded compresses, plenty of bandages, broader than the contusion, and which should be smeared with cerate; in applying the bandages, broad and soft shawls should be used, and they should be put on moderately firm, so that the patient will say that they are neither too tight nor loose, and the bandaging should commence at the seat of the injury, and be made more particularly tight there, and the bandaging should be conducted as is done with a double-headed roller, so that the skin about the ribs may not be ruffled, but may lie smooth, and the bandaging should be renewed every day, or every alternate day. It is better also to open the bowels with some gentle medicine, so as just to produce an evacuation of the food, and the diet is to be restricted for ten days, and then the body is to be recruited and filled up; while you are upon the reducing system, the bandaging should be tighter, but when you are making him up again, it must be looser; and, if he spit blood from the commencement, the treatment and bandaging should be continued for forty days; but if there be no hæmoptysis, treatment for twenty days will generally be sufficient; but the length of time must be regulated by the magnitude of the injury. When such contusions are neglected, if no greater mischief result therefrom, at all events the bruised part has its flesh more pulpy than it had formerly.¹ When, therefore, any such thing is left behind, and is not properly dissipated by the treatment,

¹ The description here given of the swellings, both in the fleshy and solid parts of the chest, which are the usual consequences of a neglected injury, is so clear as not to require any elucidation. The treatment, I need scarcely add, is founded on most rational principles.

it will be worse if the mucosity be lodged near the bone, for the flesh no longer adheres to the bone as formerly, the bone becomes diseased, and chronic sloughings of the bone in many cases arise from such causes. But if the mischief be not upon the bone, but it is the flesh itself which is pulpy, relapses and pains will return from time to time, if there happen to be any disorder in the body; wherefore proper bandaging, and for a considerable time, must be had recourse to, until the extravasated blood forming in the bruise be dried up and absorbed, and the part be made up with sound flesh, and the flesh adhere to the bone. The best cure is the cautery in those cases which, from neglect, have become chronic, and the place turns painful, and the flesh is pulpy. And when the flesh itself is pulpy, the burning should be carried as far as the bone, but the bone itself should not be heated; but if it be in the intercostal space, you need not make the burning so superficial, only you must take care not to burn quite through. But if the contusion appear to be at the bone, if it be still recent, and the bone has not yet become necrosed, if it be very small, it is to be burnt as has been described; but if the rising along the bone be oblong, several eschars are to be burnt over it. Necrosis of the rib will be described along with the treatment of suppurating sores.

51. There are four modes of dislocation at the hip-joint: of which modes, dislocation inwards takes place most frequently, outwards, the most frequently of all the other modes;¹ and it sometimes takes place backwards and forwards, but seldom. When, therefore, dislocation takes place inwards, the leg appears longer than natural, when compared with the other leg, for two reasons truly; for the bone which articulates with the hip-joint

¹ It will be remarked that our author states that dislocation inwards is more frequent than any of the other modes of displacement, in which statement he is supported by Celsus, Paulus Ægineta, and most of the ancient authorities. This is at variance with the experience of Sir Astley Cooper, who found dislocation *upwards*, that is to say, upon the dorsum of the ilium, the most frequent of all. And here I must take an opportunity of correcting a mistake into which I perceive that I have fallen, in my Commentary on PAULUS ÆGINETA, B. VI, 118, where, through an oversight, I represent Hippocrates as holding that dislocation *outwards* is the most common of all. His language is so laconic, that I might be excused for having committed this mistake; but if I had read the commentaries of Galen and Apollonius carefully at the time, I should have seen my error. *Veram opere in longo fas est obrepere somnum!*

is carried from above down to the ischium where it rises up to the pubes, upon it, then, the head of the femur rests, and the neck of the femur is lodged in the cotyloid foramen (*foramen thyroideum*?).¹ The buttock appears hollow externally, from the head of the thigh-bone having shifted inwards, and the extremity of the femur at the knee is turned outwards, and the leg and foot in like manner. The foot then being turned outwards, physicians, from ignorance, bring the sound leg to it, and not it to the sound leg; on this account, the injured limb appears to be much longer than the sound one, and in many other cases similar circumstances lead to error in judgment. Neither does the limb at the groin admit of flexion as in the sound limb, and the head of the bone is felt at the perineum too prominent. These, then, are the symptoms attending dislocation of the thigh inwards.

52. When, then, a dislocation has not been reduced, but has been misunderstood or neglected, the leg, in walking, is rolled about as is the case with oxen, and the weight of the body is mostly supported on the sound leg,² and the limb at the flank, and the joint where the dislocation has occurred is necessarily hollow and bent, while on the sound side the buttock is necessarily rounded.³ For if one should walk with the foot of the

¹ Galen admits that, at first sight, there is a slight obscurity in this description; but he maintains that if any one will read the passage two or three times, he will not fail to apprehend the meaning. The two reasons for the lengthening of the limb resolve themselves very much into one, namely, that the head of the femur descends from a higher situation, and is lodged below on a bone. Perhaps, however, it may be held rather arbitrary to apply the term *κοτύλη* to the thyroid foramen. I know not, however, how to make sense of the passage otherwise, unless by a conjectural emendation. If instead of *ἐπὶ τῆς κοτύλης* we were permitted to read *ἀπὸ*, the meaning would obviously be, that "the neck of the femur is carried downward *from* the acetabulum." The interpretation which M. Littré gives does not at all satisfy me. It is as follows: "*ὁ ἀυχὴν ἐπὶ τῆς κοτύλης ὀχέεται*, c'est-à-dire, que le col est appuyé sur le rebord de la cavité cotyloïde, est retenu par ce rebord, et de la sorte maintient la tête dans la nouvelle position et l'empêche de remonter." But this interpretation does not appear to me consistent with the facts of the case; for the head of the femur is not fixed at the border of the acetabulum, nor, if it were, could the lengthening of the limb be thereby accounted for.

² I can state, from familiar acquaintance with a case of unreduced dislocation on the thyroid foramen, that this is a most correct description of the appearances which it presents. The increased length of the limb and the inflexibility of the limb at the groin are the strongly marked symptoms.

³ The meaning here is somewhat obscure, but I take it to be this: that in the

sound leg turned outwards, the weight of the body would be thrown upon the injured limb, but the injured limb could not carry it, for how could it? One, then, is forced in walking to turn the leg inwards, and not outwards, for thus the sound leg best supports its own half of the body, and also that of the injured side. But being hollow at the flank and the hip-joint, they appear small in stature, and are forced to rest on a staff at the side of the sound leg. For they require the support of a staff there, since the nates inclines to this side, and the weight of the body is carried to it. They are forced also to stoop, for they are obliged to rest the hand on the side of the thigh against the affected limb; for the limb which is injured cannot support the body in changing the legs, unless it be held when it is applied to the ground. They who have got an unreduced dislocation inwards are forced to put themselves into these attitudes, and this from no premeditation on their part how they should assume the easiest position, but the impediment itself teaches them to choose that which is most conformable to their present circumstances. For persons who have a sore on the foot or leg, and cannot rest upon the limb, all, even children, walk in this way; for they turn the injured limb outwards in walking, and they derive two advantages therefrom, to supply two wants; the weight of the body is not equally thrown upon the limb turned outwards, as upon the one turned inwards, for neither is the weight in a line with it, but is much more thrown upon the one under the body; for the weight is in a straight line with it, both in walking and in the shifting of the legs. In this position one can most quickly turn the sound limb under the body, by walking with the unsound limb outwards, and the sound inwards. In the case we are now treating of, it is well that the body finds out the attitudes which are the easiest for itself. Those persons, then, who have not attained their growth at the time when they met with a dislocation which is not reduced, become maimed in the thigh, the leg, and the foot, for neither do the bones grow properly, but become shortened, and especially the bone of the thigh; and the whole

lumbar region, and the region of the hip-joint, the parts are atrophied from want of the usual exercise (agreeably to a law which Hippocrates has frequently inculcated); whereas the same parts on the opposite side are unusually plump, as being subjected to extra work. Hippocrates frequently states this as a law in the animal economy.

limb is emaciated, loses its muscularity, and becomes enervated and thinner, both from the impediment at the joint, and because the patient cannot use the limb, as it does not lie in its natural position, for a certain amount of exercise will relieve excessive enervation, and it will remedy in so far the deficiency of growth in length. Those persons, then, are most maimed who have experienced the dislocation *in utero*, next those who have met with it in infancy, and least of all, those who are full grown.¹ The mode of walking adopted by adults has been already described; but those who are children when this accident befalls them, generally lose the erect position of the body, and crawl about miserably on the sound leg, supporting themselves with the hand of the sound side resting on the ground. Some, also, who had attained manhood before they met with this accident, have also lost the faculty of walking erect. Those who were children when they met with the accident, and have been properly instructed, stand erect upon the sound leg, but carry about a staff, which they apply under the armpit of the sound side, and some use a staff in both arms; the unsound limb they bear up, and the smaller the unsound limb, the greater facility have they in walking, and their sound leg is no less strong than when both are sound. The fleshy parts of the limb are enervated in all such cases, but those who have dislocation inwards are more subject to this loss of strength than, for the most part, those who have it outwards.

53. Some tell a story how the Amazonian women dislocate the joints of their male children while mere infants, some at the knee, and others at the hip-joint, that they may

¹ I cannot refrain from calling the attention of the reader to the fulness and completeness of our author's description in this place. Where else shall we find so much interesting and important information on this subject? Sir Astley Cooper was fond of exalting his discoveries in practical surgery by representing the profession as having been totally ignorant of dislocations at the hip-joint before his time; but it may be much doubted if even he was so well acquainted with the subject in all its bearings as Hippocrates in this place shows himself to have been. A good deal of interesting information on the subject of congenital dislocation at the hip-joint has been collected, however, since the death of Sir Astley Cooper, more especially by Dupuytren, R. Smith, and Chelius. The first of these has given a very circumstantial description of the appearances which the limbs present in a case of congenital dislocation. See his work, *On Injuries of the Bones*, lately reprinted by the Sydenham Society.

be maimed, and that the male sex may not conspire against the female, and that they use them as artisans to perform any sedentary work, such as that of a shoemaker or brazier.¹ Whether these things be true or not I do not know, but this I know, that matters would be such as is represented, provided their children, while infants, were to have their joints dislocated. The consequences of dislocation inwards at the hip-joint are much greater than of dislocation outwards at the hip-joint, but at the knee, although there be some difference, it is less; but the mode of either impediment is peculiar, their legs are more bandied when the dislocation is outwards, but those who have dislocation inwards stand erect on their feet with less freedom. In like manner, when the dislocation is at the ankle-joint, if outwards they become *vari* (*their toes are turned inwards?*), but they can stand; but if the dislocation be inwards they become *valgi* (*their toes are turned outwards?*), but they have less freedom of standing. The proportional growth of their bones is as follows: in those cases in which the bone of the leg is dislocated, the bones of the feet grow very little, as being very near the injury, but the bones of the leg increase in size, and with very little defect, but the fleshy parts (*muscles?*) are wasted. But when the ankle-joint is in its natural state, but the knee is dislocated, in these cases the bones of the leg do not grow in like manner, but become shortened, as being nearest the seat of the injury, and the bones of the feet also are atrophied, but not in the same proportion; because, as was said a little while ago, the ankle-joint is safe, and if they could use it, as in the case of club-foot, the bones of the foot would be still less atrophied. When the dislocation takes place at the hip-joint, the bone of the thigh, in this case, does not generally grow in like manner, as being the one nearest the seat of the injury, but becomes shorter than the sound one; but the growth of the bones of the leg is not arrested in like manner; nor of those of the feet, for this

¹ The myth of the Amazons is fully treated of in the Argument to the treatise On Airs, &c. In this place it will be remarked that our author declines giving an opinion whether he regarded the vulgar belief as being well founded or not. There seems no good reason, then, for holding, with Gruner, that the views maintained regarding this myth in these two treatises are totally different, and indicate a distinct authorship.

reason, that there is no displacement between the bones of the thigh and leg, nor between those of the leg and foot ; in those cases, however, the fleshy parts of the whole limb are atrophied ; but if they could make use of the limb, the growth of the bones would be still more developed, as formerly stated, only the thigh, although its flesh would be much less wasted, would still be by no means so fleshy as the sound limb. The following observations are a proof of this : those persons who are weasel-armed (*galiancones*) from birth, owing to dislocation of the humerus, or when the accident has happened to them before they have attained their full growth, such persons have the bone of the arm shortened, but those of the fore-arm and hand are little inferior in size to the sound, for the reasons which have been stated, because the humerus is the bone nearest to the joint affected, and, on that account, it is shorter than natural ; but the fore-arm is not equally affected by the accident, because the joint at which the bones of the arm and fore-arm are articulated remains in its natural condition, and the hand is still further distant than the fore-arm from the seat of the injury. Such are the reasons why certain of the bones in this case increase in growth, and certain do not. The laborious office of the hand contributes much to the development of the flesh in the fore-arm and hand, for whatever work is done by the hand, these weasel-armed persons strive to do no less effectually with the other hand than with the sound ; for the arms do not support the weight of the body like the legs, and the work performed by them is light. From exercise, then, the fleshy parts on the hand and fore-arm are not atrophied in weasel-armed persons, and by these means the arm, too, gains flesh. But in dislocation inwards at the hip-joint, whether from birth or from childhood, the fleshy parts, on that account, are much more atrophied than those of the hand, because the patients cannot exercise the leg. Another proof will be given in the observations which will be presently stated, that these things are such as I have represented.¹

54. When the head of the femur is dislocated outwards, the limb in these cases, when compared with the other, appears shortened, and this is natural, for the head of the femur no longer rests on a bone as in dislocation inwards, but along the

¹ See § 55.

side of a bone which naturally inclines to the side, and it is lodged in flesh of a pulpy and yielding nature, and on that account it appears more shortened. Inwardly, the thigh about the perineum appears more hollow and flabby, but externally the buttock is more rounded, from the head of the thigh having slipped outwards, but the nates appear to be raised up, owing to the flesh there having yielded to the head of the thigh-bone; but the extremity of the thigh-bone, at the knee, appears to be turned inwards, and the leg and foot in like manner, neither does it admit of flexion like the sound limb. These, then, are the symptoms of dislocation outwards.¹

55. When such a dislocation is not reduced in adults, the whole limb appears to be shortened, and in walking they cannot reach the ground with the heel, but they walk with the ball of the foot on the ground, and the points of their toes incline a little inwards. But the injured limb, in this case, can support the body much better than in dislocation inwards, both because the head of the femur and the neck of its articular extremity, being naturally oblique, have formed a bed under a considerable portion of the hip, and because the extremity of the foot is not forcibly turned outwards, but is nearly in a line with the body, and is even inclined more inwardly. When, then, the articular extremity of the femur has worn out a socket for itself in the flesh where it was lodged, and the flesh is lubricated, it ceases to be painful in the course of time, and when it becomes free from pain, they can walk without a staff, if so inclined, and they can support the body on the injured limb. From usage then, in such cases, the fleshy parts are less enervated than in those which have been mentioned a little before, still, however, they lose their strength more or less; but in general there is more enervation when the dislocation is inwards than when it is outwards. Some of them, then, cannot wear their shoes, owing to the unbending state of their leg, and some of them can. But when this dislocation takes place *in utero*, and when the dislocation having occurred at any time before manhood,

¹ The symptoms in this case are reported with a remarkable degree of accuracy. Celsus gives a very elegant version of this passage: "Si in exteriorē, brevius, varumque fit, et pes intus inclinatur; calx ingressu terram non contingit, sed planta ima; meliusque id crus superius corpus, quam in priore casu, fert, minusque baculo eget." (viii, 20.)

from violence, has not been replaced, or when from disease the articular extremity has started from its socket, and is displaced (for many such cases occur, and from some of them, if the femur become necrosed, obstinate suppurations requiring the use of tents are formed, and in certain of them the bone is laid bare), whether the bone become necrosed or not, the bone of the thigh is much shortened, and does not usually grow like the sound one, the bones, too, of the leg, become shorter than those of the other, but in a small degree, for the same reasons that were formerly stated; such persons can walk, some of them in the same fashion as adults having an unreduced dislocation, and some of them walk with the whole foot on the ground, but limp in walking, being obliged to do so by the shortness of the limb. Such is the result, even though they be carefully and properly trained in the attitudes before they have strength for walking, and in like manner also, after they have acquired the necessary strength; but those persons require the most care who were very young when they met with the accident, for, if neglected while children, the limb becomes entirely useless and atrophied. The fleshy parts of the entire limb are more wasted than those of the sound limb, but this is much less apt to happen in their case than in dislocations inwards, owing to usage and exercise, as they are speedily able to make use of the limb, as was stated a little before with regard to the weasel-armed (*galiancones*).¹

56. There are persons who, from birth or from disease, have dislocations outwards of both the thighs; in them, then, the bones are affected in like manner, but the fleshy parts in their case lose their strength less; the legs, too, are plump and fleshy, except that there is some little deficiency at the inside, and

¹ I would merely call the attention of the reader to this admirable account of the consequences resulting from an unreduced dislocation of the thigh backwards. Congenital dislocation, dislocation from disease, and dislocation from violence, all these modes are described, and their after-consequences most faithfully recorded. I may add, that none of the ancient commentators or authorities supply any additional information on this interesting subject. Indeed, after the lapse of twenty-four centuries, there is little to add to the observations of the Coan sage. The labours of Heine and Guerin have supplied, it is true, some new facts respecting the nature of congenital dislocation at the hip-joint; but, upon the whole, no one author of the present day, as far as I am aware, has given so complete a history of the displacements at the hip-joint as Hippocrates.

they are plump because they have the equal use of both their legs, for in walking they totter equally to this side and that.¹ Their nates appear very prominent, from the displacement of the bones of the joint. But if in their case the bones do not sphacelate (*become carious?*)² and if they do not become bent above the hip-joint, if nothing of this kind happen to them, they become otherwise sufficiently healthy, but the growth of all the rest of the body, with the exception of the head, is arrested.³

57. In dislocations of the head of the femur backwards, which rarely occur, the patient cannot extend the leg, either at the dislocated joint, or at the ham, to any extent, and of all the dislocations, this is the variety in which the patients have the least power of making extension at the groin and the ham. But, moreover, this also should be known (for it is a valuable piece of knowledge, and of much importance, and yet most people are ignorant of it), that persons in health cannot extend the joint at the ham, if they do not extend the joint at the groin at the same time, unless they raise the foot very high, for in this way they could do it; neither also could they bend the joint at the ham, but with much greater difficulty, if they do not bend the joint at the groin at the same time. There are many other things in the body which have similar connexions, both with regard to the contractions of nerves (*ligaments?*), and the positions of muscles, and many of them more worthy of being known than is generally supposed, and with regard to the nature of the intestine and that of the whole internal cavity, and with regard to the displacements and contractions of the uterus; but all these things will be treated of

¹ It is now well ascertained, that in a case of dislocation on both sides, the walking in the course of time improves very much. See Chelius, vol. i, p. 804.

² It will of course be readily understood, that our author here alludes to *morbus coxarius* in infancy and early life. Galen, in his Commentary, refers the disease to inflammation of the ligaments of the joint, and mentions that the disease occurs also at other joints, such as the elbow, knee, and fingers, and is followed by ankylosis in these parts.

³ The atrophy of all the rest of the body, with the exception of the head, is ascribed by Galen to sympathy of the spinal column with the inflammation at the hip-joint. He strongly calls attention to the remark, that when the spine is in anywise affected, the whole of the body, with the exception of the head, is less developed than it naturally is.

elsewhere, in a work akin to the present one. But with regard to the matter on hand, they cannot make extension, as has been already stated; and the limb appears shortened, for two reasons—first, because it cannot be extended, and also because the bone has slipped into the flesh of the nates; for the head and neck of the femur, in this dislocation, are carried downwards from their natural situation, to the outside of the nates.¹ But yet they can bend the limb, unless prevented by pain, and the leg and foot appear pretty straight, and not much inclined towards either side, but at the groin the flesh, when felt, appears looser, from the bone of the joint having slipped to the other side, but at the nates the head of the femur may be felt to be more prominent than natural. Such are the symptoms accompanying dislocation of the thigh backwards.²

¹ Notwithstanding the elaborate Commentary of Galen, there is some obscurity in this description. The natural meaning I take to be as expressed in the text. See the following note.

² This mode of dislocation is so rarely met with, that I am happy to have it in my power to give a satisfactory description of it, upon the authority of an eminent anatomist in London. See *History of a Case of Dislocation of Head of the Femur backwards; with some Observations on that Form of Dislocation.* By Richard Quain. *Medical Gazette*, No. 1077.

“The subject of the injury, a man aged 60, was killed by a fall from a ladder, the cause of death being extensive fracture through the base of the skull. Considerable deformity being observed in the right lower limb, the author was induced to make a careful examination of the extremity, with a view to detect the nature of the injury it had sustained. It was apparently, but not really, much shortened; it was also inverted, and separated from the sound leg. The trochanter major was altered in its relation to the iliac spine, and the depression behind it was wanting; the head of the femur could be felt towards the back of the pelvis. The limb could be flexed, but not rotated outwards. On removing the glutæus maximus, the head of the dislocated bone was exposed below the pyriform muscle, and immediately behind the acetabulum. . . . The practical inferences drawn by the author from the foregoing observations may be summed up as follows:—1st. In the ordinary form of dislocation backwards, the femur does not reach the sciatic notch. 2d. The head of the bone is lodged immediately behind the acetabulum, over the base of the ischiatic spine, and opposite to a small part of the sciatic foramina. 3d. The injury would be correctly named the dislocation of the head of the femur backwards. 4th. During the extension made to reduce this dislocation, the thigh is most advantageously directed across the pelvis, so that it shall form a right angle with the abdomen. At the same time the limb is to be in a state of abduction; the femur will thus be drawn away from the pelvis, forwards and outwards. The knee is to be bent, the extending force being fixed above the joint.” From the above description it will be remarked, that the following account of this form of dislocation given by Sir Astley Cooper, is

58. When this dislocation occurs in an adult, and is not reduced, he can walk, indeed, after a time, and when the pain has abated, and when he has been accustomed to rotate the articular bone in the flesh; he finds it necessary, however, to make strong flexion at the groin in walking, for two reasons, both because the limb, for the causes already stated, becomes much shorter, and he is far from touching the ground with his heel, and he can barely reach it with the ball of his foot, and not even thus, unless he bend himself at the groins, and also bend with the other leg at the ham. And in this case, he is under the necessity of supporting the upper part of the thigh with his hand at each step: this also contributes, in a certain degree, to make him bend the body at the groins; for, during the shifting of the feet in walking, the body cannot be supported on the unsound limb, unless it be pressed to the ground by the hand,—the end of the femur not being placed properly under the body, but having slipped backward to the nates; and if he should try to rest the weight of his body for a little, upon the foot, without any other support, he would fall backwards, for there would be a great inclination in this direction, from the hips having protruded backwards far beyond the line of the foot, and the spine inclining towards the hips. Such persons can walk, indeed, without a staff, if so accustomed, for because the sole of the foot is in its old line, and is not inclined outwards, they do not require anything to balance them. Such, however, as, instead of grasping the thigh, prefer resting their weight upon a staff introduced into the armpit of the affected side, these, if they use a longer staff, will walk, indeed, more erect, but will not be able to reach the ground with the foot,

not correct on all points; indeed, it is less accurate than the description given by Hippocrates:—"In this accident there is scarcely any difference in length between the one leg and the other; if any, about half an inch shorter. The knee and foot are turned inwards, but different in appearance to that of the dislocation upwards; the foot is turned over the other, the toe resting against the upper part of the other foot. When any attempt is made to move it, there is scarcely any motion. The situation of the bone is thus:—the head of the os femoris is thrown into the ischiatic notch, the trochanter resting upon the side, or a little behind the acetabulum." (Surgical Lectures, 27.) It appears from Mr. Quain's dissection, that modern authorities have been mistaken in supposing that, in this dislocation, the head of the femur is lodged in the ischiatic notch. The fact is, that, as represented by Hippocrates, the head of the femur is displaced backwards.

or if they wish to rest upon the foot, they must take a shorter staff, and will require to bend the body at the groins. The wasting of the fleshy parts is analogous to what happens in the cases formerly described, for the wasting is greatest in those cases in which the patients keep the limb up, and do not exercise it, whilst those who practise walking, have the least atrophy. The sound leg, however, is not benefited, but is rather rendered more deformed, if the injured limb be applied to the ground, for it is forced to cooperate with the other, being protruded at the hip, and bent at the ham. But if the patient does not use the injured limb by applying it to the ground, but carries it up, and rests upon a staff, the sound leg thereby gains strength, for it is employed in its natural position, and further, the exercise gives it strength. But it may be said, these things are foreign to medicine; for what is the use of enlarging upon cases which are already past remedy? This is far from being the case, for it belongs to the knowledge of medicine to be acquainted also with these, and they cannot possibly be separated from one another; for to such as are curable, means are to be used to prevent them from becoming incurable, studying how they may best be prevented from getting into an incurable state. And incurable cases should be known, that they may not be aggravated by useless applications, and splendid and creditable prognostics are made by knowing where, how, and when every case will terminate, and whether it will be converted into a curable or into an incurable disease.¹ When then, from birth, or during one's youth, this dislocation backwards occurs, and is not reduced, whether it be connected with violence or disease (for many such dislocations occur in diseases, but the nature of the diseases in which dislocations take place, will be described afterwards); if, then, the dislocated limb be not reduced, the bone of the thigh becomes shortened, the whole limb is impaired, is arrested in its growth, and loses its flesh from want of use; the articulation at the ham is also impaired, for the nerves (*ligaments?*) become stretched, from the causes formerly stated, wherefore those who have this

¹ I need scarcely remark, that nowadays it will not be questioned that a minute acquaintance with incurable diseases constitutes a most important part of the physician's knowledge, without which he can neither form an accurate *diagnosis* nor *prognosis*. Our author's remarkable partiality for the latter is very apparent in this passage.

dislocation, cannot make extension at the knee-joint. In a word, all parts of the body which were made for active use, if moderately used and exercised at the labour to which they are habituated, become healthy, increase in bulk, and bear their age well, but when not used, and when left without exercise, they become diseased, their growth is arrested, and they soon become old. Among these parts the joints and nerves (*ligaments?*), if not used, are not the least liable to be so affected; they are impaired, then, for the reasons we have stated, more in this variety of dislocation than in the others, for the whole limb is wasted, both in its bones and in its fleshy parts. Such persons, then, when they attain their full growth, keep the limb raised and flexed, rest the weight of the body on the other leg, and support themselves with a staff, some with one, and others with two.

59. In dislocations of the head of the thigh-bone forwards (they are of rare occurrence), the patients cannot extend the leg completely, but least of all can they bend it at the groin; they are pained, also, if forced to bend the limb at the ham. The length of the leg, if compared at the heel, is the same as that of the other; but the extremity of the foot inclines less to project forwards. But the whole limb has its natural direction, and inclines neither to this side nor to that. These cases are particularly attended with severe pain, and they are more apt to be accompanied with retention of urine at first than any of the other dislocations; for the head of the thigh-bone is lodged very near to important nerves. And the region of the groin appears swelled out and stretched, while that of the nates is more wrinkled and flabby. The symptoms now stated are those which attend this dislocation of the thigh-bone.¹

¹ Upon reference to Sir Astley Cooper's work, *On Dislocations*, p. 95, it will be found that there is but little disagreement between his description of this form of dislocation and that here given by our author. To be sure, Sir Astley says, the limb is shortened by an inch; but probably, as stated in Mr. Quain's description of the state of the limb in dislocation backwards, this shortening is more apparent than real; for, considering the situation in which the head of the femur is lodged, it is difficult to see how there can be any real shortening. The turning outwards which Sir Astley remarks, must also be very slight, seeing it is altogether denied by Boyer. All the modern authorities agree with Hippocrates as to the effects produced by the pressure of the head of the bone upon the anterior crural nerve. See, in particular, Chelius, vol. i, p. 797. Galen's Commentary is merely explanatory of the text, which, however, is sufficiently clear for all practical purposes.

60. When persons have attained their full growth before meeting with this dislocation, and when it has not been reduced, upon the subsidence of the pain, and when the bone of the joint has been accustomed to be rotated in the place where it is lodged, these persons can walk almost erect without a staff, and with the injured leg almost quite straight, as it does not admit of easy flexion at the groin and the ham; owing, then, to this want of flexion at the groin, they keep the limb more straight in walking than they do the sound one. And sometimes they drag the foot along the ground, as not being able to bend the upper part of the limb, and they walk with the whole foot on the ground; for in walking they rest no less on the heel than on the fore part of the foot; and if they could take great steps, they would rest entirely on the heel in walking; for persons whose limbs are sound, the greater the steps they take in walking, rest so much the more on the heel, while they are putting down the one foot and raising the opposite. In this form of dislocation, persons rest their weight more on the heel than on the anterior part of the foot, for the fore part of the foot cannot be bent forwards equally well when the rest of the limb is extended as when it is in a state of flexion; neither, again, can the foot be arched to the same degree when the limb is bent as when it is extended.¹ The natural state of matters is such as has been now described; and in an unreduced dislocation, persons walk in the manner described, for the reasons which have been stated. The limb, moreover, is less fleshy than the other, at the nates, the calf of the leg, and the whole of its posterior part. When this dislocation occurs in infancy, and is not reduced, or when it is congenital, in these cases the bone of the thigh is more atrophied than those of the leg and foot; but the atrophy of the thigh-bone is least of all in this form of dislocation. The fleshy parts, however, are everywhere attenuated, more especially behind, as has been stated above. If properly trained, such persons, when they grow up, can use the limb, which is only a little shorter than the other, and yet they support themselves on a staff at the affected side. For,

¹ The meaning of this passage would appear to be as given in the text; but it must be admitted to be somewhat obscure, owing to the use of certain unusual terms in it (such as *καμπυλίσσθαι* and *σιμῶσθαι*), the exact meaning of which is not very clearly explained either by Erotian or Galen.

not being able to use properly the ball of the foot without the heel, nor to put it down as some can in the other varieties of dislocation (the cause of which has been just now stated), on this account they require a staff. But those who are neglected, and are not in the practice of putting their foot to the ground, but keep the limb up, have the bones more atrophied than those who use the limb; and, at the articulations, the limb is more maimed in the direct line than in the other forms of dislocation.¹

61. In a word, luxations and subluxations take place in different degrees, being sometimes greater and sometimes less; and those cases in which the bone has slipped or been displaced to a much greater extent, are in general more difficult to rectify than otherwise; and if not reduced, such cases have greater and more striking impairment and lesion of the bones, fleshy parts, and attitudes; but when the bone has slipped, or been displaced to a less extent, it is easier to reduce such cases than the other; and if the attempts at reduction have failed, or have been neglected, the impairment in such cases is less, and proves less injurious than in the cases just mentioned. The other joints present great differences as to the extent of the displacements which they are subject to. But the heads of the femur and humerus are very similar to one another as to their dislocations. For the heads of the bones are rounded and smooth, and the sockets which receive the heads are also circular, and adapted to the heads; they do not admit then of being dislocated in any intermediate degree, but, from their rounded shape, the bones slip either outwards or inwards. In the case we are now treating of, then, there is either a complete dislocation or none at all, and yet these bones admit of being displaced to a

¹ The last sentence is obscure to *me*, but neither Foës nor Littré states any difficulty which they find about it. The latter translates it thus: "Mais chez ceux qui, ayant été négligés, n'appuient pas la jambe sur le sol et la tiennent en l'air, les os croissent beaucoup moins que chez ceux qui se servent de leur jambe; de la même façon, les chairs s'atrophient bien davantage; dans cette luxation les articulations de la jambe ont subi une lésion qui les tient plus droites que dans les autres luxations de la cuisse." The sense here would agree with the context, but seems scarcely warranted by the original. Foës, on the other hand, gives a literal translation, but it is as unintelligible as the original. "Circa articulos autem, quòd ad directionem spectat, crure ii aliquanto magis capti sunt, quàm quibus aliter luxatio contigerit."

greater or less extent; and the thigh is more subject to these differences than the arm.¹

62. Wherefore, then, some of these congenital displacements, if to a small extent, may be reduced to their natural condition, and especially those at the ankle-joint. Most cases of congenital club-foot are remediable, unless the declination be very great, or when the affection occurs at an advanced period of youth.² The best plan, then, is to treat such cases at as early a period as possible, before the deficiency of the bones of the foot is very great, and before there is any great wasting of the flesh of the leg. There is more than one variety of club-foot, the most of them being not complete dislocations,³ but impairments connected with the habitual maintenance of the limb in a certain position. In conducting the treatment, attention must be paid to the following points: to push back and rectify the bone of the leg at the ankle from without inwards, and to make counter-pressure on the bone of the heel in an outward direction, so as to bring it into line, in order that the displaced bones may meet at the middle and side of the foot; and the mass of the toes, with the great toe, are to be inclined inwards, and retained so;⁴ and the parts are to be

¹ I believe all our modern authorities are agreed that there is no incomplete luxation of the femur. Sir Astley Cooper speaks of a partial dislocation of the humerus, but the nature of it does not seem to be accurately defined.

² Galen remarks, in his Commentary on this passage, that it is clear our author treats of the cure both of congenital club-foot, and of the club-foot which occurs in early infancy. He further adds, that his account of this affection applies principally to the species in which the leg is distorted outwards, and the foot turned inwards, that is to say, to *varus*.

³ I need scarcely remark *now* that our author has here exactly hit the true character of this impediment, which, as he says, is not a dislocation, but, originally, a mere *declination* of the foot.

⁴ Having lately gone through the process of curing congenital *varus* in both feet of a child a year old, I can attest to the general accuracy of the directions here given. From the nature of the case, it will readily be understood that the foot is to be pushed outwards, and the leg inwards, so as to bring the foot into a line with the leg. The only difficulty which one encounters in the description, is the direction that "the mass of the toes, with the great toe, should be inclined inwards, and retained so." M. J. Guérin, so well known for his skill in orthopedy, gave M. Littré the following explanation of this manœuvre: "Quant à *ἐξω ἐγκλίειν*, il faut le traduire par *abaisser, incliner* tous les orteils en dedans (par un mouvement d'arc de cercle sur l'axe antéro-postérieur du pied). C'est là le sens littéral et il exprime parfaitement ce

secured, with cerate containing a full proportion of resin,¹ with compresses, and soft bandages in sufficient quantity, but not applied too tight; and the turns of the bandages should be in the same direction as the rectifying of the foot with the hands, so that the foot may appear to incline a little outwards.² And a sole made of leather not very hard, or of lead, is to be bound on, and it is not to be applied to the skin, but when you are about to make the last turns of the bandages.³ And when it is all bandaged, you must attach the end of one of the bandages that are used to the bandages applied to the inferior part of the foot on the line of the little toe; and then this bandage is to be rolled upwards in what is considered to be a sufficient degree, to above the calf of the leg, so that it may remain firm when thus arranged. In a word, as if moulding a wax model, you must bring to their natural position the parts which were abnormally displaced and contracted together, so rectifying them with your hands, and with the bandaging in like manner, as to bring them into their position, not by force, but gently; and the bandages are to be stitched so as to suit the position in which the limb is to be placed, for different modes of the deformity require different positions. And a small shoe made of lead is to be bound on externally to the bandaging, having the

qu'il faut faire pour la réduction du varus. Dans cette variété du pied-bot, le pied étant renversé sur la face externe; la rangée des orteils est, comme le pied, située verticalement et regarde en dehors; il convient donc d'incliner ou d'abaisser les orteils en dedans et les fixer dans cette position." By the way, there is some mistake in this quotation, for the reading in the text is not *ἐξω ἐγκλίνειν* (although I humbly think *ἐξω ἐκκλίνειν* would be the most suitable reading), but *ἐς τὸ ἑσω μέρος ἐγκλίνειν*. The only way in which I can attach any proper meaning to the common reading, is by supposing that it refers to a very aggravated case of *talipes varus*, in which the foot is fairly turned round on its axis. In such a case, no doubt the toes would have to be pushed inwards and downwards, in the first place. But, however we may understand this clause, there can be no doubt that Hippocrates understood properly the principles upon which the treatment ought to be conducted.

¹ No doubt, as is remarked by Galen in his Commentary, the addition of resin to the cerate would give the bandages a greater degree of firmness and stability.

² That is to say—agreeably to the Hippocratic rule, *contraria contrariis curantur*—the abnormal inclination inwards is to be cured by producing for a time an inclination outwards.

³ The benefit of this leather sole is in reality very marked in the treatment of infantile club-foot. This I can attest from personal experience.

same shape as the Chian slippers had.¹ But there is no necessity for it if the parts be properly adjusted with the hands, properly secured with the bandages, and properly disposed of afterwards. This, then, is the mode of cure, and it neither requires cutting, burning, nor any other complex means, for such cases yield sooner to treatment than one would believe. However, they are to be fairly mastered only by time, and not until the body has grown up in the natural shape; when recourse is had to a shoe, the most suitable are the buskins, which derive their name from being used in travelling through mud; for this sort of shoe does not yield to the foot, but the foot yields to it. A shoe shaped like the Cretan is also suitable.

63. In cases of complete dislocation at the ankle-joint, complicated with an external wound, whether the displacement be inwards or outwards, you are not to reduce the parts, but let any other physician reduce them if he choose. For this you should know for certain, that the patient will die if the parts are allowed to remain reduced, and that he will not survive more than a few days, for few of them pass the seventh day, being cut off by convulsions, and sometimes the leg and foot are seized with gangrene.² It should be well known that such will be the results; and it does not appear to me that hellebore will do any good, though administered the same day, and the draught repeated, and yet it is the most likely means, if any such there be; but I am of opinion that not even it will be of service. But if not reduced, nor any attempts at first made to reduce them, most of such cases recover. The leg and foot are to be arranged as the patient wishes, only they must not be put in a dependent position, nor moved about;³ and they

¹ Of the Chian slippers *or* sandals, and the buskins for travelling through mud or clay, Galen can give no account. See further the editors of Erotian. They were, no doubt, composed of stout and unyielding materials. It is well known that such a boot is very useful to keep the foot in position after it has been rectified.

² Galen, in his Commentary, states that the danger of reduction consists partly in the additional violence inflicted on the muscles, and partly in their being then put into a stretched state, whereby spasms *or* convulsions are brought on, and gangrene as the result of the intense inflammation which ensues. Galen explains the term gangrene to mean the intermediate state between intense inflammation and sphacelus, the latter term being applied to the complete corruption, that is to say, death of a part. Celsus uses "cancer" as being synonymous with the term "gangrene." (viii, 25.)

³ Celsus translates this clause of the sentence as follows: "tantum (membrum) ne moveatur, neve dependeat." (viii, 25.)

are to be treated with pitched cerate, a few compresses dipped in wine, and not very cold, for cold in such cases induces convulsions;¹ the leaves also of beet, or of colt's foot, of any such, when half boiled in dark-coloured austere wine, form a suitable application to the wound and the surrounding parts; and the wound may further be anointed with cerate in a tepid state. But if it be the winter season, the part is to be covered with unscoured wool, which is to be sprinkled from above with tepid wine and oil, but on no account is either bandage or compress to be applied; for this should be known most especially, that whatever compresses, or is heavy, does mischief in such cases. And certain of the dressings used to recent wounds are suitable in such cases; and wool may be laid upon the sore, and sprinkled with wine, and allowed to remain for a considerable time; but those dressings for recent wounds which only last for a few days, and into which resin enters as an ingredient, do not agree with them; for the cleansing of the sores is a slow process, and the sore has a copious discharge for a long time. Certain of these cases it may be advantageous to bandage. It ought also to be well understood, that the patient must necessarily be much maimed and deformed, for the foot is retracted outwards, and the bones, which have been displaced outwards, protrude: these bones, in fact, not being generally laid bare, unless to a small extent; neither do they exfoliate, but they heal by thin and feeble cicatrices, provided the patient keeps quiet for a length of time; but otherwise there is danger that a small ulcer may remain incurable. And yet in the case we are treating of, those who are thus treated are saved; whereas, when the parts are reduced and allowed to remain in place, the patients die.²

¹ It will be remarked that our author only forbids the use of "very cold" applications, from which Galen justly infers that he did not disapprove of moderately cold things. Galen here gives some interesting observations on the distinction between things which are cold to the senses, and those which are possessed of cold *or* congealing qualities, such as cicuta, mandragora, and the like. The ancient authorities all held that narcotics are of a cold *or* refrigerant nature.

² Our author, it will be remarked in this and the succeeding paragraphs, lays down his own views respecting the treatment of compound dislocations. That he must have been familiar with the treatment of them there can be no doubt, from the precise and well-defined manner in which he describes all the phenomena regarding them. The danger of such accidents he has fairly stated, but probably not exaggerated. I need

64. The same rule applies to dislocations at the wrist, attended with a wound and projection of the bone, whether the bones of the arm be displaced inwards or outwards.¹ For this should be well understood, that the patient will die in the course of a few days, by the same mode of death as formerly described, if the bone be reduced, and allowed to remain so. But in those cases in which they are not reduced, nor any attempt made to reduce them, the patients, for the most part, recover; and the same mode of treatment as has been described will be applicable; but the deformity and impediment of the limb must necessarily be great, and the fingers of the hand will be weak and useless; for if the bones have slipped inwards, they cannot bend the fingers, or if outwards, they cannot extend them.²

65. When the *os tibiæ*, having made a wound at the knee, has protruded through the skin, whether the dislocation be outwards or inwards, in such a case, if the bone be reduced, death will be even more speedy than in the other cases, although speedy also in them. But the only hope of recovery is if you treat them without reduction. These cases are more dangerous than the others, as being so much higher up, as being so much stronger joints, and displaced from bones which are so much stronger. But if the *os femoris* form a wound at the knee, and slip through

scarcely say that, with the modern surgeon in these unfortunate cases, the first consideration is, whether or not the limb is to be taken off at once; and that, even with this frightful alternative, the results have been by no means satisfactory. We have discussed this subject, however, in the Argument, where we have given an abstract of the other views of practice entertained by subsequent authorities.

¹ That is to say, whether the bones of the fore-arm protrude before or behind. It is obvious from the text, and is made still more clear from Galen's Commentary, that, in this case, Hippocrates understands the bones of the fore-arm to be the parts displaced, and not those of the hand, as is usually understood in modern works on surgery. Sir Astley Cooper, however, like Hippocrates, considers the hand as the part in position, and the bones of the fore-arm as those which are displaced. But whether our author is always consistent with himself in regard to this, and the dislocations of the other joints, may be doubted. It is well known, that early writers, however remarkable they may be for originality of thought and vigour of expression, are seldom so distinguished for precision in the use of terms as succeeding authors are. That Hippocrates is not exempt from this defect must be admitted, nor is this to be wondered at, since he lived before the age of Aristotle, who first brought logic and criticism to perfection.

² I need scarcely say that recent authorities give the symptoms very differently. See the Argument.

it, provided it be reduced and left so, it will occasion a still more violent and speedy death than in the cases formerly described; but if not reduced, it will be much more dangerous than those cases mentioned before, and yet this is the only hope of recovery.¹

66. The same rule applies to the elbow-joint, and with regard to the bones of the fore-arm and arm. For when these bones protrude through a wound which they have made in the skin, all cases in which they are reduced prove fatal; but if not reduced, there is a chance of recovery; but to those that survive there is certain impediment. And if in any instance the bones of the upper articulations (*shoulder-joint?*) should be dislocated, and project through a wound which they have made in the skin, these, if reduced, are followed by more speedy death; and if not reduced, they are more dangerous than the others. But the mode of treatment which appears to me most suitable has been already described.

67. When the joints of the toes or hands are dislocated, and the bones protrude through a wound which they have made, and when there is no fracture of the bone, but merely displacement of the joint, in these cases, if the reduction be made and allowed to remain, there is some danger of spasm (*tetanus?*) if not properly treated, and yet it may be worth while to reduce them, having warned the patient beforehand that much caution and care will be required. The easiest, the most efficient method, and the one most conformable to art, is that by the lever, as formerly described when treating of bones which have been fractured and protruded; then the patient must be as quiet as possible, lie in a recumbent position, and observe a restricted regimen. And it will be better also that he should get some gentle emetics. The sore is to be treated with the dressings for fresh wounds, which permit of affusions, or with the leaves of camomile,² or with the applications for fractured bones of the head, but nothing very cold must be applied. The first (*most distant?*) joints are least dangerous, but those still higher,

¹ As remarked by Galen, our author in this paragraph makes a distinction in dislocations at the knee-joint, according as it is the end of the tibia or of the femur which protrudes through the skin. Galen adds, that at the ankle it is only the bones of the leg, and at the wrist only those of the fore-arm, which are protruded.

² Probably the *Anthemis valentina*. See the Appendix to Dunbar's Greek Lexicon, under *πολύφθαλμον*.

are more so. Reduction should be made the same day, or the next, but by no means on the third or fourth, for it is on the fourth day that exacerbations especially attack. In those cases, then, where immediate reduction cannot be accomplished, we must wait until after the aforesaid days; for whatever you reduce within ten days, may be expected to induce spasm. But if the spasm supervene on its being reduced, the joint should be quickly displaced, and bathed frequently with warm water, and the whole body should be kept in a warm, soft, and easy condition, and more especially about the joints, for the whole body should rather be in a bent than in an extended state. Moreover, it is to be expected, that the articular extremities of the bones of the fingers will exfoliate, for this generally happens, if even the least degree of inflammation take place, so that if it were not that the physician would be exposed to censure, owing to the ignorance of the common people, no reduction should be made at all. The reduction of the bones of joints which have protruded through the skin, is attended with the dangers which have been described.

68. When the articular bones of the fingers are fairly chopped off, these cases are mostly unattended with danger, unless deliquium come on in consequence of the injury, and ordinary treatment will be sufficient to such sores. But when resection is made, not at the articulations, but at some other point in the bones, these cases also are free from danger, and are still more easily cured than the others; and the fractured bones of the fingers which protrude otherwise than at the joint admit of reduction without danger. Complete resections of bones at the joints, whether the foot, the hand, the leg, the ankle, the forearm, the wrist, for the most part, are not attended with danger, unless one be cut off at once by deliquium animi, or if continual fever supervene on the fourth day.¹

¹ This paragraph on resection of the bones in compound dislocations and fractures contains almost all the information on the subject which is to be found in the works on ancient medicine. Galen finds our author's meaning in this paragraph so obvious, that he does not think it necessary to give anything more than an apology for a commentary. Celsus notices the practice of resection in compound dislocations very briefly, as follows: "*Si nudum os eminet, impedimentum semper futurum est; ideo quod excedit, abscindendum est.*" (viii, 25.)

In modern times this practice has been partially advocated by several eminent authorities in surgery, especially Mr. Hey, of Leeds, and Sir Astley Cooper, in this

69. With regard to the sphacelus of fleshy parts, it takes place in wounds where there are large blood-vessels, which have been strongly compressed, and in fractures of bones which have been bound too tight, and in other cases of immoderate constriction, when the parts which have been strangulated generally drop off; and the most of such patients recover, even when a portion of the thigh comes away, or of the arm, both bones and flesh, but less so in this case; and when the fore-arm and leg drop off, the patients readily recover.¹ In cases, then, of fracture of the bones, when strangulation and blackening of the parts take place at first, the separation of the dead and living parts quickly occurs, and the parts speedily drop off, as the bones have already given way; but when the blackening (*mortification*) takes place while the bones are entire, the fleshy parts, in this case, also quickly die; but the bones are slow in separating at the boundary of the blackening, and where the bones are laid bare. Those parts of the body which are below the boundaries of the blackening are to be removed at the joint, as soon as they are fairly dead and have lost their sensibility; care being taken not to wound any living part; for if the part which is cut off give pain, and if it should prove not to be quite dead, there is great danger lest the patient may swoon away

country, and by M. L  veille, in France, the last of whom professes to have been guided by the authority of Hippocrates. (*Nouvelle Doctrine Chirurgicale*, tom. ii, p. 44.) The case in which this practice has been most generally followed is compound dislocation of the astragalus. In dislocations of the bones of the larger joints, such as the end of the humerus, the lower end of the tibia and fibula, and the like, resection has seldom been practised, and only when reduction was otherwise found to be impracticable. Mr. Fergusson suggests the propriety of resection at the elbow under these circumstances. Mr. Syme, upon the whole, approves of resection in the case of the elbow, the wrist, and the ankle, when the bones cannot be otherwise reduced; but, in the case of the knee-joint, he holds that amputation must be immediately had recourse to.

¹ This paragraph contains a very interesting account of the ancient mode of treating severe injuries of the extremities which terminate in gangrene. It will be seen that our author's practice was altogether of the expectant mode; when a limb mortified, as much of it as was become quite dead was separated at a joint, and the whole mortified part was not removed until there was a complete line of separation between the dead and living part. The constitutional treatment was altogether of a mild character. The advocates for the mild system of treatment in gangrene of the foot, it would thus appear, have the authority of Hippocrates to quote on their side. I need scarcely add that, until within the last few years, the opposite system of treatment is what was adopted in modern practice.

from the pain, and such swoonings often are immediately fatal. I have known the thigh-bones, when denuded in this manner, drop off on the eightieth day; but in the case of this patient, the parts below were separated at the knee on the twentieth day, and, as I thought, too early, for it appeared to me that this should be done more guardedly. In a case which I had of such blackening in the leg, the bones of the leg, as far as they were denuded, separated at its middle on the sixtieth day. But the separation of denuded bones is quicker or slower, according to the mode of treatment; something, too, depends upon whether the compression be stronger or weaker, and whether the nerves, flesh, arteries, and veins are quicker or slower in becoming blackened and in dying; since, when the parts are not strongly compressed, the separation is more superficial, and does not go the length of laying the bones bare, and in some cases it is still more superficial, so as not even to expose the nerves. For the reasons now stated, it is impossible to define accurately the time at which each of these cases will terminate.¹ The treatment of such cases, however, is to be readily undertaken, for they are more formidable to look at than to treat;² and a mild treatment is sufficient in all such

¹ Galen makes the following remarks on this passage: Hippocrates having previously stated that in those cases in which the flesh connected with the bones has become blackened and corrupted, the same thing, in the course of time, should happen to the bones; and, on that account, having given directions to cut them off, he now advises the removal to be made without touching the sound parts, lest, owing to the pain, the patient should fall into a severe swoon, from which it would be difficult to recover him. He recommends, therefore, that this should be done at a joint, as the removal there can be speedily accomplished, whereas, in the middle of a limb, time is taken up in cutting off the bone.

² Galen remarks on this passage that here our author shows that he had a proper regard for the safety of the physician as well as for that of the patient; for, as he states, these cases, although they put on a formidable appearance, are not so dangerous in reality, but that a physician may undertake the management of them without endangering his own character. Those cases, on the other hand, which at first sight do not appear formidable, but are dangerous in reality, he advises the physician to have nothing to do with. Many passages in the works of our author, and in those of the other ancient writers on medicine, have led me to the conclusion, that in ancient times a greater degree of responsibility attached to the physician in undertaking the management of the sick than there does in our days. It would appear to have been a very serious matter for the physician when his patient died without his death having been previously prognosticated. Necessity, then, and the regard for personal safety, would compel the ancient physician to cultivate prog-

cases, for they come to a crisis of themselves; only the diet must be attended to, so that it may be as little calculated to create fever as possible, and the body is to be placed in the proper positions: these are, neither raised very high up, nor inclining much downwards, but rather upwards, until the separation be completed; for at that time there is most danger of hemorrhage; on this account, wounds should not be laid in a declining position, but the contrary.¹ But after a while, and when the sores have become clean, the same positions will no longer be appropriate; but a straight position, and one inclining downwards, may be proper; and in the course of time, in some of these cases, abscesses form, and require bandages. One may also expect that such patients will be attacked with dysentery; for dysentery usually supervenes in cases of mortification and of hemorrhage from wounds; it comes on generally when the blackening and hemorrhage have arrived at a crisis, and is profuse and intense, but does not last many days; neither is it of a fatal nature, for such patients do not usually lose their appetite, nor is it proper to put them on a restricted diet.²

70.³ Dislocation inwards at the hip-joint is to be reduced

nosis, so that he might not decline to undertake the management of cases by which any credit could be gained, nor, on the other hand, undertake a formidable one without announcing, beforehand, its probable issue. I fear it must be admitted that professional virtue in ancient times never rose to that pitch of disinterestedness enjoined by our Sydenham, when he says that "the physician ought to be always ready to serve his patient even at the risk of his own reputation."

¹ I need scarcely point out to the professional reader how very sensible and judicious these directions are as regards the position of the limb in such cases. Galen, in a Commentary written in his elegant but diffuse style, gives our author's meaning in a more expanded form, but without supplying any additional information of the least practical importance.

² Galen, in his Commentary, enters into a lengthy discussion on the nature of the symptomatic dysentery here briefly described, but there is not much in it of any great interest, or that is not quite obvious.

³ Our author, in this and the six following paragraphs, resumes the consideration of dislocations of the hip-joint, and describes, very clearly and circumstantially, various modes of reducing the head of the bone. Galen, in his Commentary, informs us that Ctesias, being a kinsman of Hippocrates, and one of the Asclepiadæ, and certain others after him, had found fault with Hippocrates for giving directions respecting the reduction, seeing that, as they alleged, the bone, when so reduced, in all cases immediately slips out of its socket. This opinion they pretended to have founded partly on experience and partly on the construction of the hip-joint; for they maintained

in the following manner: (it is a good, proper, and natural mode of reduction, and has something of display in it, if any one takes delight in such ostentatious modes of procedure.) The patient is to be suspended by the feet from a cross-beam with a strong, soft, and broad cord; the feet are to be about four inches or less from one another; and a broad and soft leather collar connected with the cross-beam is to be put on above the knees; and the affected leg should be so extended as to be two inches longer than the other; the head should be about two cubits from the ground, or a little more or less; and the arms should be stretched along the sides, and bound with something soft; all these preparations should be made while he is lying on his back, so that he may be suspended for as short a time as possible. But when the patient is suspended, a person properly instructed and not weak, having introduced his arm between his thighs, is to place his fore-arm between the

that, as dislocation cannot take place unless the *ligamentum teres* be torn, and, as when torn, its parts cannot unite, it follows that a complete cure in this case is physically impossible. Galen enters into a lengthy and elaborate discussion of this question, in the course of which he states, that in laxity of the joint, the *ligamentum teres* may be so elongated as to allow the bone to slip out of the acetabulum without being ruptured. And, coming to the point, he cites the authority of Heraclides Tarentinus in support of the opinion, that a reduced femur may remain in its place. Heraclides further appeals to Hippocrates, Diocles, Philotimus, Euenor Beleus (Nileus?), Molphis, and Nymphodorus on the same side. Galen concludes this portion of his Commentary with further stating that many recent authorities had reported cases in which they had effected the reduction without its being followed by another escape of the bone. —Apollonius Citiensis, in his Commentary on this passage, replies to the same objection as made by Hegetor, and others of the followers of Herophilus. This discussion of the question is interesting as a piece of ancient polemic, but does not elicit any additional facts in illustration of the subject. See Scholia in Hippocratem et Galenum, tom. i, pp. 34-41; ed. Dietz.—Celsus alludes to this controversy in the following terms: "Magnum autem femori periculum est, ne vel difficulter reponatur, vel repositum rursus excidat. Quidam semper iterum excedere contendunt; sed Hippocrates, et Diocles, et Philotimus, et Nileus, et Heraclides Tarentinus, clari admodum auctores, ex toto se restituisse memoriæ prodiderunt. Neque tot genera machinamentorum quoque, ad extendendum in hoc casu femur, Hippocrates, Andreas, Nileus, Nymphodorus, Protarchus, Heraclides, faber quoque quidam reperissent, si id frustra esset." (viii, 20.) With regard to the methods of reducing this dislocation, recommended by our author, I may mention, in general terms, that they will be readily understood by any person who will read his descriptions carefully, and compare them with the figures as given by Vidus Vidius, and copied from him by M. Littré. There is not much, if anything, of practical importance in the Commentaries either of Apollonius or of Galen, so that I shall make but few extracts from them.

perineum and the dislocated head of the os femoris; and then, having joined the other hand to the one thus passed through the thighs, he is to stand by the side of the suspended patient, and suddenly suspend and swing himself in the air as perpendicularly as possible. This method comprises all the conditions which are natural; for the body being suspended by its weight, produces extension, and the person suspended from him, along with the extension, forces the head of the thigh-bone to rise up above the acetabulum; and at the same time he uses the bone of the fore-arm as a lever, and forces the os femoris to slip into its old seat. The cords should be properly prepared, and care should be taken that the person suspended along with the patient have a sufficiently stronghold.

71. Wherefore, as formerly stated, men's constitutions differ much from one another as to the facility or difficulty with which dislocations are reduced; and the cause of this was also stated formerly in treating of the shoulder. In some the thigh is reduced with no preparation, with slight extension, directed by the hands, and with slight movement; and in some the reduction is effected by bending the limb at the joint, and making rotation. But much more frequently it does not yield to any ordinary apparatus, and therefore one should be acquainted with the most powerful means which can be applied in each case, and use whatever may be judged most proper under all circumstances. The modes of extension have been described in the former parts of the work, so that one may make use of whatever may happen to be at hand. For, extension and counter-extension are to be made in the directions of the limb and the body; and if this be properly effected, the head of the thigh-bone will be raised above its ancient seat; and if thus raised, it will not be easy to prevent it from settling in its place, so that any ordinary impulse with the lever and adjustment will be quite sufficient; but some apply insufficient extension, and hence the reduction gives much trouble. The bands then should be fastened, not only at the foot, but also above the knee, so that the force of the extension may not be expended on the knee-joint more than upon the hip-joint. The extension in the direction of the foot is to be thus contrived. But the counter-extension is not only to be managed by means of something carried round the chest and armpits, but also by a long, double, strong, and supple

thong applied to the perineum, and carried behind along the spine, and in front along the collar-bone, and fixed to the point from which counter-extension is made; and then force is to be so applied, by means of this extension and counter-extension, that the thong at the perineum may not pass over the head of the thigh-bone, but between it and the perineum; and during the extension one should strike the head of the femur with the fist, so as to drive it outward. And when the patient is raised up by the stretching, you should pass a hand through (*between the legs?*) and grasp it with the other hand, so as at the same time to make extension, and force the dislocated limb outwards; while some other person sitting by the knee quietly directs it inwards.

72. It has been formerly stated by us that it will be of importance for any person who practises medicine in a populous city to get prepared a quadrangular board, about six cubits or a little more in length, and about two cubits in breadth;¹ a fathom will be sufficient thickness for it; and then along it from the one end to the other, an excavation must be made, so that the working of the levers may not be higher than is proper; then at both sides we are to raise short, strong, and strongly-fixed posts, having axles; and in the middle of the bench five or six long grooves are to be scooped out, about four inches distant from one another, three inches will be a sufficient breadth for them, and the depth in like manner; and although the number of grooves I have mentioned will be sufficient, there is nothing to prevent their being made all over the bench. And the bench should have in its middle a pretty deep hole, of a square shape, and of about three inches in size; and into this hole, when judged necessary, is to be adjusted a corresponding piece of wood, rounded above, which, at the proper time, is to be adjusted between the perineum and the head of the thigh-bone. This upright piece of wood prevents the body from yielding to the force dragging downwards by the feet;

¹ The drawings of the scamnum Hippocratis, as given by us from Vidus Vadius and Littré, will render this description quite intelligible. It is thus described by Celsus: "Etiamnum valentius intenditur membram super scamnum, cui ab utraque parte axes sunt, ad quos habenæ illæ deligantur: qui, ut in torcularibus, conversi, rumpere quoque, si perseveraverit, non solum extendere, nervos et musculos possunt." (viii, 20.) See the Plates.

for sometimes this piece of wood serves the purpose of counter-extension upwards ; and sometimes, too, when extension and counter-extension are made, this piece of wood, if susceptible of some motion to this side or that, will serve the purpose of a lever for pushing the head of the thigh-bone outwards. It is on this account that several grooves are scooped out on the bench, so that this piece of wood, being erected at the one which answers, may act as a lever, either on the sides of the articular heads of bones, or may make pressure direct on the heads along with the extension, according as it may suit to push inwards or outwards with the lever ; and the lever may be either of a round or broad form, as may be judged proper ; for sometimes the one form and sometimes the other suits with the articulation. This mode of applying the lever along with extension is applicable in the reduction of all dislocations of the thigh. In the case now on hand, a round lever is proper ; but in dislocations outwards a flat lever will be the suitable one. By means of such machines and of such powers, it appears to me that we need never fail in reducing any dislocation at a joint.

73. And one might find out other modes of reduction for this joint. If the large bench were to have raised on it two posts about a foot (*in diameter?*), and of a suitable height, on each side near its middle, and if a transverse piece of wood like the step of a ladder, were inserted in the posts, then if the sound leg were carried through between the posts, and the injured limb were brought over the transverse piece of wood, which should be exactly adapted in height to the joint which is dislocated, (and it is an easy matter so to adjust it, for the step of the ladder should be made a little higher than required, and a convenient robe, folded several times, is to be laid below the patient's body), then a piece of wood, of suitable breadth and length, is to be laid below the limb, and it should reach from the ankle to beyond the head of the thigh-bone, and should be bound moderately tight to the limb. Then the limb being extended, either by means of the pestle-like piece of wood (formerly described), or by any of the other methods of extension, the limb which is carried over the step with the piece of wood attached to it, is to be forced downwards, while somebody grasps the patient above the hip-joint. In this manner the extension will carry the head of the thigh-bone above the

acetabulum, while the lever power that is exercised will push the head of the thigh-bone into its natural seat. All the above-mentioned powers are strong, and more than sufficient to rectify the accident, if properly and skilfully applied. For, as formerly stated, in most cases reduction may be effected by much weaker extension, and an inferior apparatus.

74. If the head of the bone slip outwards, extension and counter-extension must be made as described, or in a similar manner. But along with the extension a broad lever is to be used to force the bone from without inwards, the lever being placed at the nates or a little farther up, and some person is to steady the patient's body, so that it may not yield, either by grasping him at the buttock with his hands, or this may be effected by means of another similar lever, adjusted to one of the grooves, while the patient has something laid below him, and he is secured, and the dislocated thigh is to be turned gently from within outwards at the knee. Suspension will not answer in this form of dislocation, for, in this instance, the arm of the person suspended from him, would push the head of the thigh-bone from the acetabulum. But one might use the piece of wood placed below him as a lever, in such a manner as might suit with this mode of dislocation; it must work from without. But what use is there for more words? For if the extension be well and properly done, and if the lever be properly used, what dislocation of the joint could occur, that might not be thus reduced?¹

75. In dislocation of the thigh, backwards, extension and counter-extension should be made as has been described; and having laid on the bench a cloth which has been folded several times, so that the patient may lie soft, he is to be laid on his face, and extension thus made, and, along with the extension, pressure is to be made with a board, as in the case of hump-back, the board being placed on the region of the nates, and rather below than above the hip-joint; and the hole made in the wall for the board should not be direct over, but should be inclined a little downwards, towards the feet. This mode of reduction is particularly appropriate to this variety of dislocation, and at the same time is very strong. But perhaps, instead of

¹ See the Plate at the end of the volume.

the board, it might be sufficient to have a person sitting (*on the seat of luxation?*), or pressing with his hands, or with his foot, and suddenly raising himself up, along with the extension. None of the other afore-mentioned modes of reduction are natural in this form of dislocation.

76. In dislocation forwards, the same mode of extension should be made; but a person who has very strong hands, and is well trained, should place the palm of the one hand on the groin, and taking hold of this hand with the other, is at the same time to push the dislocated part downwards, and at the same time to the fore part of the knee. This method of reduction is most especially conformable to this mode of dislocation. And the mode of suspension is also not far removed from being natural, but the person suspended should be well trained, so that his arm may not act as a lever upon the joint, but that the force of the suspension may act about the middle of the perineum, and at the os sacrum.

77. Reduction by the bladder is also celebrated in dislocations at this joint, and I have seen certain persons who, from ignorance, attempted to reduce both dislocations outwards and backwards therewith, not knowing that they were rather displacing than replacing the parts; it is clear, however, that he who first invented this method intended it for dislocation inwards. It is proper, then, to know how the bladder should be used, if it is to be used, and it should be understood that many other methods are more powerful than it. The bladder should be placed between the thighs uninflated, so that it may be carried as far up the perineum as possible, and the thighs beginning at the patella are to be bound together with a swathe, as far up as the middle of the thigh, and then a brass pipe is to be introduced into one of the loose feet of the bladder,¹ and air forced into it, the patient is to lie on his side with the injured limb uppermost. This, then, is the preparation; some,

¹ By "feet" is meant corners, I suppose. Dietz gives the following note on this passage: "*Pedes utris quatuor anguli dicuntur, capræ pedum reliquæ. Sæpius in Hispania vinum hujusmodi utribus inclusum, qui pleni tumidique capræ formam referunt, a mulionibus transvehi cognovi iisque mulis impositis loco clitellarum usum viator.*" (Ed. Dietz, tom. i, p. 30.) In like manner, "*pes veli*" means "the lower corner of a sail." See Catullus, iv, 19; and Facciolati's *Lexicon*, under *Pes*.

however, do the thing worse than as I have described, for they do not bind the thighs together to any extent, but only at the knees, neither do they make extension, whereas extension should be made, and yet some people by having the good fortune to meet with a favorable case, have succeeded in making reduction. But it is not a convenient method of applying force, for the bladder, when inflated, does not present its most prominent part to the articular extremity of the femur, which is the place that ought to be more especially pressed outwards, but its middle, which probably corresponds with the middle of the thigh, or still lower down, for the thighs are naturally curved, being fleshy, and in contact above, and becoming smaller downwards, so that the natural configuration of the parts forces the bladder from the most proper place. And if a small bladder be introduced, its power will be small, and unable to overcome the resistance of the articular bone. But if the bladder must be used, the thighs are to be bound together to a considerable extent, and the bladder is to be inflated along with the extension of the body, and in this method of reduction both legs are to be bound together at their extremity.

78. The prime object of the physician in the whole art of medicine should be to cure that which is diseased; and if this can be accomplished in various ways, the least troublesome should be selected; for this is more becoming a good man, and one well skilled in the art, who does not covet popular coin of base alloy. With regard to the subject now on hand, the following are domestic means of making extension of the body, so that it is easy to choose from among the things at hand:— In the first place, when soft and supple thongs are not at hand for ligatures, either iron chains, or cords, or cables of ships, are to be wrapped round with scarfs or pieces of woollen rags, especially at the parts of them which are to be applied, and in this state they are to be used as bands. In the second place, the patient is to be comfortably laid on the strongest and largest couch that is at hand, and the feet of the couch, either those at the (*patient's*?) head, or those at the feet, are to be fastened to the threshold, either within or without, as is most suitable; and a square piece of wood is to be laid across, and extending from the one foot to the other; and if this piece

of wood be slender, it should be bound to the feet of the couch, but, if it be thick, there will be no necessity for this; then the heads of the ligatures, both of those at the head and those at the feet, are to be fastened to a pestle, or some such piece of wood, at either end; the ligatures should run along the line of the body, or be a little elevated above it, and it should be stretched proportionally to the pestles, so that, standing erect, the one may be fastened to the threshold, and the other to the transverse piece of wood. Extension is then to be made by bending back the ends of the pestles.¹ A ladder, having strong steps, if laid below the bed, will serve the purpose of the threshold and the piece of wood laid along (*the foot of the couch?*), as the pestles can be fastened to the steps at either end, and when drawn back they thus make extension of the ligatures. Dislocation, inwards or forwards, may be reduced in the following manner: a ladder is to be fastened in the ground, and the man is to be seated upon it, and then the sound leg is to be gently stretched along and bound to it, wherever it is found convenient; and water is to be poured into an earthen vessel, or stones put into a hamper and slung from the injured leg, so as to effect the reduction. Another mode of reduction: a cross-beam is to be fastened between two pillars of moderate height; and at one part of the cross-beam there should be a protuberance proportionate to the size of the nates;² and having bound a coverlet round the patient's breast, he is to be seated on the protuberant part of the cross-beam, and afterwards the breast is to be fastened to the pillar by some broad ligature; then some one is to hold the sound leg so that he may not fall off, and from the injured limb is to be suspended some convenient weight, as formerly described.³

79. It should be particularly known that the union of all bones is, for the most part, by a head and socket (*cotylé*); in some of these the place (*socket?*) is cotyloid and oblong, and

¹ By "pestles," as explained above, was meant poles, or strong staffs. Celsus uses the expression "*valida bacula*" as applied to them. (viii, 20.)

² The reading here seems very doubtful; Vidus Vidius appears to have read *πηχναῖον*, which M. Littré approves of, though he does not adopt it.

³ We have got no commentary of Galen on this paragraph, and there is nothing in the Scholia of Apollonius of much interest bearing upon it. The modes of reduction adverted to in it are easily understood, when the description is compared with the drawings given by Vidus Vidius and Littré.

in some the socket is glenoid (*shallow*?).¹ In all dislocations reduction is to be effected, if possible, immediately, while still warm, but otherwise, as quickly as it can be done; for reduction will be a much easier and quicker process to the operator, and a much less painful one to the patient, if effected before swelling comes on. But all the joints when about to be reduced should be first softened, and gently moved about; for, thus they are more easily reduced. And, in all cases of reduction at joints, the patient must be put on a spare diet, but more especially in the case of the greatest joints, and those most difficult to reduce, and less so in those which are very small and easily reduced.

80. If any joint of the fingers is dislocated, whether the first, second, or the third, the same method of reduction is to be applied, but the largest joints are the most difficult to reduce. There are four modes of displacement—either upwards, downwards, or to either side; most commonly upwards, and most rarely laterally, and in consequence of violent motion.² On both sides of its articular cavity there is a sort of raised border. When the dislocation is upwards or downwards, owing to the articular cavity having smoother edges there than at the sides, if the joint of it be dislocated, it is more easily reduced. This is the mode of reduction:—The end of the finger is to be wrapped round with a fillet, or something such that, when you lay hold of it and make extension, it will not slip; and when this is done, some person is to grasp the arm at the wrist, and another is to take hold of the finger which is wrapped in the fillet, and then each is to make considerable extension towards himself, and at the same time the projecting bone is to be

¹ Our author evidently alludes especially to the hip- and shoulder-joints, but he applies the terms in a general way to all the articulations. The application of the term *κοτύλη* to the articular cavity of the hip-joint is very ancient, being met with in the Homeric poems, as—

ἐνθα μηρὸς

Ἰσχύφ' ἐνστρέφεται, κοτύλην αὐτὴν καλεῖουσι.

(*Iliad*, v, 305, 306.)

² Our author evidently understands the hand to be placed in a state of pronation; by upwards, then, is meant forwards, and by downwards is meant backwards, as the terms are now generally applied. See Cooper's *Surgical Dictionary*. Celsus also uses the terms forwards and backwards: "*qui vel in priorem vel in posteriorem partem exciderunt.*" (viii, 19.)

pushed into its place. But, if the dislocation be lateral, the same mode of reduction is to be used; but when you think that the extremity of the bone has cleared the rim, at the same time that extension is made, the bone is to be pushed direct into its place, while another person on the other side of the finger is to take care and make counter-pressure, so that it may not again slip out there. The twisted nooses formed from palm-shoots are convenient for effecting reduction, if you will make extension and counter-extension by holding the twisted string in the one hand and the wrist in the other.¹ When reduced, you must bind the part as quickly as possible with bandages: these are to be very slender, and waxed with cerate, neither very soft nor very hard, but of middle consistence; for that which is hard drops off from the finger, while that which is soft and liquid is melted and lost by the increased heat of the finger. The bandage is to be loosed on the third or fourth day; but on the whole, if inflamed, it is to be the more frequently loosed, and if otherwise, more rarely; this I say respecting all the joints. The articulation of a finger is restored in fourteen days. The treatment of the fingers and of the toes is the same.

81. After all reductions of joints the patient should be confined to a restricted diet and abstinence until the seventh day; and if there be inflammation, the bandages are to be the more frequently loosed, but otherwise, less frequently, and the pained joint is to be kept constantly in a state of rest, and is to be laid in the most convenient position possible.

82. Accidents at the knee are more mild than at the elbow, from its being more compact, regular, and elegant in its construction; and, therefore, it is more readily dislocated and reduced. It is most frequently dislocated inwards, but also outwards and backwards. The modes of reduction are these: by flexion at the knee, or by sudden calcitration,² or having rolled

¹ These strings or nooses, formed from palm-shoots, are mentioned in allusion to this surgical use of them by Aristotle (*De Partibus Animal.*, iv, 9); and by Diocles, in a fragment preserved by Apollonius Citiensis (ed. Dietz, p. 19). See further Littré, tom. iv, p. 61. They would appear to have been formed from the inner rind of the palm-tree; these, if of a glutinous nature, would, no doubt, answer excellently in the case to which they are applied by our author.

² This term has not been explained by any ancient author, and therefore there is some difficulty in understanding properly the process to which it is applied. M.

a swathe into a ball, and fixed it in the ham, the patient's body is to be suddenly dropped on its bended knees. Dislocation backwards, also, as in the case of the elbow, may be reduced by moderate extension, and to either side, either by flexion or calcitration, but also by moderate extension. The adjustment is the same in all cases. In dislocations backwards which are not reduced, the patient cannot bend the joint, but neither can he, to any great extent, in the other varieties; the thigh and leg are wasted in front; but if inwards the patients become bow-legged, and the external parts are wasted; but if outwards they become more bandy-legged, but the impediment is less, for the body is supported on the larger of the bones, and the inner parts are wasted. When these accidents happen at birth or during adolescence, they follow the rule formerly stated.¹

83. 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 purposes, as is common in all cases.²

84. Injuries of the foot are to be remedied like those of the hand.³

85. The bones connected with the leg, and which are dislocated, either at birth or during adolescence, follow the same course as those in the hand.⁴

86. When persons jumping from a height pitch on the heel, so as to occasion separation (*diastasis*) of the bones, ecchymosis of the veins, and contusion of the nerves; when these symptoms are very violent there is danger of sphacelus, and that the case

Littre gives a very elaborate and ingenious disquisition on this subject. The following is his own explanation: "Cela établi, voici comment je conçois de l'*éclactisme*: le patient était placé debout sur la jambe saine, et des aides le maintenaient dans cette position; la jambe luxée était en l'air; le médecin la saïssissait par le pied et la fléchissait brusquement en la portant vers les fesses. Ce procédé, dans l'hypothèse que je propose, ne différerait de la flexion simple que parce qu'il se pratiquerait le malade étant debout." (Euv. Hip., tom. iv, p. 68, Arg.) Foës, in his note on this passage, explains the term thus: "Excalcitratio, per calces elapsi ossis impulsio, aut ea quæ fit repente calcibus in sublime jactatis et per subitum flexum articuli repositio." I do not exactly see how the process, as represented by Foës, could have effected the purpose; I am inclined therefore to think that M. Littre's explanation is the true one.

¹ On dislocations at the knee-joint, see the Argument, and § 37 of the work, On Fractures.

² See, On Fractures, § 13.

³ Ibid., § 9.

⁴ Ibid., § 10.

may give trouble during life, for the bones are so constructed as to slip from one another, and the nerves communicate together.¹ And, indeed, in cases of fracture, either from an injury in the leg or thigh, or in paralysis of the nerves (*tendons*?) connected with these parts, or from neglect during confinement to bed, when the heel gets blackened the most serious consequences result therefrom. Sometimes, in addition to the sphacelus, there come on acute fevers, accompanied with hiccup, aberration of intellect, and speedy death, with lividities of the large blood-vessels. With regard to the symptoms attending exacerbations, if the ecchymosed and blackened parts and those around be somewhat hard and red, and if along with the hardness there be lividity, mortification is to be apprehended; but if the parts be slightly livid, or even very livid, and the swelling diffused,

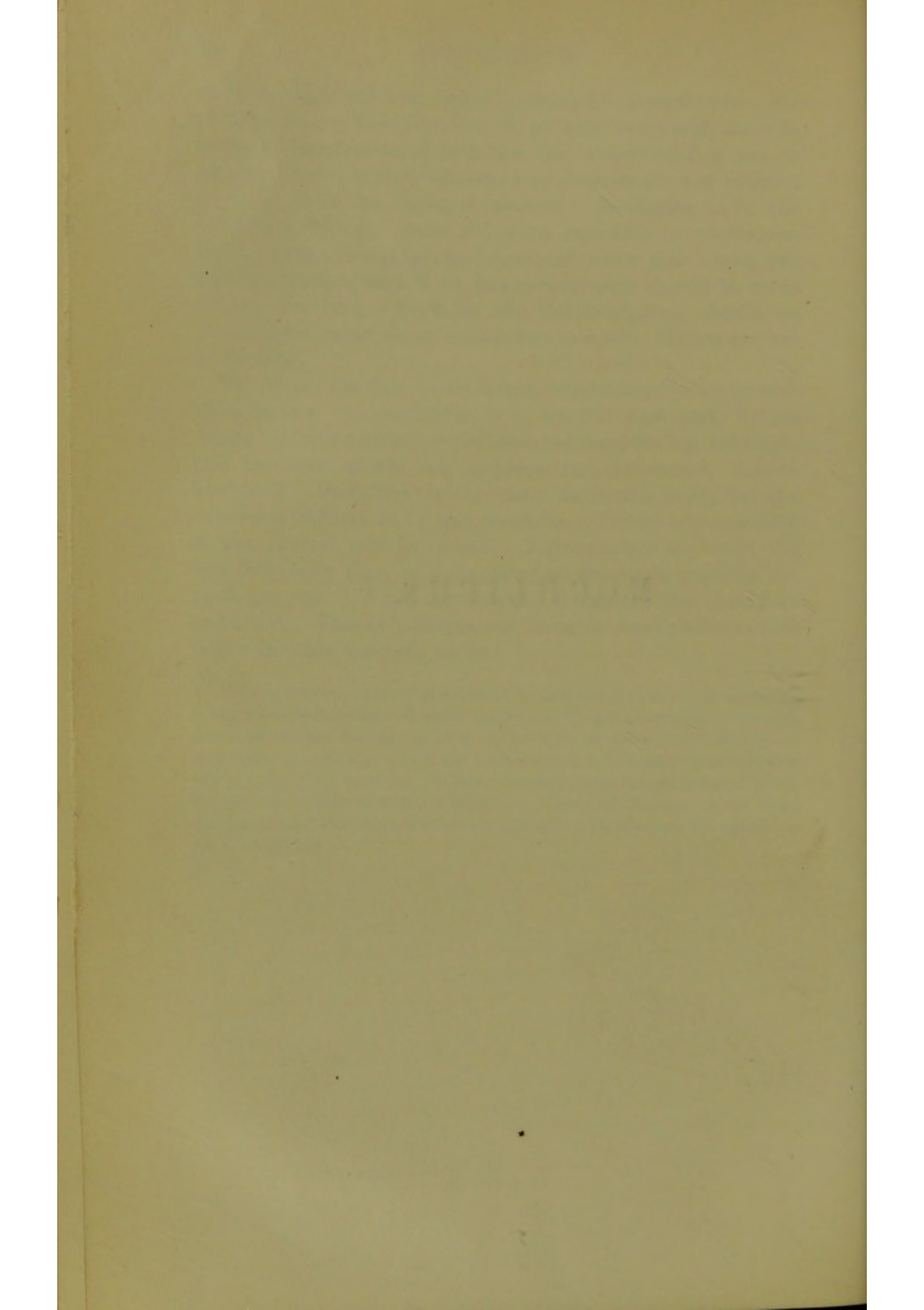
¹ The accident here briefly touched upon would appear to be dislocation of the os calcis from the astragalus. A very distinct case of it was reported lately by Mr. Bransby Cooper. "John Ryley, aged 49, was admitted into Guy's Hospital with a dislocation of foot. He stated that in swinging himself out of a cart, he lost his hold, and slipped down from the curb-stone, his right foot being turned completely inwards, in which position it remained until he was brought into the Hospital. The diagnostic marks of the injury were as follows: The chief deformity arose from the complete inversion of the whole foot, the sole of which faced directly inwards. The astragalus formed also a very evident deformity; for, although it remained in its natural position with respect to the tibia and fibula, its anterior articular surface pressed so tightly against the skin, that, had the dislocation remained unreduced, the integuments must very soon have undergone ulceration. The superior edge of the anterior articular surface of the astragalus could be easily felt, and its form was distinctly visible; a deep hollow was also observed below the external malleolus, where there was evidently extensive contusion of the soft parts. The external malleolus formed a considerable projection in its natural situation; but neither it nor any of the other bones of the foot was fractured. From these appearances it was judged to be a dislocation of the os calcis and navicular bone, with the rest of the foot outwards from the astragalus. The reduction was effected in the following manner: The surgeon knelt at the foot of the patient's bed, and, grasping the heel with his right hand, made extension from the instep with his left, an assistant at the same time pressing the tibia inwards towards its natural position. The reduction was very easily effected." Severe symptoms supervened at first, but afterwards a perfect recovery took place. (*Med. Gaz.*, No. 1069.) Though in this case the result was favorable, there can be little doubt that if the dislocation had been compound, or if the parts had not been promptly replaced, the consequences might have been such as Hippocrates describes, namely, great swelling and gangrene. These symptoms, it will be seen, he also represents as the consequences of injuries, and of the pressure produced by position in cases of paralysis. His observations on the latter case are most appropriate and deserving of attention.

or if greenish and soft, these appearances, in such cases, are all favorable. The treatment, if no fever be present, consists in the administration of hellebore, but otherwise it is not to be given, but *oxyglyky* (*decoction of honeycombs and vinegar*) is to be given for drink, if required. Bandaging as in the other articulations: above all, more especially in contusions, the bandages should be numerous and softer than usual, but the compression should be less; most turns should be made around the heel. Position, like the bandaging, should be so regulated as not to determine to the heel. Splints are not to be used.

87. When the foot is dislocated, either alone or along with its epiphysis, the displacement is, for the most part, to the inside. If not reduced, in the course of time, the hip, the thigh, and the side of the leg opposite the dislocation, become atrophied. Reduction is the same as in the wrist, but the extension requires to be very powerful. Treatment, agreeably to the general rule for joints. Exacerbations do occur, but less frequently than in dislocations at the wrist, provided the parts get rest. While they remain at rest the diet should be restricted. Those which occur at birth, or during adolescence, follow the rule formerly stated.¹

¹ See, On Fractures, § 13. Dislocation of the foot, that is to say, of the astragalus, is here correctly described. Compare Mr. Bransby Cooper's description of the accident in the Medical Gazette, No. 1069. As stated by our author, dislocation inwards is far more common than any of the other varieties, and is generally accompanied with fracture of the malleolus. Whether by epiphysis, in this paragraph, is meant the external malleolus or conjoined malleoli, has been much disputed. If the latter, the case was evidently fracture of bones of the leg immediately above the ankle-joint. See the Argument.

MOCHLICUS.



MOCHLICUS.

THE ARGUMENT.

THE work commences with a very brief description of the bones of the human body ; that is to say, with a compendious system of Osteology (§ 1).

In § 2, fractures of the nose are treated of.

In § 3, those of the ears are treated of.

In § 4, there is given a summary view of dislocations of the lower jaw.

In § 5, the dislocations of the shoulder are minutely described, along with all the known methods of reduction.

In § 6, is given an account of the nature and treatment of abruption of the acromion.

In § 7, two forms of displacement of the bones of the fore-arm, at the elbow-joint, are described : the same as 'Articulations,' § 17.

In § 8, two complete luxations of the same are given in the same terms as § 18, of 'Articulations.'

In § 9, is given a brief notice of dislocation forwards and backwards : it is the same as 'Articulations,' § 19.

In § 10, there is a brief notice of diastasis of the bones at the elbow, by which is evidently meant separation of the radius from the ulna : the same as 'Articulations,' § 20.

In § 11, the effects of these luxations when not reduced, are briefly described : the same as 'Articulations,' § 21.

In § 12, complete lateral dislocations of the bones of the fore-arm, are treated of : the same as 'Articulations,' § 22.

In § 13, complete dislocations forwards and backwards, are noticed : the same as 'Articulations,' § 23.

In § 14, another form of dislocation is described : the same as § 7, and 'Articulations,' § 24.

In § 15, the general rules by which reduction is to be accomplished, are briefly given.

In § 16, a description is given of luxation, or subluxation inwards and outwards, of the bones at the wrist.

In § 17, complete luxations of the bones at the wrist, in all directions, along with separate displacement of either bone are described very succinctly.

In § 18, the consequences of unreduced dislocations are very briefly noticed.

In § 19, luxations of the fingers are described.

Luxations at the hip-joint are correctly and distinctly described in §§ 20, 21, 22, 23, 24.

The modes of reduction are briefly enumerated in § 25.

In § 26, the symptoms and treatment of dislocation at the knee are correctly given.

In § 27, the modes of reducing dislocations at the ankle-joint are briefly described.

In § 28, the analogy between the accidents which befall the bones of the foot, and those of the hand, is adverted to.

In § 29, the consequences of unreduced luxations in the bones of the foot are compared with the same in the hand.

In § 30, the treatment of gangrene, following upon dislocation of the os calcis, and the consequence of other causes, is laid down in the same terms as at 'Articulations,' § 86.

In § 31, the luxations at the ankle-joint are briefly given as in § 87 of the work 'On the Articulations.'

In § 32, a brief summary is given of the important chapter on club-foot, in the work 'On the Articulations,' § 62.

In § 33, the treatment of compound luxations is given with much precision.

In § 34, a summary is given of the rules of practice respecting complete section of the extremities.

In § 35, gangrene of the members resulting from dislocation or any other cause, is distinctly treated of.

In § 36, curvatures of the spine from accident, and otherwise, are treated of. The doctrine is enforced that, as in injuries of the chest, there is more danger from a severe contusion than from a fracture.

In § 37, the displacement of the spinal vertebræ from injury is briefly treated of.

In § 38, all the usual modes of reducing dislocation of the spine are treated of at considerable length.

In § 39, necrosis of the palate with subsidence of the nasal bones is briefly described.

In § 40, some general observations of considerable importance, on displacements of bones are given, with other remarks.

In § 41, the treatment of fractures complicated with a wound, is distinctly laid down.

In § 42, are given a few general observations on complete and partial luxations.

We can have no difficulty in deciding that the author of this work, whether Hippocrates himself, or one of his immediate successors, must have intended it as a remembrancer to the reader on all the various subject-matters treated of in the preceding works 'On Fractures,' and 'On the Articulations.' In fact, many of the paragraphs in it, and the work 'On the Articulations,' are given in exactly the same words. That the object of the work is to fix in the mind the important facts more fully given in these two works, can admit of no doubt, and as such its importance cannot be questioned. Taking together the four treatises, namely, 'On the Surgery,' 'On Fractures,' 'On the Articulations,' and 'The Mochlicus,' the subject of dislocations and fractures is treated of most scientifically and completely. In the first place, the work 'On the Surgery,' supplies us with a *coup d'œil*, as it were, of the whole subject, and prepares us for what we are to meet with in the course of our investigation; then we have all the parts of the subject examined separately and minutely, in the works 'On Fractures,' and 'On the Articulations;' and to conclude, we have here a brief recapitulation of all the heads of the preceding inquiry. When we reflect on the admirable manner in which the whole subject is handled, and the many important truths which are evolved in the course of it, we cannot surely but regard with veneration the labours of our forefathers, nor can we miss to be impressed with the feeling that they have more cause to look down with contempt upon us their posterity for not having prosecuted with more success the path of discovery which they had pointed out, than their posterity have to look back with scorn upon them, because we have now made some little advances beyond their limits. In conclusion, I do not hesitate to declare it as my decided opinion, that no other author has treated the same subject in so complete a manner as Hippocrates has done in these treatises.

MOCHLICUS.

1.¹ 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 outwards, 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;² these bones have a common epiphysis below, with which the foot is moved, and another epiphysis above,³ 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 outwards and forwards; its head is a round epiphysis which gives origin to the ligament inserted in the acetabulum of the hip-joint.⁴ 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.⁵ The spine, from the os sacrum to the great vertebra, is curved backwards; in this quarter are situated the bladder, the organs of generation, and the inclined portion of the rectum; from

¹ The brief description of the bones given in this paragraph is evidently condensed from a larger work on the subject. A considerable portion of the matter which is found here in an abridged form, is taken from the preceding treatises, On Fractures and On the Articulations, but not the whole of it.

² The tendon of the biceps.

³ It will be here perceived that by epiphysis is merely meant a close union of the two bones by means of a ligament. The term in this paragraph is not always used in this sense. Strictly speaking, its signification would appear to be a protuberance of a bone. It is applied to the malleoli, to the head of the tibia, to the head and neck of the femur, to the spinous processes of the vertebræ, to the upper and lower extremities of the humerus, and to the lower extremity of the radius.

⁴ Allusion is evidently made to the ligamentum teres.

⁵ It will be readily perceived that the term ischium is not used here exactly as applied by modern anatomists. It is applied in this place to the ilium where it is articulated with the os sacrum. By the great vertebra, as stated in the preceding work, is meant the last vertebra of the loins.

this to the diaphragm it proceeds in a straight line inclining forwards, and the psoæ are situated there; from this point, to the great vertebra above the tops of the shoulders, it rises in a line that is curved backwards, 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 forwards. The vertebræ on the inside¹ 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 downwards, 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 scapulæ differently from most other animals. The scapula is cartilaginous towards 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 connexion 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 outwards and forwards, 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

¹ Meaning before, that is to say, at their anterior part.

a solid consistence; behind it is a cavity in which the coronoid process (*olecranon*.²) of the ulna is lodged, when the arm is extended;¹ here, too, is inserted the benumbing nerve,² which arises from between the two bones of the fore-arm at their junction, and terminates there.

2. When the nose is fractured, the parts should be modelled 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 afterwards 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. Callus 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.³

¹ Here I would call the attention of the reader to the application of this term, "the coronoid process of the ulna" (*ἡ κορώνη ἢ ἐκ τῶν πύχους*), which creates a good deal of ambiguity in several of our author's descriptions of the accidents at the elbow-joint. There can be no doubt, in this place, that it is applied to the olecranon, as I think it is on all occasions, but M. Littré interprets differently several of the passages in which it occurs. In the present instance, M. Littré, however, understands it as I always do. By Galen, the term (*κορώνη*) is always decidedly applied to the whole of the posterior process of the ulna, that is to say, to the olecranon. See *Chirurgici Veteres*, ed. Cocchi, p. 141.

² Foës explains this as meaning the ligament: he says, "*ναρκῶδες νεῦρον* ligamentum intelligere videtur quod ligamentorum natura sensu careat. Innuat autem ligamentum illud densum, crassum et validum ac membranosum, quod ex brachii fine inferiore exertum, cubitum cum radio connectit, totamque dearticulationem circumvestiens, majore tamen parte cubitum annectit, ut scribit Hippocrates libro de Fract." But, if our author meant the ligament in this place, it is clear that he ascribes to it the well-known sensation occasioned by pressure on the ulnar nerve. The following description of it will explain clearly what I allude to: "At the elbow the ulnar nerve is superficial, and supported by the inner condyle, against which it is easily compressed, giving rise to the thrilling sensation along the inner side of the fore-arm and little finger, ascribed to striking the 'funny-bone.'" (Wilson's Anatomy, p. 392.) Whether or not Hippocrates may not fall into the mistake of confounding nerves with ligaments I cannot venture to state positively.

³ This paragraph is abridged from §§ 35, 36, 37, 38, 39 of the work, On the Articulations. On the caddis mentioned in this paragraph, see the editors of Erotian, Eustachius, and Frantzius, under *ἄχνη ὀθονίου*.

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 light ; 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 deceptive 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.¹ The cure is soonest effected by transfixing the ear with a cautery ; but the ear is maimed and diminished in size, if burnt across. If opened, one of the gentle medicines for fresh wounds should be used as a dressing.²

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 slip 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 dejections ; 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 manœuvres at once, —rectify the position of the jaw, push it backwards, and shut the mouth. The treatment should consist of soothing applica-

¹ Compare On the Articulations, § 15.

² The contents of this paragraph are abridged from § 40 of the work, On the Articulations.

tions, position, and applying a suitable bandage to support the jaw-bone, so as to co-operate with the reduction.¹

5. The bone of the shoulder is dislocated downwards. I have never heard of any other mode. The parts put on the appearance of dislocation forwards, 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.² 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.³ 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

¹ This is an abridgment of §§ 30 and 31 of the work, On the Articulations.

² The language here would seem to imply that the dislocation in cattle is not real, but merely apparent. See § 8 of the Articulations, and the Annotations on it.

³ Every experienced physician must have met with cases in which abscess about a joint has occasioned impairment of it.

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 armpit, pushes up the head of the humerus with it, and brings the hand forward to the breast. Another:—Force it backwards, 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 a 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.¹

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.²

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 backwards and to the sides.³

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 inwards. The parts are to be adjusted by separating the bones

¹ This description of the symptoms and treatment of dislocation at the shoulder-joint is abridged from § 1-13 of the work, On the Articulations.

² This is an abridgment of § 14 of the work, On the Articulations.

³ This is a repetition of § 17 of the work, On the Articulations.

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.¹ 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.²

9. The elbow, when luxated, induces the most serious consequences, fevers, pain, nausea, vomiting of pure bile ; and this especially in dislocations backwards, from pressure on the nerve which occasions numbness ; next to it is dislocation forwards. The treatment is the same. The reduction of dislocation backwards is by extension and adaptation : the symptom of this variety, loss of the power of extension ; of dislocation forwards, 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.³

10. Diastasis of the bones may be recognised by examining the part where the vein which runs along the arm divides.⁴

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 shoulder 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

¹ The meaning in this passage seems very equivocal. See Littré, and our Argument to the work, On the Articulations.

² This is a repetition of § 18 of the work, On the Articulations.

³ This is copied from § 19 of the work, On the Articulations.

⁴ This is literally copied from § 20 of the work, On the Articulations.

outwards, is on the inside ; or if otherwise, on the side opposite the dislocation.¹

12. In dislocation at the elbow, whether outwards or inwards, 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.²

13. Dislocations backwards 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 forwards, the arm is to bend around a ball of cloth, of proper size, and at the same time replaced.³

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 distension.⁴

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.⁵

16. The joint of the hand is dislocated inwards or outwards, but most frequently inwards. The symptoms are easily recognised ; if inwards, the patient cannot at all bend his fingers, but if outwards, he cannot extend them. Reduction :—By placing the fingers above a table, extension and counter-extension are to be made by assistants, while, with the palm of the hand or the heel, on the projecting bone, one presses forwards, 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 backwards, into

¹ This is taken from § 21 of the work, On the Articulations.

² This is taken from § 22 of the work, On the Articulations.

³ This is copied from § 23 of the work, On the Articulations.

⁴ This is taken from § 24 of the work, On the Articulations.

⁵ This is the same as § 25 of the work, On the Articulations.

a state of supination. The treatment is to be conducted with bandages.¹

17. The whole hand is dislocated either inwards or outwards, but especially inwards, 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 backwards 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 fore-arm, 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 affusions of water are to be used².

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.³

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 joint. In congenital dislocations, and in those which occur during adolescence, the 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.⁴

20. Dislocation at the hip-joint occurs in four modes, inwards most frequently, outwards next, the others of equal frequency. The symptoms:—The common, a comparison with the sound leg. The peculiar symptoms of dislocations inwards;

¹ This is the same as § 26 of the work, On the Articulations.

² This is taken from § 27 of the work, On the Articulations.

³ This is the same as § 28 of the work, On the Articulations.

⁴ This is taken from § 29 of the work, On the Articulations.

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 outwards. 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 easily do they walk. If the accident happen 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 towards 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.¹

21. The symptoms and attitudes in dislocation outwards are the opposite, and the knee and foot incline a little inwards. 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 outwards, 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

¹ This is mostly condensed from §§ 51 and 52 of the work, On the Articulations.

the dislocation frequently happens, and treatment of this. In dislocation outwards 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 inwards, 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.

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.¹ 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.²

23. The symptoms of dislocation backwards 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 backwards 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, if inactive, it gets into a bad condition, unless its inactivity arise from fatigue, fever, or inflammation. And in dislocations outwards, the limb is shortened, because the bone is lodged in flesh which yields; but, in dislocations inwards, 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,

¹ That is to say, unless the case proceed from disease of the bone.

² The contents of this and the preceding paragraph are mostly condensed from §§ 54, 55, 56 of the work, *On the Articulations*.

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 ground,—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 afterwards), 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.¹

24. In dislocations forwards 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 ancylosed in a straight position. The diminution of the bones, and wasting of the fleshy parts, are analogous.²

25. In reduction—the extension of the thigh is to be powerful,

¹ The contents of these two paragraphs on dislocation backwards are condensed from §§ 57, 58 of the work, *On the Articulations*.

² The contents of this paragraph are condensed from §§ 59, 60 of the work, *On the Articulations*.

and the adjustment what is common in all such cases, with the hands, or a board, or a lever, which, in dislocations inwards, should be round, and in dislocations outwards, flat; but it is mostly applicable in dislocations outwards. Dislocations inwards 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 forwards and the others, but least of all in dislocations backwards. A board fastened under the limb, like the board fastened below the arm in dislocations at the shoulder, answers in dislocations inwards, 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 forwards and backwards.¹

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 inwards, but also outwards and backwards. The methods of reduction are—by circumflexion, or by rapid exalcitration, 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 backwards. Dislocations backwards, like those of the elbows, may also be reduced by moderate extension. Lateral dislocations may be reduced by circumflexion or exalcitration, or by extension (but this is most applicable in dislocation backwards), but also by moderate extension. The adjustment is what is common in all. If not reduced, in dislocations backwards, 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 inwards they are bandy-legged, and the external parts are atrophied. But, in dislocations outwards, they incline more outwards, but are less lame, for the body is supported on the thicker bone, and the inner parts are wasted. The con-

¹ This paragraph is made up from § 70 and other paragraphs of the work, On the Articulations.

sequences of a congenital dislocation, or one occurring during adolescence, are analogous to the rule formerly laid down.¹

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.²

28. Dislocations of the bones of the foot are to be treated like those of the hand.³

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.⁴

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, tumours, aberration of intellect, and speedy death, along with lividity of the large blood-vessels, 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, 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; compres-

¹ The substance of what is here said on dislocations at the knee, is taken from § 82 of the work, On the Articulations, and § 37 of the work, On Fractures.

² See On the Articulations, § 83; and On Fractures, § 13.

³ See On the Articulations, § 84.

⁴ Ibid., § 85.

sion less; more water than usual to be used in the affusions; to be applied especially to the heel. The same object should be sought after in the position as in the bandaging, namely, that the humours 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.¹

31. When the foot is dislocated, either alone, or with the epiphysis, the displacement is more apt to be inwards. 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.²

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 modelling 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.³

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 upwards, and, if elsewhere, according to the same rule. The bones do not readily exfoliate;

¹ The contents of this paragraph are copied almost word for word from § 86 of the work, On the Articulations.

² This is literally taken from § 87 of the work, On the Articulations.

³ This is a very brief abstract of the contents of § 62 of the work, On the Articulations.

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.¹

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.²

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

¹ This is condensed from §§ 63-7 of the work, On the Articulations.

² See § 68 of the work, On the Articulations.

away at the middle on 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 to 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, with a restricted diet; hemorrhages and cold are to be dreaded; the position, so as that the limb may be inclined upwards, and afterwards, 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 violent diarrhœas, 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.¹

36. Displacement of the spine, if inwards, threatens immediate death, attended with retention of urine and loss of sensibility. Outwards, the accident is free from most of these bad effects, much more so than when 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 hæmoptysis and empyema also take place. The management of this case consists in careful treatment, bandaging according to rule, diet at first restricted, but afterwards 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

¹ This is condensed from § 69 of the work, On the Articulations.

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 afterwards; 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.¹

37. Displacements (*of the vertebræ*) 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 the head. Excurvation, in adults, speedily relieves the individual from the disease he is labouring 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.

38. The rule for the reduction and adjustment:—The axle, the lever, the wedge, pressure above;² 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

¹ This and the next paragraph are taken partly from § 41 of the work, On the Articulations, and partly from the three following paragraphs of the same book.

² See On Fractures, § 31.

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 backwards and downwards, whether the dislocation be inwards or outwards. In lateral displacements, pressure and counter-pressure must be made on the opposite sides. Displacements forwards 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 forwards, the case is taken for dislocation inwards: these fractures heal speedily and easily. Dislocation outwards is to be remedied by succussion, when high up, towards 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 downwards, 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.¹

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 humours descend from the head to the throat, and from the wound in the head to the liver and thigh.²

40. The symptoms of sub-luxations and luxations, and where, and how, and how much these differ from one another. And the cases in which the articular cavity has been broken off, and in which the ligament has been torn, and in which the epiphysis has been broken off; and 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,

¹ The contents of this paragraph are taken from various parts of the works, On Fractures, and On the Articulations, but more especially from § 47 of the latter.

² The greater part of this paragraph is founded on the work, On Injuries of the Head. See Epidem. iv, 19, and vi, 3, for cases of exfoliation of the bones of the nose. These are evidently cases of *malignant* sloughing about the mouth and nose, connected no doubt with the pestilential constitution then prevalent. The notice of this affection, given in the Sixth Book, is to this effect: "In those cases in which the bone of the palate exfoliates, the middle of the nose sinks down; but in those in which the sloughing is about the teeth, the ridge is flattened." At Epid. iv, the case is related more circumstantially.

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 most porous parts heal fastest, and *vice versâ*. 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 backwards 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.¹

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 distension is to be practised 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 towards 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 distension.² 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

¹ The contents of this paragraph are taken from various parts of the works, On Fractures, and On the Articulations.

² This method of treating fractures by continued distension is abridged from Fractures, § 30. See also the figures at the end of this volume.

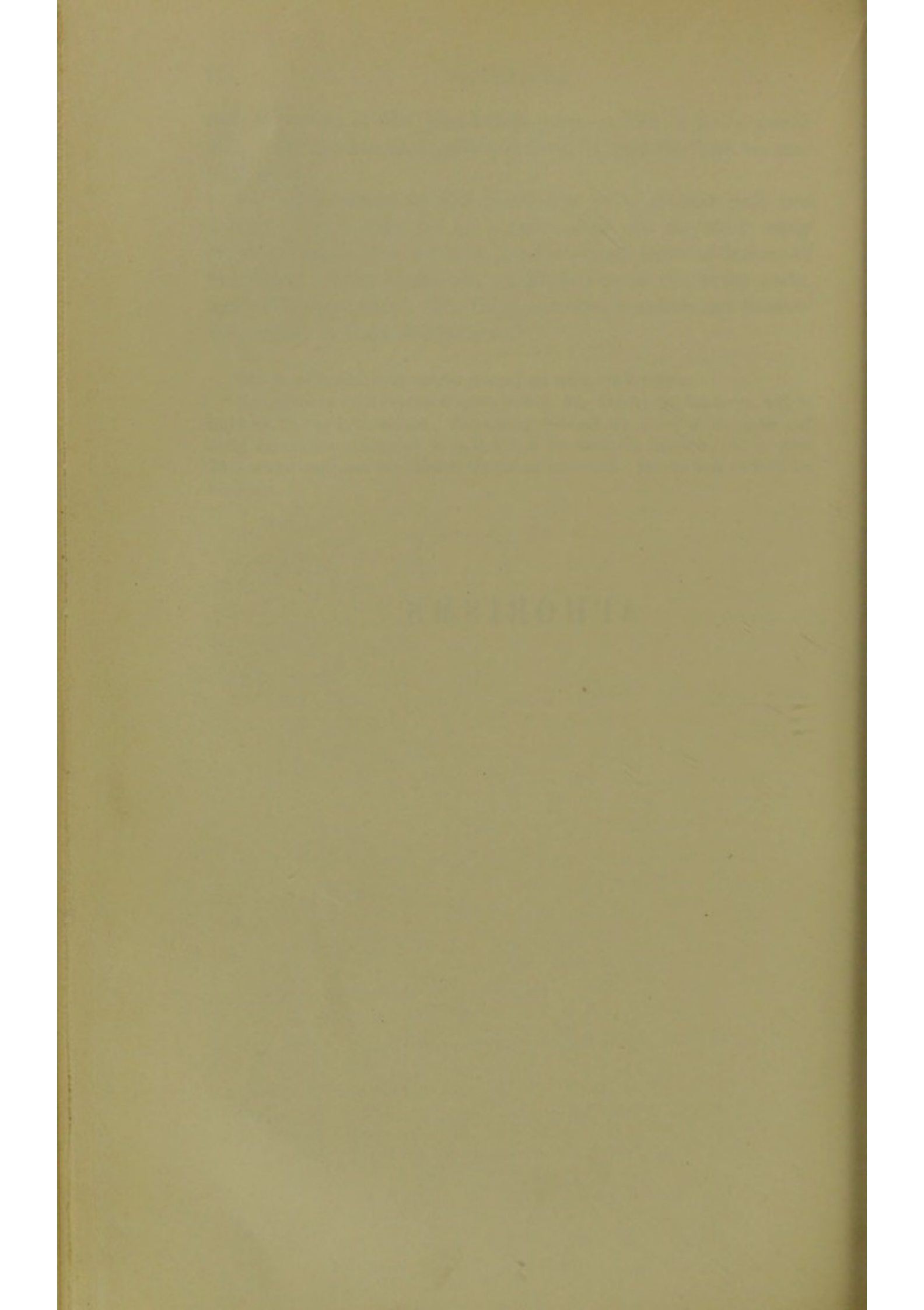
rest, a portion of the part which prevents this is to be sawed off. But the denuded parts will drop off, and the limb become shortened.¹

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.²

¹ This is condensed from various parts of the work, *On Fractures*.

² The opinions here expressed occur both in the treatise *On Fractures*, and in the work *On the Articulations*. The analogy between the joints of the upper and lower extremities is adverted to in §§ 8, 9 of the work, *On Fractures*, and in other parts of that work and the treatise, *On the Articulations*. See the note on § 18, *On Fractures*.

APHORISMS.



APHORISMS.

THE ARGUMENT.

WE now come to the examination of a work so celebrated, that Suidas, who lived more than seventeen centuries after the time of Hippocrates, and no doubt spoke the established opinion of his age, does not hesitate to pronounce it to be "a performance surpassing the genius of man." In short it is a work which, from his own time down to within a very recent period, when ancient authority in medicine came to be unjustly discarded, was always looked upon as being one of the most important productions which have come down to us from antiquity. It has been translated (I believe I may say) into all the learned languages on earth: into the Hebrew, Arabic, Latin, English, Dutch, Italian, German, and French languages; it has been commented upon, from the earliest time down to the present day, by a whole host of commentators, some of whom are remarkable for their learning and practical acquaintance with their profession; and it has been published so frequently, and in so many different forms, that the titles alone of the various editions occupy ten pages in the edition of Littré, and still more in that of Kühn. I shall be readily believed, then, to be sincere, when I state that it is with much diffidence that I approach this part of my task, more especially as every previous attempt to confer upon this great work its proper position in the English literature of medicine has proved a complete failure. Of these insignificant translations into English I have already given some account in the Preliminary Discourse, and I shall now merely state in a few words the plan upon which I myself have proceeded. The work in question being remarkable for condensation of thought and brevity of style, the necessity of some explanatory notes, in

order to adapt the subject-matters to the tastes of modern readers, was felt by me to be so strong, that I resolved upon giving on each of the Aphorisms a brief commentary, founded on a careful study of all the commentaries and annotations which I myself have had an opportunity of consulting. It will be seen that my commentaries are remarkably brief, when their bulk is contrasted with that of many of my predecessors; but I may be permitted to say in this place, that I shall feel much disappointed if it be found that I have not given a sufficient amount of illustration to render the understanding of all parts of the work an easy task to a careful reader. Illustrated in this manner, it is hoped that my readers will find no difficulty in comparing the views of our author with those entertained by the profession at the present time.

I have now to give a general exposition of the nature of the work, and a brief analysis of its contents. First, then, with regard to the nature and scope of the present work: the three ancient commentators, Theophilus, Meletius, and Stephanus,¹ have all virtually given the same definition of what is meant by an aphorism, namely (to give a literal translation of their quaint language), that "it is a succinct saying, comprehending a complete statement," or, in other words, that it is "a saying poor in expression, but rich in sentiment." They say it is called an aphorism because (agreeably to the derivation of the word in Greek) "the thought in every instance is defined and distinctly separated from what goes before and succeeds it." Galen, in like manner, pronounces an aphorism to be "a writing of great power, comprehended in few words," that is to say, in more modern language, that it is a writing remarkable for brevity and point.² With regard to the scope and object of our author in this work, the same commentators do not hesitate to pronounce it to have been to embrace the heads of the whole Art and the operations of Nature, by which is probably meant, to give an exposition in brief terms of all the principles of medicine, physiology, and physical philosophy; for the two latter branches of science were generally held to be inseparably connected with the Art of medicine. Hence the work embraces many things relating to the seasons, the risings

¹ See the edition of their Scholia by Dietz, vol. ii. Regimont. Pruss., 1834.

² Comment. IV, in Diat. Morb. Acut.

of the stars, the nature of waters, the symptoms of disease, and the modes of combating them. Stephanus, in particular, passes a high eulogium on the work, as being useful to the perfect scholar, and to the uninitiated,—to those who have been late in beginning their studies, and to those who have been familiar with them from their youth,—to travellers, and to those who reside in cities,—to men of excellent parts, and to those of obtuse understanding,—to the enterprising and the indolent,—to persons whose knowledge is complete, as putting them in mind summarily of those things which they formerly knew, and to those who are imperfect in knowledge, as giving them in a brief space what had been previously delivered to them in a diffuse style.

From a careful examination of the work, it is not difficult to perceive that our author's object was to collect the conclusions to which his investigations on various subjects had conducted him, or, in other words, to give in a general view all the grand results of his preceding inquiries. That the work in question was the production of his advanced age, is frequently stated by Galen,¹ and, indeed, from the nature of it, we might confidently affirm, that no one could have written it but a person who had been long familiarly acquainted with the phenomena of disease, and had maturely reflected on all the various subjects to which the several books of Aphorisms relate. A very considerable portion of the sentences which occur in it are evidently taken from the treatises with which we have been already occupied, especially 'The Prognostics,' 'On the Articulations,' and 'On Airs, Waters, and Places.' But here, on the outset, we are met with a puzzle, namely, how to account for the books of Aphorisms containing many extracts from works which we have set down as being of a spurious nature? Are these interpolations? or, have these sentences been taken from the books of Aphorisms, and transferred to the other works in which they appear? These are questions, which it is much to be regretted that, in many instances, we have no means of answering in a satisfactory manner. Indeed, it must be admitted that, with the most positive evidence in favour of the general authenticity of the Aphorisms, it is unfortunately but too well

¹ See De Crisibus, i, 6.

ascertained that a certain portion of them are unquestionably interpolations; and of a good many more it is often difficult to pronounce whether they be genuine or not. With these drawbacks, from which it is to be lamented that few works which have descended to us from remote antiquity, are altogether exempt, we must proceed to examine the book as we now possess it, and to give a succinct analysis of its subject-matters.

I must mention, however, in the first place, that the Aphorisms were differently divided by the commentators in ancient times. Thus, Soranus divided them into three sections, Ruffus into four, and Galen into seven. In modern editions they are usually divided into eight sections, but those contained in the last of them are generally admitted to be apocryphal, with the exception of a few which have been added to the seventh section by Foës and Littré.

SECTION I.

The work opens with a memorable Aphorism, in which the author strikingly contrasts the shortness of human life with the prolixity of Art; proclaims the necessity of prompt decision, while he states the difficulty of forming a correct judgment, owing to the fallaciousness of medical experience; and evinces his practical acquaintance with the business of the profession, by announcing that it is not sufficient for the physician to be prepared to do his duties himself, unless he disposes those who surround the patient to cooperate with him in the performance of his task (§ 1).

The following Aphorisms, down to the 20th, relate principally to dietetics, or, at least, they bear more or less upon that subject. In the 2d, it is stated that, as in natural evacuations, if the discharges, whether upwards or downwards, be such as the system requires to get rid of, they do good, and are easily supported, but if otherwise, the contrary is the case; so the same rule applies to evacuations produced by the administration of medicines. The next states the danger of too full and too spare a diet in the persons of the Athletæ, and hence follows the natural conclusion, that a very full or very spare diet is equally dangerous in the case of convalescents (§§ 3, 4, 5). The rules of diet in diseases are next given with great precision; the propriety of using the sparest diet when the disease

is at its acme, is stated; and in particular it is laid down as a general rule, that the administration of food is to be avoided at the stage of the exacerbations in intermittent fevers, attention, however, being paid to the strength of the patient, so that it may not be allowed to sink for want of proper support. See §§ 6, 7, 8, 9, 10, 11. The symptoms by which the exacerbations and remissions of fever may be judged of, are tersely but distinctly stated in § 12. The system of diet best suiting the different ages, founded on the grand principle of the differences of the innate *or* animal heat in youth and old age, are stated in §§ 13, 14, and the regimen befitting the different seasons in § 15. In § 16 is announced the great principle upon which the regimen in acute diseases is to be regulated, namely, that a diluent diet, that is to say, a diet consisting principally of liquids, is the most suitable in all such cases. In the 17th, 18th, and 19th are given some further directions with regard to the times of administering food. One of the rules there laid down, deserves to be kept in constant remembrance: "something is to be conceded to habit, to season, to country, and to age."

The remaining Aphorisms in this section from the 20th to the 25th, relate entirely to purging, the rules of which are here accurately laid down. One of them is most important, namely, that when the strength permits, evacuation in certain cases should be carried the length of inducing *deliquium animi*. (See § 2.)

SECTION II.

The first eight Aphorisms of this section relate principally to the rules of prognosis, especially those regarding sleep, fasting, and repletion, §§ 1-6: then there are two relating to the effect of food in convalescence, which leads to the remark that when food does not recruit the body, we know that evacuation is required (§ 8); and hence our author proceeds to give directions about purgings (§§ 9, 10), and then he remarks upon the mode of recruiting, which he recommends to be done with liquid food (§ 11); and the consequences of allowing the peccant humours to remain in the system are stated in § 12. Next follow two Aphorisms touching the crisis (§§ 13, 14); and afterwards ingenious directions are given for determining

whether an abscess in the throat or elsewhere, be of a local nature, or whether it affect the constitution (§ 15); then follow three Aphorisms regarding hunger and the administration of food in convalescence (§§ 16, 17, 18); with an important advice as to the necessity of being cautious in giving a prognosis in acute diseases (§ 19); in the next (§ 20), is given a statement, not very intelligible, regarding the condition of the bowels in youth and old age; then, after a short aphorism, in which wine is declared to be the cure of hunger (§ 21), the author states the grand rule of all rational therapeutics, namely, that diseases are to be cured by their contraries (§ 22); three Aphorisms (§§ 23, 24, 25) then follow, relative to crises (the 26th, in which the combination of fever with spasms is stated, seems rather out of place); after this there are two Aphorisms, relative to prognostics in febrile diseases (§§ 27, 28); the next two Aphorisms are devoted to the exposition of the times at which remedial measures are to be used in fevers, these are the beginning and decline, avoiding the acme (§§ 29, 30); the two following (§§ 31, 32) relate to the regimen in convalescence; in the next, the importance of a sound intellect and good appetite in all diseases is stated (§ 33); the following one refers to prognostics, and states the comparative immunity from danger in diseases, when they are in accordance with ages, constitutions, and habits (§ 34); the next one relates to the state of the hypochondrium in diseases,—a point in semeiology to which our author paid great attention (§ 35); in §§ 36, 37, the deleterious effects of purgatives, when unseasonably administered, are pointedly declared; in § 38, the propriety of consulting the palate in laying down the rules of regimen is distinctly stated; the comparative effects of diseases on the old and young are given in § 39; and the danger of pectoral complaints in the old are stated in § 40. The danger attending sudden swoonings is proclaimed in § 41, and hence, naturally apoplexy, and the danger with which it is accompanied, form the subject of § 42; probably from some fancied connexion between the subjects, the author next states the appearances from which one may judge whether or not a person who has been strangled may be resuscitated (§ 43). The comparative degree of danger when disease attacks the fat and the lean is declared in § 44. The 45th relates to the influence which

changes of age, place, and circumstances have on epileptics. The 46th contains the announcement of an important principle in the natural treatment of diseases, namely, that a milder attack of pain is obscured by a more severe. The 47th embraces the symptoms which accompany the formation of pus in an abscess; in the 48th is stated the well-known fact of the need of rest in all disorders of the body. The next four relate to changes, and the dangers attending them: the 49th proclaims the effect of habit in making the weak endure more than the strong; the 50th embraces the same subject in a more comprehensive form; in the 51st the danger of sudden changes is depicted; and in the 52d, the medical practitioner is cautioned not to alter his plan of treatment without a suitable indication. The 53d is a repetition of the 20th, and the last proclaims the advantages of tallness in youth, and the disadvantages in old age.

From the outline now given, it will be readily perceived that very important subjects in semeiology, therapeutics, and prognostics, are touched upon in this section, but that it is often difficult to trace any connexion between the different parts of which it is composed.

SECTION III.

This section, as is stated by Theophilus, the Commentator, is principally devoted to two subjects: the one being the temperature of the seasons and the diseases connected with them; and the other, the different ages and the diseases peculiar to them. The first sixteen relate almost entirely to the seasons, and the states of the weather, with the diseases to which they give rise, and the constitutions best and worst adapted to particular seasons. The changes of the seasons, and the changes of the weather in the different seasons, are declared to be the principal causes of disease. Autumn is held to be the most unhealthy of the seasons. The 17th resumes the subject of the effects of the seasons in different states of the health, and in the 18th, 19th, 20th, 21st, 22d, and 23d, the diseases which prevail most in particular seasons are enumerated. The remaining Aphorisms in this section are devoted to the consideration of the diseases peculiarly incident to certain periods of life.

A large portion of the Aphorisms in this section are taken

from the works 'On Airs, Water, and Places,' and 'On Humours,' that is to say, provided the latter be genuine, which is not now generally admitted. If it is not recognised to be genuine, we must suppose that the parallel passages have been transferred from the Aphorisms to the other work.

SECTION IV.

A great portion of this section relates to semeiology, but the first 21 Aphorisms are restricted to the consideration of purgings, and the circumstances under which they are to be performed. In purgings, it is directed (§ 2) to eject only those humours which it is advantageous for the system to get rid of. In summer the system is to be purged upwards, and in autumn downwards (§ 4); and during the great heat of the dog-days, purgings are to be entirely avoided (§ 5); and many directions are given respecting the administration of the hellebores (§§ 13-16).

From §§ 21-28, the prognostics founded on the alvine discharges are given. The dangers attending the evacuations of black bile are strongly stated in §§ 22, 23, 24.

The 29th and 30th relate principally to crises. The 31st, 32d, and 33d contain a statement of the circumstances under which deposits or abscesses take place on particular parts, and the marks by which they are to be recognised. In the 34th and 35th, two acute affections of the neck are noticed in very striking terms. The next three, namely, the 36th, 37th, and 38th, are semeiotic, and relate to sweats. The 39th and 40th are allied to them, and the same subject is resumed in the 41st and 42d. The 43d, 44th, 45th, 46th, and 47th relate to remittent fevers, and the usual terminations and complications of fevers in general. The Aphorisms from §§ 48-74 all relate to the prognostics in fever, and contain many important observations on this subject. A considerable proportion of them are taken from 'The Prognostics,' and 'The Coan Prænotions.' From the 74th to the end of the section, the Aphorisms relate principally to prognostics founded on the appearances of the urine.

From what has now been stated, it will be readily perceived that this section relates mainly to semeiology and prognostics.

SECTION V.

Theophilus, the Commentator, states, in general terms, that our author delivers diagnostic and prognostic rules in this section. It contains a variety of matters, which may be thus arranged. From §§ 1-6, the danger of convulsions from purging by hellebore, from a wound, from loss of blood, from immoderate purgings, and from drinking, is clearly stated. A favorable prognosis is given in the case of persons before puberty who are seized with epilepsy, but an unfavorable, in the case of those who have passed their 25th year (§ 7).

From §§ 8-15, various prognostics relating to empyema and phthisis are given. The danger of the case in which angina passes down to the lungs is strongly expressed (§ 10).

The medicinal effects of heat and cold in a variety of diseases are delivered with much precision from §§ 16-29. The danger of applying snow and ice to the chest is strongly expressed (§ 24); and the benefit of the affusion of cold water in diseases of the joints is stated with much force (§ 25).

Then follows an interesting series of Aphorisms relating to pregnant women, and the diseases of pregnancy, from §§ 28-62. The 63d relates to the causes of impotence in men. The good and bad effects of milk are given in § 64. The 65th relates to the translations of swelling from the external to the internal parts. To this the next two Aphorisms are nearly allied, that is to say, they relate to swellings consequent upon severe wounds. The 68th contains an important rule in therapeutics, namely, that when the back part of the head is pained, it is relieved by bleeding from the frontal vessels. The 69th relates to the rationale of rigors in women and in men. The 70th announces a most important principle in natural therapeutics, namely, that a quartan may prove a cure of convulsions. The 71st relates to the indications from the state of the skin; and the 72d to the nature of jaundice.

SECTION VI.

This section relates principally to a class of cases which, in the ancient system of prognostics, were called superventions.¹ By this term was meant a disease supervening *or* coming on another disease, as a fever upon pleurisy; or a symptom on a disease, as headache on fever; or a disease on a symptom, as dryness on headache; or a symptom on a symptom, as headache on insomnolency. These superventions are scattered over the section, in what would appear to be a disorderly manner, and are also mixed up with other important Aphorisms on totally different subjects. The Aphorisms in the present section, then, do not well admit of any distinct grouping; but M. Littré has attempted an arrangement of them, which I, in part, shall follow.

The first class of superventions contains cases in which the symptom or disease which supervened proved favorable. These are §§ 1, 10, 11, 13, 14, 15, 17, 21, 25, 26, 37, 40, 44, 48, and 51. Of these, some suggest valuable indications as to the proper method of cure, such as (§ 37) that an external swelling coming on in a case of quinsy relieves the latter; and (§ 17) that it is a good thing in ophthalmia when a diarrhœa comes on; and (§ 15) that spontaneous vomiting relieves diarrhœa; and (§ 14) that dropsy is carried off by a watery discharge from the bowels.

The second class contains cases in which the new disease, or symptom proves an aggravation of the disease. These are §§ 3, 16, 35, 42, 43, 54, 56. Of these, some of the most interesting are—(§ 16) that in confirmed pleurisy and pneumonia a looseness of the bowels aggravates the disease; and (§ 43) that dysentery is a fatal disease when it supervenes on enlargement of the spleen.

Of the others it is difficult to give any arrangement; and I shall merely advert to a few which appear to me particularly deserving of notice, such as (§ 5) that one should consider the nature of pains in the side, and other parts of the body, whether they differ from one another; and (§ 7) that pains in the abdo-

¹ A modern writer, Leonard Iacchinus, in his work entitled *Methodus Præcognoscendi*, has an interesting chapter on the *Supervenientia* (c. viii). In a word, this formed a very important part of the ancient system of prognostics.

minal region are formidable in proportion as they are deep seated; and (§ 12) that in removing hemorrhoids, one should be left, as a safety valve, so to speak, to the system; that (§ 18) wounds in certain parts of the body, of which a list is given, are deadly; that (§ 19) bone and certain other structures of the body, when excised, are not restored; that (§ 20) extravasated blood, in certain cavities of the body, becomes purulent; that (§ 27) it is dangerous to evacuate the fluid rapidly in empyema and ascites. In §§ 29, 30, 55 are given some important statements respecting gout. In § 31 there is an important list of all the various remedies for ophthalmy. At §§ 36 and 48 venesection is pronounced to be a remedy in acute pains of the bladder and side. In § 38 the danger of meddling with cancerous diseases is stated. In § 39 the double nature of convulsions is distinctly indicated. In § 47 it is laid down as a rule, that persons requiring bleeding or purging, should be bled or purged in spring. The last two Aphorisms relate to morbus coxarius, and are very interesting, as showing how well acquainted our author was with this disease in all its stages.

SECTION VII.

In this section, also, a large portion of the Aphorisms belong to the class called superventions, namely, from §§ 1-27, 29, 41, 47, 49, 70, 75, 76, 77, 78, 79, 80, 84, 85, 86. It appears, then, that nearly the half partake of this character. In this list it is generally a symptom which supervenes on a disease, as (§ 1) coldness of the extremities on an acute disease; and (§ 3) hiccup on vomiting; or (§ 7) rigor and delirium upon intoxication; and (§ 14) stupor and delirium on injury of the head; and (§ 15) purulent expectoration on hæmoptysis; and (§ 16) purulent expectoration on phthisis.

Another class is mostly prognostic, as §§ 31, 32, 33, 37, 38, 44, 45, 52, 82. Of these, §§ 31, 32, and 33 relate to the characters of the urine in fevers, and are very interesting.

Another class are diagnostic, as §§ 30, 34, 35, 36, 39, 40, 62, and 69.

Other Aphorisms contained in this section are deserving of being well considered, such as §§ 66, 67, 68, 69, in which the importance of attending to the excretions is pointedly stated. In

§ 72, the prognosis founded on coldness of the extremities, while the internal parts are warm, in intermittent fevers, is distinctly pointed out.

Many of the Aphorisms in the latter part of the work are probably supposititious ; and, moreover, they are possessed of little value. The last, as given here, and in the editions of Foës and Littré, is memorable, from its containing a notable statement of the proportional powers of medicines, the knife, and the actual cautery as remedial means.

This, then, is a brief outline of a work which, whether we regard the value of the subject-matters of which it is composed, or the influence which they have exerted on professional practice during a long lapse of ages, may be confidently pronounced to be one of the most remarkable works in the whole compass of Medical Literature. I may be permitted to say further respecting it, that whoever is possessed with any proper degree of liberal curiosity to understand the real state of professional knowledge at the time when its scattered fragments were first embodied into a regular system ; and whoever would wish to have his mind thoroughly imbued with those enduring principles which have formed the groundwork of medical theory and practice during the many revolutions of professional opinions, in the course of the last twenty-four centuries, should give his days and nights to the study of these Aphorisms. But I feel that any formal eulogy on a work of so undisputed a reputation would be entirely out of place ; and that if I were to attempt it, I might be stopped short at once with the pertinent interrogatory, *Quis culpavit ?*

APHORISMS.

SECTION I.

1. LIFE is short, and the Art long; the occasion fleeting; experience fallacious, and judgment difficult. The physician must not only be prepared to do what is right himself, but also to make the patient, the attendants, and externals co-operate.

The exordium of this work bespeaks at once the reflective philosopher and the practised physician. It commences by contrasting the shortness of human life with the extent of the Medical Art, the parts of which, as Theophilus, the commentator, remarks, are diversified, and some of them require long and tedious investigation. "The occasion is fleeting," that is to say, the season during which remedies may be successfully applied is soon past; as the poet says, "fugit irreparabile tempus." Some render this clause by "the time is urgent," and this interpretation is quite apposite. The following clause might be rendered: "experiment is dangerous, and decision is difficult;" and this appears to be the meaning which Galen puts upon it. He remarks that it is evidently hazardous to experiment in a case which involves the life of a human being, and that it is difficult to catch the truth in medicine, as is evident from the circumstance of the profession being divided into so many opposite sects. The last part of the Aphorism evinces how well he had apprehended the difficulties which beset the practitioner of Medicine, who must not only be well acquainted with the part which he himself has to act, but ought also to possess the talent of making the patient, the assistants, and all around, cooperate with him in the performance thereof. The whole of Galen's Commentary on this Aphorism is replete with philosophical reflection, but is written in too diffuse a style for my limits. The same objection partly applies to those of Theophilus, Damascius, and Meletius. Compare Loc. in Hom. l, 1; ib. liv, 1; II Prædict. xix, 13, xxix, 8; I Morb. iv, 1-2; I Morb. Mul. lxvi, 13; Humor. i, 6, 7; Artic. ix, 7; I Epid. ii, 93, 96; VI Epid. ii, 78-82.¹

2. In disorders of the bowels and vomitings, occurring spontaneously, if the matters purged be such as ought to be purged, they do good, and are well borne; but if not, the contrary. And so artificial evacuations, if they consist of such matters as should be evacuated, do good, and are well borne; but if not, the contrary. One, then, ought to look to the country, the season, the age, and the diseases in which they are proper or not.

I need scarcely remark, that this Aphorism consists of two divisions: in the former of these the effects of natural, that is to say, spontaneous evacuation, are described; and in the latter, those of artificial, that is to say, such as are produced by medicinal

¹ The reader is requested to observe that in the Annotations on the Aphorisms the references, for convenience sake, are all made to the edition of Van der Linden, unless otherwise stated.

means. I have adopted the interpretation approved of by Galen, about the correctness of which I cannot entertain a doubt. The last clause of it contains a precept which is evidently of great importance in medical practice, and yet I fear it is often overlooked at the present day. We now seldom find the question mooted whether or not it be safe to practise severe evacuations in hot seasons or in hot countries; in a word, we forget the precept of Hippocrates, who directs us "to look to the country and to the season." A few years ago it was the fashion in this country for us to deride the Italian physicians because they would not bleed *heroically*, as was the practice with us. Now, we are obliged to admit that the Italians were not so far wrong as we supposed, and that their practice was adapted to their own climate. They had not forgot the rule laid down by their ancient countryman: "differunt pro natura locorum genera medicinæ." (Celsus, Præf.) Compare Aphor. i, 25; Humor. ii, 49; VI Epid. iv, 30.

3. In the *athletæ*, *embonpoint*, if carried to its utmost limit, is dangerous, for they cannot remain in the same state nor be stationary; and since, then, they can neither remain stationary nor improve, it only remains for them to get worse; for these reasons the *embonpoint* should be reduced without delay, that the body may again have a commencement of reparation. Neither should the evacuations, in their case, be carried to an extreme, for this also is dangerous, but only to such a point as the person's constitution can endure. In like manner, medicinal evacuations, if carried to an extreme, are dangerous; and again, a restorative course, if in the extreme, is dangerous.

In the Life of Hippocrates we have stated that he was initiated in medicinal gymnastics under Herodicus; in this school, then, it is to be supposed that he learned the facts which he enunciates in this Aphorism. The two following modern authors have written very learnedly on the gymnastics of the ancients: Hieron. Mercurialis (*de Arte Gymnast. Veter.*); Schulze (*Hist. Med., and de Athletis Veterum*). Hippocrates evidently points out what happens in the case of the *athletæ*, as a lesson, to show the dangerous effects of repletion; he also takes occasion to state the danger of carrying depletion to an extreme. About the meaning of the different parts of this Aphorism there can scarcely be any doubt; and none of the commentaries, ancient or modern, supply much interesting information under this head. Compare IV Morb. xi, 15, 16; Aphor. ii, 51; Vet. Med. xviii, 1; Viet. Acut. xvii, 10; and Celsus, ii, 2.

4. A slender and restricted diet is always dangerous in chronic diseases, and also in acute diseases, where it is not requisite. And again, a diet brought to the extreme point of attenuation is dangerous; and repletion, when in the extreme, is also dangerous.

As Galen, in his Commentary, remarks, our author, having pointed out the dangerous effects of too great repletion and depletion on the health, in the present Aphorism defines the effects of a slender, an extremely spare, and a full diet, in diseases. Any difficulty which the reader may meet in this Aphorism, he will find cleared up satisfac-

torily by Heurnius and Berends, in their very sensible Commentaries on the Aphorisms of Hippocrates. Compare *Vict. Acut.* xx, 6, 7; *Aph.* vi, 39; and *Celsus*, iii, 2.

5. In a restricted diet, patients who transgress are thereby more hurt (than in any other?); for every such transgression, whatever it may be, is followed by greater consequences than in a diet somewhat more generous. On this account, a very slender, regulated, and restricted diet is dangerous to persons in health, because they bear transgressions of it more difficultly. For this reason, a slender and restricted diet is generally more dangerous than one a little more liberal.

There have been different interpretations of the first clause of this Aphorism, but I am satisfied that Galen and Theophilus are correct in explaining it as I have rendered it, namely, that a patient who is put upon too strict a regimen is apt to transgress the rules prescribed to him, and in this way he is more injured than if he had been allowed a fuller diet. Damascius also understands Hippocrates to mean that when patients are much restricted as to regimen, they are apt to deceive their physicians, and to take things that are very prejudicial to them. Lefebure, however, understands Hippocrates to mean that the physician commits a mistake by putting his patient upon too restricted a diet, whereby he suffers. As I have stated, however, I prefer the interpretation given by the old commentators, to which, I should mention, Bosquillon also inclines. With regard to the meaning of the latter part of the Aphorism, and the correctness of the opinions there stated, there can, to my mind, be no question. On the propriety of using a varied regimen, see *Celsus*, i, 1. Compare *Vet. Med.* xv, 9-14; *Vict. Acut.* xx, 6, 7, 11.

6. For extreme diseases, extreme methods of cure, as to restriction, are most suitable.

By extreme diseases it will be readily understood is meant, extremely acute, as is explained by Galen, Theophilus, Damascius, and Stephanus. By extreme methods of cure these commentators all understood an extremely restricted regimen. Heurnius, however, gives a wider latitude to our author's rule of practice, and understands him to mean that, in very dangerous diseases, the physician is warranted in using "*diæta quam tenuissima, pharmacia exquisita, et crudeli chirurgia.*" This mode of interpretation is ingenious, but it is unsupported by any of the ancient medical authorities, who may be supposed the best judges of our author's meaning. At the same time it must be admitted that Cicero seems to have adopted this interpretation; for it would appear to be this passage which he alludes to (*de Officiis*, i, 24). Our earlier modern authorities in surgery also adopted this interpretation. See Angelus Bologninus, *de Ulcer.* Compare, further, *Loc. in Homin.* xxxvi, 14, lv, 7-11; *Artic.* i, 9.

7. When the disease is very acute, it is attended with extremely severe symptoms in its first stage; and therefore an extremely attenuating diet must be used. When this is not the case, but it is allowable to give a more generous diet, we may depart as far from the severity of regimen as the disease, by its mildness, is removed from the extreme.

The meaning here seems quite obvious, and the rule of practice judiciously laid down. The ancient commentators agree in explaining "a very acute disease" to mean one that is finished in four days. As Galen remarks, inflammations and fevers are the classes of disease principally comprehended under this order. Compare Aph., iv, 10; I Epid., iii, 29, 33; II Epid., i, 24; Celsus, iii, 6.

8. When the disease is at its height, it will then be necessary to use the most slender diet.

Theophilus, in his Commentary, remarks, that there are four stages of a disease: the beginning, the increase, the height (*or* acme), and the decline. That there ought to be least food administered when the disorder of the system is at its height, and consequently when the body is in the worst possible condition to digest it, is evidently a proper rule of practice, and consistent with reason. Compare Aph. ii, 28; Vict. Acut. xvii, 11, xx, 1-6.

9. We must form a particular judgment of the patient, whether he will support the diet until the acme of the disease, and whether he will sink previously and not support the diet, or the disease will give way previously, and become less acute.

This Aphorism is evidently a corollary, as it were, to the preceding one, indeed, the two are joined together by Dietz along with the commentaries of Damascius and Theophilus. As the former of these remarks, when the physician calculates that the strength of the patient will not endure through all the stages of the disease, it is evidently his duty to give a more nourishing diet than would otherwise be allowed. Berends, in his Commentary, draws attention to the term here used by our author (*συντεκμαίρεσθαι*), the meaning of which rests on the distinction between a general symptom (*σημῖον*) and a special one (*τέκμαρσις*). The physician, then, is supposed to form his judgment in this case from his knowledge of the peculiar constitution of his patient. From this we see the importance of a physician being well acquainted with the habits and constitution of his patient. This is very pointedly stated by Celsus in his Preface. (See p. 16, ed. Milligan.) Compare Vict. Acut. xix, 5-10; Aph. i, 23; Humor. iii, 87.

10. In those cases, then, which attain their acme speedily, a restricted diet should be enjoined at first; but in those cases which reach their acme later, we must retrench at that period or a little before it; but previously we must allow a more generous diet to support the patient.

The meaning here is so obvious, that even Galen is very brief under this head. Damascius states that it was considered to be an early acme when it happened during the first seven days. Compare Vict. Acut. xix, 8, 9; Affect. xlii, 3.

11. We must retrench during paroxysms, for to exhibit food would be injurious. And in all diseases having periodical paroxysms, we must restrict during the paroxysms.

This rule follows, as a natural consequence, from Aphor. i, 7. I would beg here to refer the reader to the admirable chapter of Celsus, On Regimen in Fevers, iii, 4.

See, further, Aph. i, 19; Nat. Hom. xviii, 30, 31; Humor., iii, 82; Loc. in Hom. xxxix, 1; Affect. xlii, 3, lii, 14.

12. The exacerbations and remissions will be indicated by the diseases, the seasons of the year, the reciprocation of the periods, whether they occur every day, every alternate day, or after a longer period, and by the supervening symptoms; as, for example, in pleuritic cases, expectoration, if it occur at the commencement, shortens the attack, but if it appear later, it prolongs the same; and in the same manner the urine, and alvine discharges, and sweats, according as they appear along with favorable or unfavorable symptoms, indicate diseases of a short or long duration.

The general meaning here is obvious, although there be differences of opinion respecting certain terms which are used in this Aphorism. On them see, in particular, Heurnius and Berends, by which I have been assisted in making my translation. That the changes in any disease are to be calculated from the nature of the disease, and from the symptoms which come on in its later stages (the *epiphænomena*, the superventions of our author), seems quite clear. Galen's lengthy and elaborate Commentary on this head may be read with some advantage, although one cannot see much necessity for it, seeing that the meaning is sufficiently transparent without such illustration. Compare II Epid. i, 26-30; Aph. v, 8, 15; Prænot. xiii, 1, 12, xiv, 12; Coac. iii, 132, 143; III Morb. xxi, 33, 34.

13. Old persons endure fasting most easily; next, adults; young persons not nearly so well; and most especially infants, and of them such as are of a particularly lively spirit.

This Aphorism is beset with considerable difficulties. Celsus would appear, at first sight, to controvert decidedly the rule laid down by Hippocrates. He says, "*quod ad ætates vero pertinet, inedia facillime sustinent mediæ ætates, minus juvenes, minime pueri et senectute confecti.*" (i, 3.) In fact, it stands to reason, and is conformable to common experience, that persons in extreme old age could not long endure a total abstinence from food; for, as the poet Sophocles beautifully expresses it, "a slight turn of the scale settles aged persons (*σικκρὰ παλαιὰ σώματ' ἐννάζει ροπή*," *Æd. Tyr.* 961). Berends thinks the view which Galen takes of our author's meaning is the only one which solves the difficulties. Galen holds that Hippocrates did not mean "total abstinence from food," but merely "a spare diet," and by "aged persons," that he did not understand "persons in extreme old age," but "persons of advanced years." I am inclined to adopt this interpretation. Sanctorius, however, (Aph., i, 83) and Kaau Boerhaave (*Persp. Dict. Hippocrat.*) held that it is true that old men bear fasting better than men at any other age.

14. Growing bodies have the most innate heat; they therefore require the most food, for otherwise their bodies are wasted. In old persons the heat is feeble, and therefore they require little fuel, as it were, to the flame, for it would be

extinguished by much. On this account, also, fevers in old persons are not equally acute, because their bodies are cold.

This Aphorism contains the physiological explanation of the facts assumed in the preceding one; namely, that the vital flame, so to speak, is strongest in growing bodies, and gradually becomes weaker as life advances, until in extreme old age it becomes quite feeble. I refer the reader to what I have stated in the Third Section of the Preliminary Discourse, on the connexion between heat and vitality. The ancient philosophers all held that every animal and vegetable substance is endued with a *calidum innatum*, which serves as the first instrument by which its vital operations are performed. On this physiological opinion Galen has written with great ingenuity and earnestness, more especially in his Commentary on this Aphorism, and in his work, Against Lycus. (Opera, tom. v, 329; ed. Basil.) The term *calidum innatum* occurs frequently in the works of Harvey and his contemporaries. We now use "animal heat" in place of it, as applied to animals; but we seem to want a term to comprehend the corresponding tepidity of vegetables. It is to be regretted, in short, that physiologists should have dropped the use of the term "*calidum innatum*." On this subject, one of the best works which the reader can consult is the one entitled *Perspiratio dicta Hippocrati*, of Kaau Boerhaave. Compare *De Arte*, xxii, 2; *I Diet.* xxviii, 5, 6, 7; *Nat. Human.* xxiv, 7, 8; *Aph.* iii, 7; *I Morb.* xx, 15, 16, xxi, 16.

15. In winter and spring the bowels are naturally the hottest, and the sleep most prolonged; at these seasons, then, the most sustenance is to be administered; for as the belly has then most innate heat, it stands in need of most food. The well-known facts with regard to young persons and the *athletæ* prove this.

This Aphorism, in like manner, turns upon the ancient doctrine of *calidum innatum*, which, according to Hippocrates and the other authorities, is most abundant in winter and spring; and hence the greatest supply of food is required at these seasons. In confirmation of the opinions here stated, he appeals to the well-known facts in reference to infants and the *athletæ*, who, being possessed of a large amount of the *calidum innatum*, require a corresponding supply of food. Berends' Commentary on this Aphorism is very sensible and instructive. Compare *Humor.* v, 4; *Aër.*, *Aq.*, *Loc.* ii, 2; *Aphor.* i, 18; *Salubr. Diet.* i, 2, 26; *IV Morb.* xvii, 9.

16. A humid regimen is befitting in all febrile diseases, and particularly in children, and others accustomed to live on such a diet.

That a humid or diluent diet is the kind best adapted for febrile diseases, is an important conclusion derived by our author from his disquisition, On the Regimen in Acute Diseases. I need scarcely remark that it is one of the most important facts in the practice of medicine. It is well expressed by Celsus: "*Cibus autem febricitantibus humidus est aptissimus, aut humori certe quam proximus,*" &c. (iii, 6.) The rationale of this practice, according to Galen, is, that a fever being an affection of a hot and dry nature, the proper indication in the cure of it is to administer things of a cooling and humectating nature. Galen informs us that some of the adversaries of Hippocrates objected to this Aphorism as not containing a truth of general appli-

cability, since, as they argued, such a regimen would be very improper in fevers of a dropsical nature; but, as Berends justly remarks, modern experience in the treatment of dropsy is quite in favour of the diluent treatment even in that case. Compare *Insomn.* xv, 12, 15, 16, 17; *III Morb.* xxxi, 11; *Salubr. Diæt.* ii, 5, 11.

17. We must consider, also, in which cases food is to be given once or twice a day, and in greater or smaller quantities, and at intervals. Something must be conceded to habit, to season, to country, and to age.

In the work, *On Ancient Medicine*, our author adverts to the differences which prevail in regard to the number of meals among persons in good health. He seems here to lay it down as a rule, that attention should be paid to the habit in administering food to persons in disease. Compare *Vict. Acut.* v, 19, 20, xix, 6; *Vet. Med.* xviii, 4; *III Diæt.* i, 10.

18. Invalids bear food worst during summer and autumn, most easily in winter, and next in spring.

There will be little doubt, I suppose, that the opinion here stated is well founded. This Aphorism is nearly allied to the fifteenth; indeed Theophilus informs us that some had held it to be merely a repetition of that Aphorism. Compare also, *Humor.* viii, 24; and *Celsus*, i, 3.

19. Neither give nor enjoin anything to persons during periodical paroxysms, but abstract from the accustomed allowance before the crisis.

This Aphorism is so like the eleventh, that I am much disposed, with Lefebure and Berends, to set it down as an interpolation. Galen and Heurnius attempt to make out a distinction, but it is not obvious after all. See also, *Humor.* viii, 24.

20. When things are at the crisis, or when they have just passed it, neither move the bowels, nor make any innovation in the treatment, either as regards purgatives or any other such stimulants, but let things alone.

Our author, it will be seen, here recommends the expectant method, when things are at a crisis. It would be difficult to controvert this practice even at the present day. By other stimulants, he means clysters and suppositories. Compare *Humor.* iii, 83; *Nat. Hum.* xix, 8.

21. Those things which require to be evacuated should be evacuated, wherever they most tend, by the proper outlets.

That is to say, by the stomach, or bowels, or uterus. See the Commentaries of Galen and Theophilus; also *Humor.* i, 2, 24, iii, 85; *VII Epid.* xxxii, 4; *Aph.* vii, 61.

22. We must purge and move such humours as are concocted, not such as are unconcocted, unless they are struggling to get out, which is mostly not the case.

The only difficulty in this Aphorism is about the expression, which I have rendered "struggling to get out" (*ὁρῶντι*). As Galen explains, its original meaning

is "in a state of orgasm," that is to say, in a state of excitement and irritability, or in a turgid state. See Heurnius and Berends; also Humor. iii, 84; Aph. iv, 13, vii, 68.

23. The evacuations are to be judged of not by their quantity, but whether they be such as they should be, and how they are borne. And when proper to carry the evacuation to *deliquium animi*, this also should be done, provided the patient can support it.

I need scarcely remark that this is a very important rule of practice, and one that deserves to be maturely weighed and comprehended. The commentators attempt to define the cases in which evacuation is to be carried the length of inducing *deliquium animi*. They instance strong inflammations, violent fevers, and very severe pains. See the Commentaries of Galen, Theophilus, and Damascius. It will be remarked that our author guards his recommendation of this practice by restricting it to those cases in which the powers of the patient are sufficient to support it. The commentators understood that the evacuation here meant is venesection, but I incline to think it is purging by drastic medicines. This Aphorism seems to be taken from the work, On Humours, iii, 86, 87. See also, Aph. i, 25; Loc. in Hom. xxxix, 9; Vict. Acut. lii, 8, 9; II Morb. Mulier. xxix, 9.

24. Use purgative medicines sparingly in acute diseases, and at the commencement, and not without proper circumspection.

This rule of practice here laid down is a natural inference from Aphor. xxii; indeed Berends arranges this Aphorism immediately after it. Galen admires our author's cautious spirit in forbidding purging altogether in acute diseases, unless when proper circumspection has been used. He seems to lay it down as a rule that we are to purge only when we have reason to believe that more good will be derived from the evacuation of the offending matters, than harm from the administration of the purgative medicines. This seems a very safe and sensible rule; but, I need scarcely remark, that we are now much bolder in the use of purgative medicines; and accordingly Berends seems at a loss to decide in this case between modern usage and the authority of Hippocrates. This Aphorism is in accordance with Humor. iii, 97. See Purg. iv, 1, v, 4; Aph. i, 22; I Morb. Mul. xxiii, 9.

25. If the matters which are purged be such as should be purged, the evacuation is beneficial, and easily borne; but, if otherwise, with difficulty.

All the commentators point out the resemblance between this and the second Aphorism. Although certainly in so far a repetition, it is evidently, as stated by Galen, a timely remembrancer, in this place, of a truth formerly announced and applying to the present occasion. There can be no doubt that, in this place, it forms an excellent conclusion to the four preceding Aphorisms on the use of purgative medicines. Compare further, Humor. ii, 49; VI Epid. iv, 30.

SECTION II.

1. In whatever disease sleep is laborious, it is a deadly symptom ; but if sleep does good, it is not deadly.

The meaning of "laborious," as an epithet to sleep, Galen remarks, is clearly indicated by the last clause of the sentence to which it is a contrast. As the meaning there is clearly stated to be "to do good," there can be no doubt that, in the former clause, it signifies "to do harm." The term "deadly," too, it deserves to be remarked, is only a strong expression for "dangerous." This is pointed out by Galen, Foës, and Berends. Galen acutely remarks further under this head, that sleep, being sometimes the commencement of coma in disease, is, in such a case, the very reverse of a favorable symptom. He further explains the cause of sleep having these effects, upon physiological principles: the innate heat, he remarks, being more concentrated inwardly during sleep, if it does not do good, it must necessarily do harm. I Epid. iii; Æg. vii, 83; II Epid. iii, 12; Aph. iv, 67; I Prædict. xv, 5, 17; VI Epid. viii, 5.

2. When sleep puts an end to delirium, it is a good symptom.

As remarked by Galen and the others, the truth embodied in this Aphorism follows naturally from the preceding one. Lefebure mentions an addition to this Aphorism, which is found in certain MSS. to this effect: "but when it increases (the delirium), it is deadly"—ὅσον δὲ παρέχει, θανατωδές. This reading does not appear to be recognised by any of the ancient commentators, and therefore it may be regarded as an interpolation. Compare I Epid. iii; Æg. vii, 13, 16; II Epid. iii, 11, 12; also Celsus, iii, 18.

3. Both sleep and insomnolency, when immoderate, are bad.

Few experienced physicians will be disposed to question the opinion here stated, and yet Galen informs us that some of the commentators had denied that sleep could ever be a symptom of bad omen. Galen and the other commentators hold that sleep is produced by the cooling of the first sensorium, that is to say, of the brain, and insomnolency by a heated state of the same. This physiological dogma seems plausible, and our modern physiologists have neither confirmed nor controverted it. Compare Aph. vii, 71; Humor. iii, 78; I Coac. ii, 35; VI Epid. vi, 6.

4. Neither repletion, nor fasting, nor anything else, is good when more than natural.

The propriety of the rule "ne quid nimis" will, of course, not be questioned. I need scarcely remark that it is a truth which the poets have frequently proclaimed to mankind. Compare VI Epid. viii, 16; II Morb. xvi, 13; Aph. ii, 21, 61; Vet. Med. xv, 13, 15.

5. Spontaneous lassitude indicates disease.

This Aphorism announces an important and now generally admitted fact. On the kinds of lassitude described by the ancient authorities, see PAULUS ÆGINETA, Book I, 22, Syd. Soc. edit.

6. Persons who have a painful affection in any part of the body, and are in a great measure insensible of the pain, are disordered in intellect.

This also is the announcement of an important and unquestionable fact. Galen instances erysipelas, inflammation, a wound, a bruise, a rupture, and a sprain, as cases in which it is an unfavorable symptom when the patient does not feel pain, and when delirium may accordingly be apprehended. Compare Celsus, ii, 2, 7.

7. Those bodies which have been slowly emaciated should be slowly recruited; and those which have been quickly emaciated should be quickly recruited.

This appears a very judicious rule of practice, the rationale of which, as pointed out by Berends, seems to be, that, in emaciation resulting from acute disease, the digestive functions are only impaired for a time; whereas in chronic, the depravation of them is of a more inveterate character. The ancient commentators have nothing interesting under this head. Compare Aliment. xi, 6, 7; Aph. ii, 11, 18.

8. When a person after a disease takes food, but does not improve in strength, it indicates that the body uses more food than is proper; but if this happen when he does not take food, it is to be understood that evacuation is required.

That there have been differences of opinion regarding the text and import of this Aphorism, may be seen upon consulting the Commentaries of Galen and Berends, and the note of M. Littré. It appears to me that our author evidently refers to the treatment of the depraved appetite, and anorexia of convalescents. Compare Aph. ii, 22, 31; Coac. i, 179; Aph. iv, 41, 45, vii, 64.

9. When one wishes to purge, he should put the body into a fluent state.

That is to say, the body should be put into a state to admit readily of evacuations. For this purpose Galen mentions hydromel, in which some hyssop, marjoram, or the like, has been boiled. He arranges this Aphorism immediately before the last of the first section, as well as here. Theophilus says the body is to be prepared for evacuations by giving attenuant and emollient articles. Compare Aph. iv, 13, vii, 70; IV Morb. ix, 1; also Celsus, iii, 18.

10. Bodies not properly cleansed, the more you nourish the more you injure.

The meaning here is clear, and the rule of practice unexceptionable. Compare Aph. vii, 65, 67; Vet. Med. xii, 11, 12, xix, 10-14, &c.

11. It is easier to fill up with drink than with food.

The meaning is, that it is easier to recruit an emaciated body with liquid than with solid food. Among liquid articles of food Galen enumerates particularly thick and red wines. Berends has a most interesting Commentary on this Aphorism, but I regret that it is too bulky for my limits. See also, Vet. Med. xii, 3, 9; Aliment. xi, 5.

12. What remains in diseases after the crisis is apt to produce relapses.

That relapses are to be apprehended when the body is left in an unsound state by the illness, is sufficiently obvious. Compare Humor. vii, 16, 17; II Epid. i, 81, iii, 72.

13. Persons in whom a crisis takes place pass the night preceding the paroxysm uncomfortably, but the succeeding night generally more comfortably.

That a crisis is preceded by disturbance in the system is remarked by all the later authorities. See in particular PAULUS ÆGINETA, Book II, 10. This truth is illustrated by an example related in the VI Epidem. ii, 42. Galen informs us that the last part of the Aphorism was wanting in certain copies. Celsus gives a version of the whole sentence (iii, 5). See further, I Epid. iii; Æg. vii, 13; III Epid. iii, 66.

14. In fluxes of the bowels, a change of the dejections does good, unless the change be of a bad character.

Heurnius and Prosper Martian understand this Aphorism as referring to critical diarrhœas. When these, then, are of varied characters, they purge the body the more effectually. The bad characters of the dejections are minutely given in the Prognostics (10), and Aphor. iv, 21.

15. When the throat is diseased, or tubercles (*phymata*) form on the body, attention must be paid to the secretions; for if they be bilious, the disease affects the general system; but if they resemble those of a healthy person, it is safe to give nourishing food.

Upon reference to the Commentary of Berends and the notes of Heurnius, it will be seen that there have been different readings and interpretations of this Aphorism. Heurnius supposes that allusion is here made to critical abscesses in the parotid gland, of which an interesting description is given in the Third Book of the Epidemics. I am inclined to think that our author merely means to state the symptoms by which it may be determined whether glandular swellings about the neck be of a local nature, or whether they are connected with constitutional disorder. A better rule for solving this question cannot well be imagined than to pay attention to the characters of the secretions; for by attending to this direction one need seldom commit mistakes in such a case. See further, Aph. iii, 26.

16. When in a state of hunger, one ought not to undertake labour.

This Aphorism is well rendered by Celsus: "Si quibus de causis futura inedia est, labor omnis vitandus est." (i, 2.) Galen very ingeniously applies this rule to the treatment of invalids, and infers from it that when the system is debilitated from want of food, it is unsafe to pursue any active treatment, such as venesection, purging, vomiting, or any other means which would produce a great change in the body. He praises Hippocrates for always attending to the preservation of the vital powers.

17. When more food than is proper has been taken, it occasions disease; this is shown by the treatment.

Galen, in a lengthy and very elaborate Commentary, gives what he holds to be the meaning of this Aphorism, namely, that it is meant as a particular illustration of the general truth announced in the fourth Aphorism of this section, and that it is intended to teach that too much food, like too much of anything, is hurtful to the body, and that this is shown by the mode of cure, which consists in evacuation. Heurnius thinks that it applies to the regimen of convalescents. Lefebure emends the text, and instead of *νοῦσον ποιεῖ* reads *ναυσίην ποιεῖ*, and for *ἰησις* reads *ἰνῆσις*, "inanition." He would then translate it thus: "when too much food is taken, it induces nausea; inanition shows this." I see no reason for departing from the interpretation given by Galen, which is adopted by Theophilus and Damascius. Compare Aph. ii, 22; Vet. Med. viii, 16, xii, 10, xiii, 11, 24, xix, 6, 31; I Diæt. xxx, 15; III Diæt. xv, 16; Loc. in Hom. lii, 8, 9.

18. From food which proves nourishing to the body either immediately or shortly, the dejections also are immediate.

Galen and the other Greek commentators understand this Aphorism to mean, that as liquid food, and especially wine, is soon digested and furnishes nourishment to the body, so is it speedily evacuated; whereas solid food, such as beef and shell-fish, as it is slowly digested, so is it also slowly evacuated. This would appear to me to be decidedly the meaning. For the interpretation of Lefebure, see Berends's Commentary. Compare Aliment. xi, 4, 5; VI Epid. v, 37, 53.

19. In acute diseases it is not quite safe to prognosticate either death or recovery.

Dr. Rush gives a similar advice to young practitioners of the Art; that is to say, not to treat any febrile case as being slight, nor abandon any one as hopeless. No doubt it is a prudent maxim. Compare Decent. Ornat. x, 7, 8; and Celsus, ii, 6.

20. Those who have watery discharges from their bowels when young have dry when they are old; and those who have dry discharges when they are young will have watery when they are old.

Galen and the other Greek commentators wrote very long dissertations on this Aphorism, which, however, enunciates as a general fact what will scarcely be admitted as such by any experienced physician of the present day. Lefebure accordingly rejects it entirely as unworthy of the great Hippocrates. See further Berends. It is evidently closely connected with Aphorism 53 of this section.

21. Drinking strong wine cures hunger.

By hunger, in this place, Galen, Theophilus, and Damascius understand an abnormal appetite for food. Galen, however, does not approve of restricting the term hunger here to the signification of bulimia. That strong wine, when drunk, removes hunger, all are agreed. See Celsus, i, 3.

22. Diseases which arise from repletion are cured by depletion; and those that arise from depletion are cured by

repletion; and in general, diseases are cured by their contraries.

That diseases are cured by their contraries—or as it is expressed in Latin, “*contraria contrariis curantur*,” is a general rule frequently announced in the Hippocratic works, as in the treatise, *De Locis in Homine*. See the notice of that work in the Preliminary Discourse. That this rule is announced here would appear probable to me, but Berends is not satisfied with this interpretation. See his Commentary. See further, *Nat. Human.* xvii, 11, 12, 13; *San. tuend. ad Dem.* 8; *VI Epidem.* viii, 16; *I Aph.* ii, 8; *Flat.* ii, 9-16, iii, 2, 3.

23. Acute diseases come to a crisis in fourteen days.

We have here a distinct definition of what is meant by an acute disease, and of the time within which it will come to a crisis. See further, *Aph.* ii, 9; *Judicat.* iv, 12; *Coac.* i, 190, 211.

24. The fourth day is indicative of the seventh; the eighth is the commencement of the second week; and hence, the eleventh being the fourth of the second week, is also indicative; and again, the seventeenth is indicative, as being the fourth from the fourteenth, and the seventh from the eleventh.

For the ancient opinions on the Critical Days, see *PAULUS ÆGINETA*, Book II, 7, *Syd. Soc. edit.* Compare *Aph.* iv, 36, 71; *Sept.* viii, 6; *Judicat.* ii, 7-12; *Prænot.* xx, 5-10; and *Celsus*, iii, 4.

25. The summer quartans are, for the most part, of short duration; but the autumnal are protracted, especially those occurring near the approach of winter.

That summer fevers are generally short and mild is a well-known fact, at least with respect to those of warm climates. Compare *Nat. Human.* xxix, 5, 6, 7; *I Epid.* iii, 17; *Coac.* i, 236.

26. It is better that a fever succeed to a convulsion, than a convulsion to a fever.

Galen and the other commentators explain the rationale of this rule as follows: Convulsions are connected either with repletion or inanition; when, then, in the former case, a convulsion takes place, a fever succeeding removes the thick humours which occasioned the convulsion, and in so far proves beneficial; whereas, in the latter case, when a convulsion seizes the body in a debilitated state from the fever, it is likely to prove fatal at once. Compare *Coac.* i, 232, iii, 80, 82; *I Morb.* vi, 13, 14; *San. tuend. ad Dem.* 10.

27. We should not trust ameliorations in diseases when they are not regular, nor be much afraid of bad symptoms which occur in an irregular form; for such are commonly inconstant, and do not usually continue, nor have any duration.

The meaning here is sufficiently obvious. Heurnius, although a remarkably good

expounder of our author's sense in most cases, gives a most absurd interpretation of the first clause of this Aphorism, as if it were meant to exclude the use of amulets, and other superstitious modes of working upon the imagination, which, although they produce a temporary amendment, are not followed by any good consequences. This interpretation is altogether fanciful. Our author, like a man of sense and experience, merely warns the physician not to form a wrong judgment in febrile cases from any irregular symptoms, either good or bad, which may come on. Compare I Prædict. vi, 16, vii, 7; II Prædict. xxix, 6; Coac. i, 73, iii, 100, 109, 110; II Epid. iii, 132.

28. In fevers which are not altogether slight, it is a bad symptom for the body to remain without any diminution of bulk, or to be wasted beyond measure; for the one state indicates a protracted disease, and the other weakness of body.

The Greek commentators explain the facts here stated thus:—When the body is not wasted in proportion to the severity of the fever, this proceeds from the thickness of the morbid particles, or the condensation of the patient's cuticle; and, on the other hand, when the emaciation is rapid, it is connected with thinness of the humours and rarity of the skin, either of which conditions is obviously unfavorable. Celsus renders these rules as follows:—He ranks it among the symptoms of a protracted fever, "*ubi æger pro spatio parum emacrescit*," (ii, 5); and says elsewhere, "*mali etiam morbi signum est, nimis celeriter emacrescere*." (ii, 4.) Compare Humor. iii, 17; Aph. v, 55; Humor. iii, 52; also Celsus, ii, 2.

29. If it appear that evacuations are required, they should be made at the commencement of diseases; at the acme it is better to be quiet.

The rationale of this rule of practice is sufficiently explained in the next Aphorism. Compare Aph. i, 24, ii, 30; Loc. in Hom. xxxviii, 9, 10, 11; Purgant. iv, 1.

30. Towards the commencement and end of diseases all the symptoms are weaker, and towards the acme they are stronger.

The facts here stated are so obvious, that even Galen dismisses this Aphorism with a very brief Commentary.

31. When a person who is recovering from a disease has a good appetite, but his body does not improve in condition, it is a bad symptom.

The opinion here stated is consistent with general observation. Nowadays, in such a case, we should suspect organic disease in some part of the body. Compare Aphor. ii, 8; and Coac. i, 179.

32. For the most part, all persons in ill health, who have a good appetite at the commencement, but do not improve, have a bad appetite again towards the end; whereas, those who have a very bad appetite at the commencement, and afterwards acquire a good appetite, get better off.

This Aphorism refers to convalescents; and it is a very important observation of

our author, that too good an appetite at first in their case is anything but a favorable circumstance, since the appetite is greater than the digestion. Heurnius points out that, by "commencement," in this place, is meant the beginning of convalescence. See further, Coac. i, 179; Aph. vii, 6.

33. In every disease it is a good sign when the patient's intellect is sound, and he is disposed to take whatever food is offered to him; but the contrary is bad.

The facts stated in this Aphorism, I need scarcely remark, are important and unquestionable. They are expressed by our author with wonderful brevity and force. Compare De Medic. iii, 9; Coac. i, 72; and Celsus, ii, 3.

34. In diseases, there is less danger when the disease is one to which the patient's constitution, habit, age, and the season are allied, than when it is one to which they are not allied.

The meaning here is obvious, and when fairly interpreted, there seems no reason to dispute the facts announced in it; yet it would appear that his immediate successor, Diocles, had strongly attacked our author on the score of the facts being incorrect. See the Commentary of Galen, and that of Stephanus. (Dietz, tom. ii, p. 327.) Surely, for example, the diseases of infancy are more dangerous when they attack the old than when they occur in the young; and it implies a more serious cause when the diseases of summer take place in winter, and *vice versâ*. Compare further, Aph. vii, 82; Humor. vi, 1-5; Dies Judic. i, 11-15; VI Epid. viii, 43-46; Affect. vii, 3, 46.

35. In all diseases it is better that the umbilical and hypogastric regions preserve their fulness; and it is a bad sign when they are very slender and emaciated; in the latter case it is dangerous to administer purgatives.

From the reports of the cases contained in the Books of the Epidemics, it will be remarked that our author paid great attention to the condition of the upper region of the abdomen in febrile diseases; that is to say, to the part which he calls the hypochondria; in this place he directs attention also to the hypogastric region, by which he meant the part of the abdomen between the umbilicus and pubes. See Galen and Heurnius. That it is a bad symptom when the abdomen is excessively emaciated, every practical physician must know. Celsus renders this Aphorism thus: "Inter mali morbi testimonia esse, nimis celeriter emacrescere, et cutem circa umbilicum pubemque macram esse." (ii, 3.) That purgatives are contraindicated under such circumstances will readily be understood; and Galen wonders that our author did not also forbid emetics, but supposes that he took it for granted that they also would be understood to be proscribed. Compare Præn. x, 2; Aph. ii, 28; I Morb. Mulier. lxxvii, 9; Celsus, ii, 3.

36. Persons in good health quickly lose their strength by taking purgative medicines, or using bad food.

This Aphorism announces an important fact, which deserves to be always kept in mind; but, although obvious when fairly stated, we often see it neglected. I once knew an excellent runner lose a race in consequence of being previously weakened by taking purgative medicines. Compare Aph. i, 3, ii, 37, iv, 16; Verat. Usus, i, 12.

37. Purgative medicines agree ill with persons in good health.

This, according to Galen, is merely an announcement in more general terms of the particular fact respecting purgatives which is stated in the preceding Aphorism. As he remarks, by the operation of a purgative medicine, the fluids of the body are evacuated, and the solids melted down. Compare Aph. ii, 36, iv, 16; Verat. Usus, i, 5, 12.

38. An article of food or drink which is slightly worse, but more palatable, is to be preferred to such as are better but less palatable.

This is evidently a wise rule in regimen, since, as Galen in his Commentary remarks, what is palatable is likely to be more readily digested by the stomach. Berends prudently observes, further, that a physician often shows his skill most particularly by applying this rule in making a proper selection of those things which are peculiarly adapted to the tastes of his patient. See Sydenham, p. 344, Syd. Soc. edit. Compare de Arte, xii, 10; VI Epid. iv, 26; IV Morb. xii, 7; Affect. xlii, 1, 2; Vect. Acut. xv, 1, 2, xviii, 24.

39. Old people, on the whole, have fewer complaints than young; but those chronic diseases which do befall them generally never leave them.

One reason, as Galen remarks, why old people have fewer complaints than young is, that they are generally more guarded in their course of life. That chronic complaints in old age generally prove fatal, is confirmed by daily experience. Damascius, in his Commentary on the next Aphorism, says, in illustration, that nephritis, gout, arthritis, and ischiatic disease are incurable in old age. Compare I Morb. xx, 13, 15; Aph. v, 7; Celsus, ii, 1-8.

40. Catarrhs and coryzæ in very old people are not concocted.

This Aphorism, as Galen remarks, contains an illustration of the truth stated in the preceding one. By coryza is to be understood a catarrh seated in the nose. That these complaints in old age are never entirely got rid of is a well-known fact.

41. Persons who have had frequent and severe attacks of swooning, without any manifest cause, die suddenly.

This, I need scarcely say, is now a well-known fact, it being ascertained by *post-mortem* inspections, that in such cases there is generally some cardiac disease. One cannot but admire the accurate observation of Hippocrates, who ascertained the fact so correctly, although he had not the same opportunities, as we now have, of accounting for it. To him may be applied the general maxim of Cicero: "Sufficit si quid fiat intelligamus, etsi quomodo quidve fiat nesciamus." I may mention here, however, that although the ancient physicians cannot have practised *inspectiones cadaverum* very frequently, there can be no doubt that they did so occasionally; and it is a remarkable circumstance, that in the cases of sudden death they referred the cause, as we now generally do, to cardiac disease. Theophilus, in his Commentary, mentions that Galen inferred this from finding disease of the heart in the inferior animals that died suddenly. See Dietz, t. ii, p. 332, and PAULUS ÆGINETA, B. III, 34, Syd. Soc. edit. Compare Coac. i, 83.

42. It is impossible to remove a strong attack of apoplexy, and not easy to remove a weak attack.

The experience of twenty-two centuries and upwards affords no reason to call in question the prognosis here announced by our author. It is thus rendered by Celsus: "Isque morbus mediocris vix sanatur, vehemens sanari non potest." (ii, 8.) Galen has an interesting Commentary under this head, in which he attempts to explain how it happens that the respiratory muscles in attacks of apoplexy, often continue to perform their office, although the others are paralysed.

43. Of persons who have been suspended by the neck, and are in a state of insensibility, but not quite dead, those do not recover who have foam at the mouth.

There are great diversities of opinion as to the reading and interpretation of this Aphorism, but upon these I have not room to enter. I may just mention, however, that I would have preferred reading *καταδυσμένων* as applying to persons who have been immersed in water, but dare not adopt it, as it appears not to be sanctioned by any of the MSS. On this Aphorism see the Commentary on PAULUS ÆGINETA, B. III, 28, Syd. Soc. edit. Galen's Commentary is well worth being consulted.

44. Persons who are naturally very fat are apt to die earlier than those who are slender.

There seems no great reason to question the prognostic rule here laid down. Galen explains the rationale of it, upon the principle that fat persons have smaller blood-vessels, and consequently are less liberally supplied with the *pneuma*, or vital spirit, than leaner persons. Compare Celsus, ii, 1.

45. Epilepsy in young persons is most frequently removed by changes of age, of country, and of modes of life.

We may well exclaim with Berends, that this Aphorism embodies a most important statement of facts! His lengthy Commentary on this passage contains much interesting matter, which I regret that my limits preclude me from availing myself of: those of the ancient commentators contain nothing but what is common-place. Compare Aph. v, 7; II Prædict. xvi, 123; Morb. Sac. xiii, 6; VI Epid. vi, 36.

46. Of two pains occurring together, not in the same part of the body, the stronger weakens the other.

Experience, I need scarcely say, has amply confirmed the truth of the maxim here announced. It is a principle of extensive applicability in the practice of medicine. Consult Galen and Berends. Compare Humor. xi, 16, 17; Aliment. i, 11.

47. Pains and fevers occur rather at the formation of pus than when it is already formed.

This also is an announcement of an important and indisputable fact. Galen and the other ancient commentators all hold that pus is formed from blood. Compare Vet. Med. xxxiii, 8; Prænot. xvii, 6; Ulcer. ii, 8-11.

48. In every movement of the body, whenever one begins to endure pain, it will be relieved by rest.

This is a self-evident, but, as Berends remarks, not an unimportant fact. See Aph. ii, 22; Præcept. xiii, 4; Nat. Human. xvii, 14, 15; Flat. ii, 14.

49. Those who are accustomed to endure habitual labours, although they be weak or old, bear them better than strong and young persons who have not been so accustomed.

This Aphorism, it will readily be seen, is founded on the well-known effects of habit. It is thus rendered by Celsus: "*Omnem laborem facilius vel puer, vel senex, quam insuetus homo sustinet.*" (i, 3.) See, also, Cicero *Tuscul. Disput. ii, 17.*

50. Those things which one has been accustomed to for a long time, although worse than things which one is not accustomed to, usually give less disturbance; but a change must sometimes be made to things one is not accustomed to.

This Aphorism contains a very proper exception to the general rule announced in the preceding Aphorism. Celsus describes very fully the most proper course of life, which, it will be remarked, he directs not to be tied down to too strict rules (i, 1), at the beginning. Compare *Vict. Acut. xviii, 2, 6* *II Diæt. xlv, 4*; *Humor. iii, 115*; *Humid. Us. iii, 8.*

51. To evacuate, fill up, heat, cool, or otherwise move the body in any way much and suddenly, is dangerous; and whatever is excessive is inimical to nature; but whatever is done by little and little is safe, more especially when a transition is made from one thing to another.

The rule of practice here stated is very tersely given by Celsus: "*Ergo, quum quis mutare aliquid volet, paulatim debet assuescere.*" (i, 3.) Berends, in his Commentary, remarks, that although the propriety of this rule may appear to be self-evident, we often see it improperly transgressed. Compare, in particular, *VI Epid. ii, 27*; *Vict. Acut. v, 22, x, 8.* The same subject is often handled in the Hippocratic treatises. See further, *Aph. iii, 1, v, 16, vi, 39*; *II Diæt. xlv, 5*; *Humor. viii, 17, 18*; *Humid. Us. iii, 7*; *VI Epid. ii, 27.*

52. When doing everything according to indication, although things may not turn out agreeably to indication, we should not change to another while the original appearances remain.

This Aphorism shows decidedly that our author's system of treatment was not empirical, but founded upon reason. What he directs here evidently is not to change one's plan of treatment when grounded on a proper indication, although it may not turn out according to expectation. This is a rule which every physician must follow who would wish to support the dignity of the profession, and it is further consonant to reason. See further, *Loc. in Hom. xx, 11, 12*; and Celsus, *iii, 2.*

53. Those persons who have watery discharges from the bowels when they are young, come off better than those who have dry; but in old age they come off worse, for the bowels in aged persons are usually dried up.

Galen dismisses this Aphorism with the remark that it is evident, and refers the reader to *Aph. ii, 20.* Celsus, with great propriety, has joined the two together: "*Quibus juvenibus fluxit alvus, plerumque in senectute contrahitur.* Quibus in ado-

lescentia fuit adstricta, sæpe in senectute solvitur. Melius autem in juvene fusior, in sene astrictior." (i, 3.) There can be no doubt about the latter rule being generally true, but the former is subject to many exceptions. Perhaps what our author means to say is, that the best rule of health is that the bowels should be rather loose in youth and rather confined in old age. That this generally holds true there can be no doubt.

54. Largeness of person in youth is noble and not unbecoming; but in old age it is inconvenient, and worse than a smaller stature.

Celsus renders this Aphorism as follows: "longa statura, ut in juventa decora est, sic matura senectute conficitur." (i, 1.) All the Greek commentators remark that old men are subject to gibbosity, that is to say, become bent forwards. See further, Præcept. xi, 10.

SECTION III.

1. The changes of the seasons mostly engender diseases, and in the seasons great changes either of heat or of cold, and the rest agreeably to the same rule.

This is an announcement of a fact pretty generally acknowledged and admitted in all ages, namely, that diseases or disorders in the constitution are mostly, or at least frequently, produced by changes of the seasons and changes of the weather. Berends has well remarked, in his Commentary on this Aphorism, that our author here lays the foundation of the doctrines more fully expanded and explained by Sydenham, Stoll, and other modern authorities. This Aphorism agrees with Humor. viii, 15. Compare further, Aër. Aq. Loc. i, 19; Vict. Acut. xvii, 9; Morb. Sac. xii, 7.

2. Of natures (*temperaments*?), some are well- or ill-adapted for summer, and some for winter.

Galen and Theophilus, by "natures," in this place, understand "temperaments." That some of these agree better with summer and others with winter is indisputable. This is in accordance with the work Humor. viii, 20. See also, Vet. Med. xxxvii, 14; I Diæt. xxv, 12; III Diæt. i, 6; Aër. Aq. Loc. xxxiv, 9.

3. Of diseases and ages, certain of them are well- or ill-adapted to different seasons, places, and kinds of diet.

As here stated, there is no doubt as to the fact announced in this Aphorism. But Galen complains that it is rather confusedly expressed in the original. Compare Humor. viii, 21; and Celsus, ii, 1.

4. In the seasons, when during the same day there is at one time heat and at another time cold, the diseases of autumn may be expected.

The meaning here would appear to be, that very changeable weather at any season will induce diseases similar to those of autumn, which is a very changeable and unhealthy season. See the Commentaries of Stephanus and Theophilus, and of Heurnius

and Berends, among the modern annotators. That autumn is an unhealthy season is declared by the poet Horace as follows: "*Frustra per autumnos nocentem Corporibus metuemus austrum.*" Ovid, in like manner, expresses the effects of changeable weather on the health very correctly and strikingly:

"Cum modo frigoribus premimur, modo solvimur æstu,
Tempore non certo, corpora languor habet."

On this subject, see further Humor. viii, 21.

5. South winds induce dullness of hearing, dimness of vision, heaviness of the head, torpor, and languor; when these prevail, such symptoms occur in diseases. But if the north wind prevail, coughs, affections of the throat, hardness of the bowels, dysuria attended with rigors, and pains of the sides and breast occur. When this wind prevails, all such symptoms may be expected in diseases.

The same announcement is made at Humor. viii, 1. I shall merely notice a few things which appear to be somewhat obscure. By "hardness of the bowels," about the meaning of which expression Galen informs us that there had been some difference of opinion among the commentators, would appear to be meant constipation of the bowels. See also Theophilus. Dysuria, as they remark, is no doubt produced by the cold occasioning a determination inwardly. Celsus translates this Aphorism literally. (ii, 1.)

6. When summer is like spring, much sweating may be expected in fevers.

See, in like manner, Humor. viii, 1. The reason assigned by Galen for the prevalence of sweats under the circumstances described is, that they are produced by the prevalence of humidity, and the absence of the heat which used to dissipate it.

7. Acute diseases occur in droughts; and if the summer be particularly such, according to the constitution which it has given to the year, for the most part such diseases may be expected.

According to Theophilus, in his very interesting Commentary on this Aphorism, by acute fevers in this place Ruffus understood "pestilential," namely, such as are connected with buboes; for that these are occasioned in Libya by the excessive heat. (Dietz. ii, 353.) But none of the other commentators, ancient or modern, understand it as applying to pestilential fevers. Compare Humor., vii, 11; and Celsus, 36; ed. Milligan.

8. In seasons which are regular, and furnish the productions of the season at the seasonable time, the diseases are regular, and come readily to a crisis; but in inconstant seasons, the diseases are irregular, and come to a crisis with difficulty.

This agrees with Humor. vii, 3, 15. The meaning appears certainly to be, that when the weather is suitable to the season of the year, that is to say, hot in summer, cold in winter, and so forth; and when the fruits of the earth are produced seasonably,

the complaints are mild and regular; but when the weather is unseasonable, the diseases are of an irregular character. This truth is admirably illustrated in the First and Third Books of the Epidemics.

9. In autumn, diseases are most acute, and most mortal, on the whole. The spring is most healthy, and least mortal.

See Epidem. ii, 1; and Prorrhēt. ii, 13, 4. These characters of the two seasons are thus given by Celsus: "Igitur saluberrimum ver est:—autumnus longè periculosissimus." (ii, 1.) On this subject I believe all the ancient authorities, professional and non-professional, are perfectly agreed. I might quote Horace, Juvenal, and a whole host of poets, who have celebrated the healthfulness of spring, and described the insalubrity of autumn. The rule, however, as is well known, does not apply to northern latitudes.

10. Autumn is a bad season for persons in consumption.

Popular opinion, at least, is in this country quite in unison with what is here stated by our author; and many medical authorities in modern times have declared in favour of it. See Riverius in Prax. xvii; De Hectica, 3; Dolæus de Phthisi, ii, 4. I am not aware that recent experience has furnished any ground for questioning this opinion.

11. With regard to the seasons, if the winter be of a dry and northerly character, and the spring rainy and southerly, in summer there will necessarily be acute fevers, ophthalmies, and dysenteries, especially in women, and in men of a humid temperament.

This is manifestly taken from the work, On Airs, &c., § 10. It is thus rendered by Celsus: "Si hiems sicca septemtrionales ventos habuit, ver autem austros et pluvias exhibet, fere subeunt lippitudines, tormina, febres, maximèque in mollioribus corporibus, ideoque præcipue in muliebribus." (ii, 1.) Galen has an interesting but rather lengthy Commentary upon it.

12. If the winter be southerly, rainy, and calm, but the spring dry and northerly, women whose term of delivery should be in spring, have abortions from any slight cause; and those who reach their full time, bring forth children who are feeble, and diseased, so that they either die presently, or, if they live, are puny and unhealthy. Other people are subject to dysenteries and ophthalmies, and old men to catarrhs, which quickly cut them off.

This, in like manner, is taken from the work, On Airs, &c., xxvi, § 10, ed. Linden. It is thus rendered by Celsus: "Si vero austri pluviaeque hiemem occuparunt, ver autem frigidum et siccum est, gravidæ quidem feminæ quibus tum adest partus, abortu periclitantur; eæ vero qui gignunt, imbecillos, vixque vitales edunt: ceteros lippitudo arida, et, si seniores sunt, gravidites malè habent." (ii, 1.)

13. If the summer be dry and northerly, and the autumn

rainy and southerly, headaches occur in winter, with coughs, hoarsenesses, coryzæ, and in some cases consumptions.

This also is taken from the same chapter of the work, On Airs, &c., and is thus rendered by Celsus: "At si sicca æstas aquilones habuit, autumnno vero imbres austrique sunt, tota hieme, quæ proxima est, tussis, distillatio, raucitas, in quibusdam etiam tabes oritur." (ii, 1.)

14. But if the autumn be northerly and dry, it agrees well with persons of a humid temperament, and with women; but others will be subject to dry ophthalmies, acute fevers, coryzæ, and in some cases melancholy.

This is taken, with a few alterations, from the same chapter as the preceding. It is thus rendered by Celsus: Sin autem autumnus quòque æque siccus iisdem aquilonibus perflatur, omnibus quidem mollioribus corporibus, inter quæ muliebria esse proposui, secunda valetudo contingit: durioribus vero instare possunt et aridæ lippitudines, et febres partim acutæ, partim longæ, et ii morbi, qui ex atra bile nascuntur." (ii, 1.)

15. Of the constitutions of the year, the dry, upon the whole, are more healthy than the rainy, and attended with less mortality.

This is partly taken from the § 4 of the work, On Airs. Celsus thus tersely renders it: "saluberrimi sunt sereni dies." (ii, 1.) That the fact is correctly stated by our author, no one, I suppose, will pretend to question. That dry seasons and dry countries are more healthy than humid, is consistent with universal experience and observation. The reason of this, as stated by the ancient commentators, is, that in hot weather the humours are dissipated; whereas, in humid, that is to say, rainy, the humours are collected within the body, and engender putrid diseases. There is no doubt, however, as to the fact, in whatever way it is to be accounted for.

16. The diseases which occur most frequently in rainy seasons are, protracted fevers, fluxes of the bowels, mortifications, epilepsies, apoplexies, and quinsies; and in dry, consumptive diseases, ophthalmies, arthritic diseases, stranguries, and dysenteries.

Galen explains at considerable length, upon the principles of the humoral pathology, his ideas respecting the manner in which rainy or dry weather produce the various diseases enumerated under this head. It will be seen from his Commentary, and that of Theophilus, that some connected the epithet "consumptive" with ophthalmies, and understood the meaning to be, "ophthalmies which lead to the destruction of the eye." Compare Celsus, ii, 1.

17. With regard to the states of the weather which continue but for a day, that which is northerly, braces the body, giving it tone, agility, and colour, improves the sense of hearing, dries up the bowels, pinches the eyes, and aggravates any previous

pain which may have been seated in the chest. But the southerly relaxes the body and renders it humid, brings on dullness of hearing, heaviness of the head, and vertigo, impairs the movements of the eyes and the whole body, and renders the alvine discharges watery.

It is to be borne in mind, that our author here touches upon the effects of temporary conditions of the weather upon the health. As Theophilus then remarks, he has been unjustly blamed for tautology in this place. Celsus briefly renders the first part of this sentence as follows: "*Aquilo sanum corpus spissat, et mobilius atque expeditius reddit.*" (ii, 1.) The latter clause is rendered rather freely: "*Auster aures hebetat, sensus tardat, capitis dolorem movet, alvum solvit, totum corpus efficit hebes, humidum, languidum.*" (Ibid.) See further, Aph. v, 26.

18. With regard to the seasons, in spring and in the commencement of summer, children and those next to them in age are most comfortable, and enjoy best health; in summer and during a certain portion of autumn, old people; during the remainder of the autumn and in winter, those of the intermediate ages.

There is no obscurity about this Aphorism, nor any reason to controvert the facts as stated in it. It is thus elegantly rendered by Celsus: "*Quod ad ætates vero pertinet, pueri proximique iis vere optimè valent, et æstate prima tutissimi sunt; senes æstate et autumnii prima parte: juvenes hyeme, quique inter juventam senectutemque sunt. Inimicior senibus hyems, ætas adolescentibus est.*" (ii. 1.) The Greek commentators explain all the facts, as stated in this Aphorism, upon their principles regarding the temperaments and humours. See Galen and Theophilus.

19. All diseases occur at all seasons of the year, but certain of them are more apt to occur and be exacerbated at certain seasons.

As Berends remarks, this Aphorism contains an undoubted and most important truth. Galen remarks in his Commentary, that if diseases had been connected solely with the temperament of the atmosphere, all would have been affected with such diseases as are peculiar to particular seasons; but since many diseases arise from errors of diet, these occur at all seasons. Constitution, as he further states, has much to do with the occurrence of disease. That certain diseases are more disposed to happen at certain seasons, he declares in the subsequent Aphorisms. Compare *Prænot.* xxvi, 4; Aph. iii, 17; and Celsus, ii, *Præf.*

20. The diseases of spring are, maniacal, melancholic, and epileptic disorders, bloody flux, quinsy, coryza, hoarseness, cough, leprosy, lichen, alphas, exanthemata mostly ending in ulcerations, tubercles, and arthritic diseases.

I have little to say on the subject of this Aphorism, as the meaning is sufficiently plain, and the nature of the diseases here enumerated may be readily ascertained upon reference to the Index of the Sydenham Society's edition of *PAULUS ÆGINETA*.

Celsus gives a translation of it, but not very literal; and it is worthy of remark, that he vaguely includes all the cutaneous diseases here noticed under the single term "pustulæ." He has also chronic ophthalmia (*or lippitudines*), which does not occur in our author's list. (ii, 1.)

21. Of summer, certain of these, and continued, ardent, and tertian fevers, most especially vomiting, diarrhœa, ophthalmia, pains of the ears, ulcerations of the mouth, mortifications of the privy parts, and the sudamina.

On most of the diseases contained in this list it will be unnecessary to make any remarks. I may mention, however, that the gangrene of the genital organs here noticed is minutely described in the Books of the Epidemics of which I have given a translation. Berends mentions, that some had regarded it as being of a venereal nature, but without any good reason. The sudamina are described by Galen as being a cutaneous disease of the skin produced by excessive sweating. By the way, Celsus translates it in such terms, as would seem to imply that he did not at all understand it: "et quicquid sudore hominem resolvit." (ii, 1.)

22. Of autumn, most of the summer, quartan, and irregular fevers, enlarged spleen, dropsy, phthisis, strangury, lientery, dysentery, sciatica, quinsy, asthma, ileus, epilepsy, maniacal and melancholic disorders.

Celsus gives an elegant version of this Aphorism, on which I have only to remark, that he has omitted the maniacal and melancholic disorders from his list of summer diseases. (ii, 1.) How this happened it is impossible to find out. That these are engendered by black bile, and that it prevails in autumn, was held by all the ancient authorities. See the Commentaries of Galen and Theophilus.

23. Of winter, pleurisy, pneumonia, coryza, hoarseness, cough, pains of the chest, pains of the ribs and loins, headache, vertigo, and apoplexy.

About this Aphorism there can be no doubt nor difficulty. I have again to remark, that it is rendered by Celsus in so vague and indefinite terms, as would almost lead one to doubt whether he apprehended correctly the meaning of our author: "Hyems autem capitis dolores, tussim, et quicquid in faucibus, in lateribus, in visceribus mali contrahitur, irritat." (ii, 1.)

24. In the different ages the following complaints occur: to little and new-born children, aphthæ, vomiting, coughs, sleeplessness, frights, inflammation of the navel, watery discharges from the ears.

There is little in this list of the common disorders which attack new-born children that requires comment. Celsus, in his translation, omits "frights," for what reason cannot be ascertained. Both Galen and Theophilus state, that these are connected with the stomach. I may mention that Rhases, the Arabian, gives a pretty full treatise on the diseases of infancy. He describes twenty-four diseases altogether.

25. At the approach of dentition, pruritus of the gums, fevers, convulsions, diarrhœa, especially when cutting the canine teeth, and in those who are particularly fat, and have constipated bowels.

Among the Hippocratic treatises there is one on Dentition, of which I have given a brief analysis in the Preliminary Discourse. Celsus, in his version of this Aphorism, renders the disease named *ὀδᾶξις* by our author, and which Galen and Damascius distinctly explain to mean "pruritus of the gums," by "*gingivarum exulcerationes*." This seems another instance of mistranslation.

26. To persons somewhat older, affections of the tonsils, incurvation of the spine at the vertebra next the occiput, asthma, calculus, round worms, ascarides, acrochordon, satyriasmus, struma, and other tubercles (*phymata*), but especially the aforesaid.

There are many things in this Aphorism which it might be interesting to examine, did not our limits preclude; in particular, the affection of the *vertebræ* here enumerated. Did our author mean the disease described by Sir Charles Bell under the head of "Inflammation and Ulceration in the Atlas and Vertebra Dentata?" (*Institutes of Surgery*, p. 144.) See, also, V. Swieten, *Comment. in Boerhaav. Aph. t. ii, de Angina Convulsiva*. Or did he apply it to the less formidable affection called "the crick of the neck?" I am inclined to adopt the latter conjecture. See the Commentaries of Galen and Theophilus. All the other terms will be found explained in the *Comment. on PAULUS ÆGINETA*. See the *INDEX*. According to Heurnius and Berends, the *satyriasmus* here noticed was an affection of the glands of the neck. See, also, the note of M. Littré.

27. To persons of a more advanced age, and now on the verge of manhood, the most of these diseases, and, moreover, more chronic fevers, and epistaxis.

According to Damascius, the period of life here referred to is that immediately following 14; but Galen applies it to the term of puberty, which, he says, may be at 12, 13, or 14. That epistaxis is common at this period of life is well known; but why fevers should be more protracted than usual, does not appear clear. Heurnius ascribes them to voracity, which gives rise to a pituitous crudity, and to a certain acrimony which occasions putridity. Theophilus and Damascius seem to point to a similar explanation.

28. Young people for the most part have a crisis in their complaints, some in forty days, some in seven months, some in seven years, some at the approach to puberty; and such complaints of children as remain, and do not pass away about puberty, or in females about the commencement of menstruation, usually become chronic.

There is little that requires elucidation in this Aphorism. It will be remarked that our author seems to attach a *religious* importance, so to speak, to the number *seven*.

I have made some observations on this subject in the Analysis of the Hippocratic Treatise bearing this title. See Preliminary Discourse, § II. See further Aph. ii, 45; II Prædict. xvi, 1, 3.

29. To persons past boyhood, hæmoptysis, phthisis, acute fevers, epilepsy, and other diseases, but especially the aforementioned.

With respect to the diseases mentioned in this Aphorism, the only one which we would hesitate in recognising as being particularly common at this period of life, is epilepsy. Galen, in fact, wonders that his author placed it here, seeing he had formerly ranked epilepsy among the diseases of infancy, which sometimes disappear at puberty. A modern commentator, Riegerus, suggests, that by epilepsy he probably meant the hysterical convulsion. But perhaps it is better to consider our author's meaning to be, that epileptical convulsions are apt to be exacerbated at this period. That hæmoptysis and phthisis are most common at this period has been accurately determined by recent statistics. By the way, the period of life here treated of is not so satisfactorily determined as could be wished. In M. Littré's translation, it is marked "from 21 to 25," but surely this last is a misprint for 35. It comprehends the "adolescencia" and "juvenes" of Celsus. (ii, 1.) Compare Aph. v, 9, viii, 7; Coac. iii, 260; Morb. Sac. xiii, 1.

30. To persons beyond that age, asthma, pleurisy, pneumonia, lethargy, phrenitis, ardent fevers, chronic diarrhœa, cholera, dysentery, lientery, hæmorrhoids.

The period here treated of is that from 35 to 50. See Galen and Theophilus. There is not much in it requiring illustration. Galen is rather surprised that our author has omitted "melancholy" in this list of diseases. Compare Coac. iii, 395; Aër., Aq., Loc. iv, 7; VII Epid. xl, 19.

31. To old people dyspnœa, catarrhs accompanied with coughs, dysuria, pains of the joints, nephritis, vertigo, apoplexy, cachexia, pruritus of the whole body, insomnolency, defluxions of the bowels, of the eyes, and of the nose, dimness of sight, cataract (glaucoma), and dullness of hearing.

There is little to remark on the contents of this Aphorism, most of the diseases here enumerated being notoriously those of old age. I may mention that, as Galen states, the terms here used in reference to diseases of the eyes apply both to amaurosis and cataract (*ὀπόχυμα*.) Compare Affection. xxix, 10; Coac. iii, 395.

SECTION IV.

1. We must purge pregnant women, if matters be turgid (in a state of orgasm?), from the fourth to the seventh month, but less freely in the latter; in the first and last stages of pregnancy it should be avoided.

The term significative of "being in a state of orgasm" occurs at Aphor. i, 22. It would appear to mean that the fluids, that is to say, the contents of the vessels, are

ready to burst forth with plethora. That purging is unsafe in the earlier and later stages of pregnancy is consistent with common observation at the present day. I have translated the latter clause agreeably to the interpretation of it given by Theophilus. Compare Aph. i, 22, v, 29; Morb. Mul. xlii, 8.

2. In purging we should bring away such matters from the body as it would be advantageous had they come away spontaneously, but those of an opposite character should be stopped.

The meaning is obvious, and the propriety of the rule will scarcely be challenged. As Damascius remarks, the practice in this case imitates Nature. Galen further remarks, that upon this principle we administer cholagogues in diseases of a bilious nature. Compare Aph. i, 2.

3. If the matters which are purged be such as should be purged, it is beneficial and well borne; but if the contrary, with difficulty.

This is a repetition of the rule of practice given in Aphor. i, 25. It is evidently very much in place here, where the rules of practice respecting purging are treated of. Galen, however, mentions that some of the editors had expunged it.

4. We should rather purge upwards in summer, and downwards in winter.

This appears to be a very proper rule of practice, and it is accordingly approved of by all the ancient commentators. Celsus, however, seems to controvert it; he says: "Vomitum utilior est hieme quam æstate." (i, 3.) Whether he opposes Hippocrates designedly or in ignorance, cannot be determined.

5. About the time of the dog-days, and before it, the administration of purgatives is unsuitable.

It is an important rule of practice, followed by all the Greek and Arabian authorities, not to give purgative medicines in hot weather. According to Galen, it is fighting against Nature to determine inwardly by purgative medicines, while the heat is determining outwardly. Damascius says, that the body being then enfeebled, cannot bear purgatives. Compare Aër., Aq., Loc. xxx, 2, 5, 8; Purg. v, 8.

6. Lean persons who are easily made to vomit should be purged upwards, avoiding the winter season.

Galen and Theophilus approve of this rule of practice; the rationale of which they explain by stating that slender persons are bilious. They both, however, approve of limiting the practice to those who vomit readily, and of avoiding the winter season. Celsus again appears to be opposed to our author, for he holds that "vomitum inutilis gracilibus." (i, 3.) I have not met with any satisfactory solution of this apparent contradiction. Compare II Morb. xiii, 12.

7. Persons who are difficult to vomit, and are moderately fat, should be purged downwards, avoiding the summer season.

The rule here laid down is a natural inference from the preceding one. Here *moderately fat* is opposed to *lean*; *difficult to vomit*, to *easy to vomit*; and *the summer season*, to *winter*. I have had occasion to state already that the ancients particularly avoided purgatives during the heat of summer. Compare II Morb. xii, 35.

8. We must be guarded in purging phthisical persons upwards.

It will be seen upon reference to the Commentaries of Theophilus and Damascius, as published by Dietz, that they joined this Aphorism to the last. I have followed Galen, as M. Littré has also done. Considering how frequently phthisis is complicated with hæmoptysis, it is a prudential rule, at all events, to avoid giving emetics in such cases, lest one should get the blame of causing the rupture of a blood-vessel. We have mentioned in an analysis of the work, On Diseases, that the author of it enumerates this among the awkward mistakes which a physician is liable to make. Compare Loc. in Hom. xxxv, 4; Int. Affect. iv, 26, xiii, 36.

9. And from the same mode of reasoning, applying the opposite rule to melancholic persons, we must purge them freely downwards.

It was an invariable rule of ancient practice to administer purgatives, and more especially black hellebore (*helleborus niger*) in melancholy, with the intention of carrying off the black bile downwards. "The opposite rule," to which he refers, would appear to be that laid down in Aph. 6, respecting the treatment of persons to whom it is proper to give emetics. Compare Aër., Aq., Loc. xi, 2.

10. In very acute diseases, if matters be in a state of orgasm, we may purge on the first day, for it is a bad thing to procrastinate in such cases.

The meaning of this Aphorism is obvious, namely, that when there is great turgescence of the fluids, they should be purged off without delay. See Aph. 1 of this section. According to Galen, by "very acute diseases" he means such as terminate within seven days. Compare V Epidem. xxv, 16, 17.

11. Those cases in which there are tormina, pains about the umbilicus, and pains about the loins, not removed either by purgative medicines or otherwise, usually terminate in dry dropsy.

We have the positive assurance of Galen that by "dry dropsy" Hippocrates meant that species of dropsy called tympanites, which is so named because in it the belly, when struck, sounds like a drum (tympanum). Although Prosper Martian, Berends, and other modern authorities, are sceptical on this point, I must say that I see no reason for doubting that it was the same as the tympanites of modern nosologists. See further, PAULUS ÆGINETA, B. III, 48, Syd. Soc. edit. Compare Coac. ii, 279, iii, 286.

12. It is a bad thing to purge upwards in winter persons whose bowels are in a state of lientery.

As Galen states, the disease being seated in the lower intestines, emetics can obviously do no good in lientery. But, moreover, it is contrary to rule to administer them in winter. See above, § 6. Berends, under this head, gives a very interesting, but very lengthy, dissertation on lientery.

13. Persons who are not easily purged upwards by the

hellebores, should have their bodies moistened by plenty of food and rest before taking the draught.

For a full account of all the ancient rules respecting the administration of hellebore, see PAULUS ÆGINETA, B. VII, 10. One can readily understand that it would be a wise rule to give diluents before administering so violent an emetic as the *veratrum album*. Compare Aph. i, 22, ii, 9, vii, 70; II Diæt. xxxvi, 18; Loc. in Hom. xl, 3; Verat. Us. i, 1; II Morb. xiii, 10; Int. Affect. xxiii, 13; Morb. Mulier. xxv, 13, 14; Superfœt. xx, 1.

14. When one takes a draught of hellebore, one should be made to move more about, and indulge less in sleep and repose. Sailing on the sea shows that motion disorders the body.

The object being to procure ready vomiting, it was no doubt a good rule to move the patient about. That motion produces vomiting is illustrated, as he says, by the movements of a ship occasioning sea-sickness. That such is his meaning, there can be no doubt. See the Commentaries of Galen and Theophilus. Compare Verat. Us. i, 2; VI Epid. v, 45; Aph. ii, 51.

15. When you wish the hellebore to act more, move the body, and when to stop, let the patient get sleep and rest.

The argument contained in this Aphorism is manifestly a continuation of the preceding one. Compare Veratr. Us. i, 4; Superfœt. xx, 1; VI Epid. v, 45; Aph. v, 27; VI Epid. v, 45.

16. Hellebore is dangerous to persons whose flesh is sound, for it induces convulsion.

This is little else but a repetition of Aphor. ii, 36. Celsus, in like manner, declares that emetics "*non semper ægris prodesse, semper sanis nocere.*" (ii, 13.) See Verat. Us. i, 5; Aph. ii, 36, 37, vi.

17. Anorexia, heartburn, vertigo, and a bitter taste of the mouth, in a person free from fever, indicate the want of purging upwards.

The symptoms here enumerated are, no doubt, indicative of the presence of bile in the stomach, and consequently emetics must be proper in such a case. See Galen and Berends. Compare Verat. Us. i, 10; Affect. xiv, 12; II Morb. Mulier. xxiv, 2, 3.

18. Pains seated above the diaphragm indicate purging upwards, and those below it, downwards.

I here follow the reading which Berends, Lefebure, and Littré have adopted from Bosquillon. The rule here laid down seems to be, that, in affections of the chest, emetics are to be administered; and in those of the abdomen, purgatives. That this rule would be a very proper one in *many* cases I can well believe, but as a *general* rule, I suppose we would now demur submitting to it. Compare Veratr. Us. i, 10, 11.

19. Persons who have no thirst while under the action of a

purgative medicine, do not cease from being purged until they become thirsty.

The same remark is made in the little tract on the Administration of Hellebore. It is a well-known fact that the operation of a drastic purgative induces thirst. The rationale of the rule of practice founded upon it is explained by Theophilus to be, that until thirst takes place we must consider that the system has not been properly dried. See *Veratr. Us. i, 11*.

20. If persons free from fever be seized with tormina, heaviness of the knees, and pain of the loins, this indicates that purging downwards is required.

This Aphorism is little else than a continuation of Aph. 18. The reader will remark that our author qualifies both by restricting purging to those cases in which no fever is present. Compare *Veratr. Us. i, 11*.

21. Alvine dejections which are black, like blood, taking place spontaneously, either with or without fever, are very bad; and the more numerous and unfavorable the colours, so much the worse; when with medicine it is better, and a variety of colours in this case is not bad.

The characters of the dejections given in this Aphorism, and some of the following, is taken partly from *Prognost. § 11*, and *Coac. Pr. § 596*, of Littré's edition. The Commentaries of Galen and Theophilus are interesting, as showing us the manner in which the ancient authorities accounted for this appearance physiologically. They held that the office of the spleen being to attract the melancholic humour for its own purposes, when this viscus fails to perform its office, the superfluity deranges the liver; and hence this discharge is indicative of the greatest possible derangement of the internal viscera. Galen mentions that he found black dejections from the bowels a common symptom in the plague which prevailed in his time.

22. When black bile is evacuated in the beginning of any disease whatever, either upwards or downwards, it is a mortal symptom.

This is a natural inference from the preceding Aphorism. Of course, as the commentators remark, a black discharge either upwards or downwards, at the commencement of a disease, indicates a very serious derangement of the system. Galen remarks that, in a more advanced stage of the disease, such an evacuation may be critical, and in that case favorable. See also *Coac. i, 100*.

23. In persons attenuated from any diseases, whether acute or chronic, or from wounds, or any other cause, if there be a discharge either of black bile, or resembling black blood, they die on the following day.

Of the fatal nature of such dejections there can be no question. Hippocrates would, no doubt, be familiar with them in the fevers of his own country. In inter-tropical fevers, I need scarcely remark, they are looked upon as most mortal symptoms.

24. Dysentery, if it commence with black bile, is mortal.

Galen, in his Commentary, pronounces such a case to be as incurable as cancer,—as, in fact, being produced by the same humour, that is to say, black bile. Theophilus makes the curious remark, that if black bile, when poured on the earth, occasions an effervescence, like vinegar, it may well be supposed that it will corrode the human body when confined in it. Compare Coac. i, 100, iii, 292; V Epid. x, 2.

25. Blood discharged upwards, whatever be its character, is a bad symptom, but downwards it is (more?) favorable, and so also black dejections.

Upon reference to Dietz (Analec. tom. ii, p. 400) and Littré (Œuv. Hip. tom. iv, p. 510), it will be seen that there are different readings of this paragraph. As a general fact, there is little to say to the announcement made in this Aphorism; for certainly discharges of blood upwards are generally unfavorable, whereas those downwards are less so. Galen understands the meaning to be, that discharges of blood, or black discharges, when they proceed from the hæmorrhoidal vessels, are favorable. Compare Aph. vii, 37; Coac. ii, 254, vi, 14.

26. If in a person ill of dysentery, substances resembling flesh be discharged from the bowels, it is a mortal symptom.

The dejection resembling the scrapings of the guts, is noticed at Prognost. § 11, and occurs among the symptoms of dysentery as given by Aretæus (Morb. Chron. i, 9), and the other authorities. All regard it as a fatal symptom, proceeding from ex-coriation of the bowels. See Aph. iv, 76.

27. In whatever cases of fever there is a copious hemorrhage from whatever channel, the bowels are in a loose state during convalescence.

The rationale of this, as stated by Theophilus, is, that the discharge of blood having occasioned debility of the digestive powers, the food is not properly digested, and in consequence the chyle is evacuated from the bowels. See also Prorrh. i, 133; Coac. 149, 326, ed. Littré.

28. In all cases whatever, bilious discharges cease if deafness supervenes, and in all cases deafness ceases when bilious discharges supervene.

As remarked by Galen, our author, in this place, evidently refers to symptomatic deafness in fevers, and other such complaints. Theophilus explains, that such an affection, being occasioned by a metastasis of the bile upwards, is naturally relieved by an evacuation of the same downwards. See Coac. ii, 66, 103, vi, 77; Aph. iv, 60.

29. Rigors which occur on the sixth day have a difficult crisis.

The sixth was regarded by all the authorities as an unfavorable critical day. Theophilus compares the sixth to a tyrant, and the seventh to a king. See Galen De Crisibus; and PAULUS ÆGINETA, B. II, 7, Syd. Soc. edit. Compare Coac. i, 23; VII Epid. xl, 20.

30. Diseases attended with paroxysms, if at the same hour

that the fever leaves it return again next day, are of difficult crisis.

It will be seen upon reference to the Commentary of Galen, that there had been two different interpretations of this passage. As rendered here, the meaning seems sufficiently clear, and the diagnosis would appear to be very well founded. See Humor. iii, 91.

31. In febrile diseases attended with a sense of lassitude, deposits form about the joints, and especially those of the jaws.

See Humor. iii, 98; IV Epidem. xviii, 16, 17. This Aphorism evidently bears reference to semeiology. As stated by Galen, the deposits here noticed are bubo and parotis. These, I need scarcely remind the reader, are frequently mentioned in the Epidemics.

32. In convalescents from diseases, if any part be pained, there deposits are formed.

See Humor. iii, 100. I need not say that deposits *or* abscesses (for they are nearly the same) are largely treated of in the different books of Epidemics. That in such a case a deposit should form in a part affected with pain, is what might be naturally expected.

33. But if any part be in a painful state previous to the illness, there the disease fixes.

As stated by Galen, this Aphorism is closely connected with the two preceding ones. That any disease is apt to fix on a weak limb, is a well-known fact in semeiology. See Humor. iii, 101; IV Epidem. xviii, 2, 3; Loc. in Homin. xxxvi, 6.

34. If a person labouring under a fever, without any swelling in the fauces, be seized with a sense of suffocation suddenly, it is a mortal symptom.

This is evidently *cynanche laryngitis*, which is frequently noticed in the Hippocratic treatises. See Aph. iv, 25; Prænot. xxiii, 3, 4; Coac. i, 90, ii, 201, 202, 203, iii, 96; also PAULUS ÆGINETA, B. III, 27, Syd. Soc. edit. Galen gives a very interesting Commentary on this passage, in which he discusses the nature of the affection noticed in it. He distinctly refers it to inflammation spreading from the fauces to the larynx, and obstructing the passages to the lungs, that is to say, the bronchi. Theophilus gives briefly the same account of it.

35. If in a person affected with fever, the neck become suddenly distorted, and he cannot swallow unless with difficulty, although no swelling be present, it is a mortal symptom.

Allusion is evidently made here to dislocation of the upper vertebræ, an affection which we have had occasion to notice previously more than once. See Articulations, § 41; Epidem. ii, 24; Aphor. iii, 26; Prorrhæ. i, 87; and Coac. 261. See also our analysis of Epid. ii, and Commentary on Aph. iii, 26. Galen's Commentary on this Aphorism is very interesting. He describes the affection as a form of dislocation forwards of the upper vertebræ from an inflammatory complaint about the fauces. Theophilus and Damascius give a similar account of the disease, which the

former of these calls a species of cynanche, in which the vertebræ of the spine are affected sympathetically. It is noticed by Celsus in the following terms: "Cuive in eodem febris corporisque habitu cervix convertitur, sic ut devorare æque nihil possit." (ii, 6.)

36. Sweats, in febrile diseases, are favorable, if they set in on the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth, twenty-first, twenty-seventh, and thirty-fourth day, for these sweats prove a crisis to the diseases; but sweats not occurring thus, indicate pain, a protracted disease, and relapses.

The prognostics from sweats, and the critical days, are treated of in various parts of our author's works. See Prænot. v, 1, 2, 3; Coac. iv, 36, &c. See also the Commentary on PAULUS ÆGINETA, B. II, 7, Syd. Soc. edit.

37. Cold sweats occurring along with an acute fever, indicate death; and along with a milder one, a protracted disease.

The truth of this, Galen says, has been often proved by experience; and the rationale of it he explains at considerable length, in this way, that cold sweats are occasioned by the innate heat being nearly overpowered by the humours which engender the fever. Theophilus gives a similar explanation. Compare Judicat. vi, 9, 10, viii, 1, 8; Prænot. v, 4, 5; Coac. iv, 40.

38. And in whatever part of the body there is a sweat, it shows that the disease is seated there.

That is to say, as Heurnius justly remarks, affections of the brain are indicated by sweats about the head, and those of the lungs by sweats about the chest. He treats here of symptomatic and partial sweats. See Aph. ii, 5, and Celsus, ii, 2.

39. And in whatever part of the body heat or cold is seated, there is disease.

All the ancient commentators explain this upon the principle that the disease is connected with an unequal distribution of the innate heat in the body, or, as they express, to a departure from the proper temperature (*εὐκρασία*). Compare Judicat. viii, 3.

40. And wherever there are changes in the whole body, and if the body be alternately cold and hot, or if one colour succeed another, this indicates a protracted disease.

From the varied characters of the affections, as the commentators remark, Nature—meaning the *vis medicatrix naturæ*—cannot accomplish the removal of them in a short time. Celsus renders this Aphorism as follows: "Aut ubi corpus modo frigidum, modo calidum est, et color alius ex alio fit." (ii, 5.) Compare Aph. vii, 60; Humor. iii, 22, 53; Judic. viii, 4; Prædict. vi, 4; Coac. i, 77, 177.

41. A copious sweat after sleep occurring without any manifest cause, indicates that the body is using too much food. But if it occur when one is not taking food, it indicates that evacuation is required.

As Galen and Theophilus explain his meaning, Hippocrates infers that a copious

sweat must be occasioned by an effort of Nature to expel a superfluity from the system, which, as he states, is likely to be, either the consequence of too much food, or of humours in the system requiring to be purged. Aph. vii, 61; Coac. iv, 36; V Epid. xxv, 15; Aph. iii, 8.

42. A copious sweat, whether hot or cold, flowing continuously, indicates, the cold a greater, and the hot a lesser disease.

Copious, and more especially colliquative and cold sweats, are well known to be a very unfavorable symptom in fevers. See further Judicat. viii, 9; Coac. i, 21; Aphor. vii, 61; also PAULUS ÆGINETA, B. II, 47, Syd. Soc. edit.

43. Fevers, not of the intermittent type, which are exacerbated on the third day, are dangerous; but if they intermit in any form, this indicates that they are not dangerous.

Our author here evidently draws the distinction between remittent and intermittent fevers, pronouncing of the former that they are dangerous, and of the latter that they are not so. Celsus seems to have had this Aphorism in view, when he gives in his list of dangerous diseases, "quæve sic continuent, ut per accessiones increscant, per decessiones tantum molliantur, nec unquam integrum corpus demittant." (ii, 4.) I need scarcely remark, that remittent fevers, which are the same as the continual fevers of the ancients, are well known to be of a very intractable nature. See further Aph. vii, 62; Coac. i, 166; I Epid. iii, 16; III Epid. iii, 109; VII Epid. xl, 19; Vict. Acut. iii, 3.

44. In cases attended with protracted fevers, tubercles (*phymata*) or pains occur about the joints.

That protracted fevers are apt to terminate in collections of matter, or pains in joints, must be well known to every one who is familiar with medical practice. They are noticed in several of the Hippocratic treatises, as, Aph. vii, 63; Humor. iii, 98; Prænot. xxiv, 9, 10, 11; II Prorrh. x, 7; Coac. i, 168, 169. By *phymata* in this place, our author evidently means *deposits*, of which I need scarcely say that he treats in various parts of his works, more especially in the Epidemics.

45. When tubercles (*phymata*) or pains attack the joints after fevers, such persons are using too much food.

This seems a very natural inference if confirmed by experience; namely, that Nature being overloaded, endeavours to relieve herself, either by these tubercles, or effusion in the joints. See Aph. vii, 64.

46. If in a fever not of the intermittent type a rigor seize a person already much debilitated, it is mortal.

That a rigor attacking a patient reduced by fever is a very fatal symptom cannot be unknown to any person who is familiar with the treatment of these diseases. See Coac. ii, 65.

47. In fevers not of the intermittent type, expectorations which are livid, bloody, fetid, and bilious, are all bad; but if evacuated properly, they are favorable. So it is with the alvine

evacuations and the urine. But if none of the proper excretions take place by these channels, it is bad.

We have here prognostics derived from the sputa, the alvine and the urinary discharges. Upon reference to the Commentary of Galen and the Notes of Littré, it will be seen that very anciently there was a different reading of the last clause of this Aphorism. The subjects to which it relates are treated of in several of the Hippocratic treatises, as Aph. vii, 69; Coac. ii, 161, iii, 241; 2 Prorrhēt. xv, 10.

48. In fevers not of the intermittent type, if the external parts be cold, but the internal be burnt up, and if there be thirst, it is a mortal symptom.

This Aphorism is thus rendered by Celsus: "Aut cui, febre non quiescente, exterior pars friget, interior sic calet, ut etiam sitim faciat." (ii, 6.) Galen accounts for the case here noticed in the following manner: when an inflammation or erysipelas is seated in the internal parts, blood from all parts of the body is attracted to the part, and hence the surface of the body is congealed. He gives the name of *lipyria* to a fever of this character. See PAULUS ÆGINETA, B. II, 27, Syd. Soc. edit. Compare Aph. vii, 69; Coac. ii, 161, iii, 241; Prænot. xv, 10; Aph. i, 25.

49. In a fever not of the intermittent type, if a lip, an eyebrow, an eye, or the nose, be distorted; or if there be loss of sight or of hearing, and the patient be in a weak state—whatever of these symptoms occur, death is at hand.

This is partly derived from Coac. 72, ed. Littré. The most of the features here drawn are copied by Celsus, in his admirable chapter "On the evident symptoms of death:"—"eademque labra, et nares, oculique, et palpebræ, et supercilia, aliquæ ex his pervertuntur." (ii, 6.) As Theophilus remarks, the symptoms here noted indicate a loss both of the powers of motion and of sensibility.

50. Apostemes in fevers which are not resolved at the first crisis, indicate a protracted disease.

Galen does not hesitate to declare, that this is a self-evident truth, which it probably did not require an Hippocrates to announce. See Celsus, ii, 5.

51. When in a fever not of the intermittent type dyspnœa and delirium come on, the case is mortal.

In this case, as Galen remarks, both the brain and the lungs being affected, the danger must be of an urgent nature; in fact, either of them is a very unfavorable symptom, and a combination must necessarily be very mortal. Compare Judicat. viii, 17; Prænot. iv, 10, xiv, 9, xv, 3.

52. When persons in fevers, or in other illnesses, shed tears voluntarily, it is nothing out of place; but when they shed tears involuntarily, it is more so.

Celsus ranks it among the unfavorable symptoms "*sine voluntate lachrimare*." (ii.) This Aphorism is repeated Epidem. iv, 27, and Prognost. ii, 15, ed. Linden.

53. In whatever cases of fever very viscid concretions form about the teeth, the fevers turn out to be particularly strong.

The appearance here noted is a well-known symptom of malignant fevers. See Coac. ii, 153; IV Epidem. xxvii, 13. Celsus renders it thus: "Gravis morbi periculum est,—habere humorem glutinosum dentibus inhærentem." (ii, 4.)

54. In whatever cases of ardent fever dry coughs of a tickling nature with slight expectoration are long protracted, there is usually not much thirst.

Celsus gives the following version of this Aphorism: "Si quis autem in hujusmodi febre leviter tussit, is neque vehementi siti conflictatur, neque bibere aquam frigidam debet." (iii, 7.) According to Heurnius, the object of our author in this Aphorism is to warn the physician not to be deceived in a case of latent fever by the absence of thirst. See also VI Epid. ii, 43.

55. All fevers complicated with buboes are bad, except ephemerals.

I have touched upon this important subject in my Annotations on the Epidemics, and elsewhere. See Epidem. ii, 3; also, in particular, Galen. ad Glauc. ii, and De Diff. Feb. 6.

56. Sweat supervening in a case of fever without the fever ceasing, is bad, for the disease is protracted, and it indicates more copious humours.

This prognosis is repeated, Judicat. viii, 6; Coac. iv, 36; II Morb. xxxvi, 12; I Prorrh. vii, 8; Aphor. vii, 61. Galen considers it obvious that the repetition of the sweats in this case is an effort of Nature to get rid of a greater than usual amount of humours.

57. Fever supervening in a case of confirmed spasm, or of tetanus, removes the disease.

The truth of this prognosis is confirmed by many of the ancient authorities, but is denied by Cælius Aurelianus. See PAULUS ÆGINETA, B. iii, 20, Syd. Soc. edit. See further, Aph. ii, 26, v, 70; Loc. in Hom. xlviii, 6; Judic. xii, 10; Coac. i, 231, iii, 80, 84; I Morb. vi, 13, 14.

58. A rigor supervening in a case of ardent fever, produces resolution of it.

The fact here announced can be tested only by those who are familiar with the fevers of hot countries. See further, Judicat. xi, 9, 16; Coac. i, 188; also Celsus, ii, 8.

59. A true tertian comes to a crisis in seven periods at furthest.

Galen is at great pains to explain the rationale of this statement, but his doctrine of crises and critical days applies only to Greece and Italy. See further, Judicat. iv, 10; Coac. i, 212; I Epid. iii, 26; II Epid. iii, 82.

60. When in fevers there is deafness, if blood run from the

nostrils, or the bowels become disordered, it carries off the disease.

Galen reverting to his Commentary on a preceding Aphorism, in which he states that deafness in this case is connected with the determination of bilious superfluities to the brain, finds in that hypothesis a natural explanation of the prognostic contained in this Aphorism. See further, Aph. iv, 28; Judicat. xi, 11, 12, 13; Coac. ii, 66, 99, 100, 103, vi, 77, 78; and Celsus, ii, 8.

61. In a febrile complaint, if the fever do not leave on the odd days, it relapses.

Galen doubts if Hippocrates actually wrote this Aphorism, since examples are related in the Epidemics, of fevers being resolved on even days, without a relapse. This opinion of our author's, however, is alluded to in general terms in different parts of his works, as Humor. iii, 91; Judicat. ix, 11; Prænot. xxiv, 8; Coac. i, 115, 210; I Epid. iii, 40; II Epid. v, 30, vi, 18; IV Morb. xix, 10, 11, xx, 8, 12, 15, 16; Celsus, iii, 4.

62. When jaundice supervenes in fevers before the seventh day, it is a bad symptom, unless there be watery discharges from the bowels.

All the Greek authorities confirm the truth of this prognostic, but the Arabians call it in question. See the Commentary on PAULUS ÆGINETA, B. II, 4. See further, Judicat. iii, 5, 18, 20; Coac. i, 172; I Morb. vi, 2; Vict. Acut. liv, 3, 4; also Pliny, H. N. xxvi, 16.

63. In whatever cases of fever rigors occur during the day, the fevers come to a resolution during the day.

The meaning appears to me somewhat ambiguous, after consulting all the commentators; I am inclined, however, to think with Theophilus, that the prognostic applies to quotidians, in which, as there is a cold fit every day, so is there also a complete apyrexia. See further Judicat. xi, 16.

64. When in cases of fever jaundice occurs on the seventh, the ninth, the eleventh, or the fourteenth day, it is a good symptom, provided the hypochondriac region be not hard. Otherwise it is not a good symptom.

Galen thinks this Aphorism should have been joined to the 62d. Celsus alludes to it in the following terms: "Quem (morbum arquatum) Hippocrates ait si post septimum diem febricitante ægro supervenit, tutum esse, mollibus tantummodo præcordiis substantibus: Diocles, ex toto, si post febrem oritur, etiam prodesse, si post hunc febris, occidere." (iii, 24.) See Judicat. iii, 5, 18, iv, 11; Coac. i, 173; I Epid. ii, 120; I Morb. vi, 2; Aph. vi, 42.

65. A strong heat about the stomach and cardialgia are bad symptoms in fevers.

This Aphorism requires no illustration or comment. I may just mention that Damascius refers the heat in the stomach and heartburn to yellow bile in a heated state, which is lodged in the coats of the stomach.

66. In acute fevers, spasms and strong pains about the bowels are bad symptoms.

Galen remarks that the spasms and violent pains of the bowels may be connected with inflammation, erysipelas, a strong obstruction, or an abscess, and from whatever of these causes they proceed, must necessarily be a bad complication in fevers. See further, Coac. ii, 207; Aph. ii, 26; and Celsus, ii, 4.

67. In fevers, frights after sleep, or convulsions, are a bad symptom.

Galen informs us that, instead of frights (φόβοι), some read pains (πόνοι). This Aphorism is in accordance with Aph. ii, 1.

68. In fevers, a stoppage of the respiration is a bad symptom, for it indicates convulsions.

By stoppage of the respiration (τὸ πνεῦμα προσκόπτον) is meant a temporary suspension, or intermission, of the act of inspiration or expiration, or of both. See Galen, Comment. h. l. He justly ascribes it to an affection of the respiratory organs. We have seen it noticed in certain of the cases related in the First and Third Books of the Epidemics. Compare also Vict. Acut. xxi, 21; I Morb. Mul. v, 7. The expression means literally "the breath tripping," and is borrowed from the race-course. See Vossius, Etymolog. in voce *cespes*.

69. When the urine is thick, grumous, and scanty in cases not free from fever, a copious discharge of thinner urine proves beneficial. Such a discharge more commonly takes place when the urine has had a sediment from the first, or soon after the commencement.

Galen informs us that instead of grumous (θρομβώδεια), Numesianus and Dionysius read muddy, (βορβορώδεια). My necessary limits will not permit me here to treat upon the important subject of the indications drawn from the urine, as given by the ancient authorities. See a succinct account of them in the Commentary on PAULUS ÆGINETA, B. II, 14. Galen, in his Commentary, remarks that thick grumous urine may either be accompanied with fever or without it, and in either case it must be a favorable symptom when this secretion comes to its natural state. Compare Coac. v, 80, 81.

70. When in fevers the urine is turbid, like that of a beast of burden, in such a case there either is or will be headache.

Urine resembling that of cattle is noticed several times in the Epidemics. See the case of the wife of Dromeades, Epid. 1; also Epid. vi, 5, 13, and vii; Epid. liv, 5, 6, 10, 11. In all these cases it appears to have been connected with an affection of the brain.

71. In cases which come to a crisis on the seventh day, the urine has a red nubecula on the fourth day, and the other symptoms accordingly.

That in estimating the critical days, the fourth is to be looked upon as an index of the seventh, is a doctrine held by all the authorities. See PAULUS ÆGINETA,

B. II, 9, Syd. Soc. edit.; and Galen's Comment. h. l. The ancients paid great attention to the nubeculæ, or cloudy appearances in the urine. On this Aphorism, see further Judic. vi, 2, ix, 8; Coac. i, 213, v, 5, 82; Aph. 1, 12.

72. When the urine is transparent and white, it is bad; it appears principally in cases of phrenitis.

Urine that is transparent and of a light colour was held to be indicative of a complete stoppage of the digestive powers, and it was thought to be more particularly fatal in phrenitic cases, which were considered to be of a bilious character. See the Commentaries of Galen and Theophilus.

73. When the hypochondriac region is affected with meteorism and borborygmi, should pain of the loins supervene, the bowels get into a loose and watery state, unless there be an eruption of flatus or a copious evacuation of urine. These things occur in fevers.

Meteorism and borborygmi are well-known symptoms in fever. The Commentators state that they arise from flatulence and fluids collected in the hypochondriac region, which may either pass downwards by the bowels, or be determined to the urinary organs. The Aphorism is thus rendered by Celsus: "Si inflatio in superioribus partibus dolorem tumoremque fecit, bonum signum est sonus ventris inde ad inferiores partes evolutus." (ii, 3.) These symptoms are alluded to in several parts of the Hippocratic treatises, as Coac. ii, 240, 241, 257; Prognost. x, 14; Aph. v, 64.

74. When there is reason to expect that an abscess will form in joints, the abscess is carried off by a copious discharge of urine, which is thick, and becomes white, like what begins to form in certain cases of quartan fever, attended with a sense of lassitude. It is also speedily carried off by a hemorrhage from the nose.

This Aphorism is founded on two prognostics in the Sixth Book of Epidemics, § 4. See also Humor. xi, 13, 16, and Judicat. x, 4-7. That a deposit, or abscess, commencing in a joint should be carried off by the urine or a hemorrhage from the nose appears very natural. Galen and Theophilus call attention to the remark that the crisis by epistaxis carries off the affection much more speedily than that by the urine. From this Aphorism being given individually in the Epidemics and generally in the Aphorisms, the learned Fuchsius, in his Commentary on the Epidemics, infers that it is the earlier production.

75. Blood or pus in the urine indicates ulceration either of the kidneys or of the bladder.

That bloody and purulent urine, generally, is connected with ulceration in the kidneys or bladder will be admitted at the present day. Galen further remarks correctly, that the ulceration is generally produced by a sharp calculus. This Aphorism is thus rendered by Celsus: "Si sanguis aut pus in urina est, vel vesica vel renes exulceratæ sunt." (ii, 7.) See further Aph. iv, 78, 81; Int. Affect. xvi, 4, 5; Nat. Human. xxvi, 4; Prænot. xix, 11.

76. When small fleshy substances like hairs are discharged along with thick urine, these substances come from the kidneys.

The substances resembling hairs floating in the urine are described by Galen, Cælius Aurelianus, Avicenna, and other ancient authorities. See PAULUS ÆGINETA, B. III, 45, Syd. Soc. edit. Galen pays a high compliment to our author for having acutely remarked a morbid appearance, of which many practitioners in his time were ignorant. See further, Nat. Human. xxvi, 5; Aph. iv, 26. Celsus renders this Aphorism as follows: "Si hæc crassa, carunculas quasdam exiguas quasi capillos habet," &c. (ii, 7.)

77. In those cases where there are furfuraceous particles discharged along with thick urine, there is scabies of the bladder.

By scabies vesicæ, as Galen explains in his Commentary, was meant an affection of the inner membrane of the bladder. Furfuraceous sediments were looked upon by all the authorities as an unfavorable symptom. See PAULUS ÆGINETA, B. II, 14, Syd. Soc. edit.; and Nat. Human. xxvi, 6.

78. In those cases where there is a spontaneous discharge of bloody urine, it indicates rupture of a small vein in the kidneys.

This Aphorism is nearly allied to Aphor. 75. Galen, in his Commentary, remarks that the rupture of the vessel may either proceed from an external or an internal cause. By spontaneous is meant sudden.

79. In those cases where there is a sandy sediment in the urine, there is calculus in the bladder (or kidneys).

Galen informs us that there was no mention of the kidneys in the copies of Hippocrates then in use, whence he justly held that the Aphorism was not strictly correct. It is, of course, undeniable that sabulous urine may either be connected with disease of the bladder or of the kidneys. See further, IV Morb. xxix, 13; Int. Affect. xv, 10, 11.

80. If a patient pass blood and clots in his urine, and have strangury, and if a pain seize the hypogastric region and perineum, the parts about the bladder are affected.

This Aphorism is repeated word for word, Aphor. vii, 39. One, of course, can have no hesitation in admitting the truth of it, when we take into account that, as explained by Galen, under the expression "the parts about the bladder," are comprehended all the urinary organs, namely, the bladder, kidneys, and urethra.

81. If a patient pass blood, pus, and scales, in the urine, and if it have a heavy smell, ulceration of the bladder is indicated.

This, it will be remarked, is very little different from Aphor. iv, 75.

82. When tubercles form in the urethra, if these suppurate and burst, there is relief.

By *phymata* there can be no doubt that Hippocrates understood small and indolent abscesses; the term, I need scarcely say, is frequently used by him in this sense. By

urethra, in this place, according to Theophilus, was meant the neck of the bladder. I cannot, from my own personal information, give any account of these tubercles, but for a description of them I would refer the reader to the Commentary of Heurnius; and also to the works of Ambrose Paré, and, in particular, to Amatus Lusitanus, 4, cent. 19. See further, Coac. iii, 311, 312; and Celsus, ii, 8.

83. When much urine is passed during the night, it indicates that the alvine evacuations are scanty.

From this Aphorism it will be seen that our author regarded the urinary and alvine evacuations as vicarious, so that if the one was abnormally abundant, the other was of necessity deficient in as great a degree. Theophilus mentions that he says "during the night," because digestion takes place at that time. Compare II Diæt. xl, 10-17; IV Morb. vii, 4.

SECTION V.

1. A spasm from taking hellebore is of a fatal nature.

We have had occasion repeatedly to remark that Hippocrates, in extreme cases, had recourse to the hellebore, that is to say, the white hellebore, as Galen, in his Commentary, remarks. It was undoubtedly the *veratrum album*. See PAULUS ÆGINETA, Vol. III, p. 107. He here states the danger of administering it unseasonably. As Theophilus remarks, it sometimes brings on convulsion from sympathy with the stomach. Heurnius, in his Commentary, relates a case in point, which occurred to his own knowledge. See further, Aph. vii, 25; Coac. iv, 24; and Celsus, ii, 6.

2. Spasm supervening on a wound is fatal.

That spasm, that is to say, a tetanic affection supervening on a wound, is highly dangerous all experienced surgeons are well aware. Galen, in his Commentary, remarks that the spasm is an affection of the nervous parts in connexion with the wound. He further remarks that by "fatal," (*θανάσιμον*), in this place is merely meant "very dangerous." See further Coac. iii, 81, 382; Capit. Vulner. xxv, 5; Celsus, ii, 26. Tagaultius pointedly adverts to this interpretation of the Aphorism. Inst. Chirurg. ii.

3. A convulsion, or hiccup, supervening on a copious discharge of blood is bad.

Every person who is familiar with obstetrical practice will bear testimony to the truth of this Aphorism, as far as regards uterine hemorrhage; hence the danger of using violent remedies in such a case. Hiccup, as Galen remarks, is a spasm of the stomach. See further, Aph. vii, 9; Coac. iii, 57; Celsus, ii, 8.

4. A convulsion, or hiccup, supervening upon hypercatharsis is bad.

This is a natural inference from Aph. 1 and 3. See further, Aph. vii, 41; Coac. iv, 22; Verat. Us., i, 8; and Celsus, ii, 8.

5. If a drunken person suddenly lose his speech, he will die

convulsed, unless fever come on, or he recover his speech at the time when the consequences of a debauch pass off.

We have here a very important fact announced to us respecting the effects of intoxication, and it is to be regretted that of such cases modern physicians have much greater experience than Hippocrates can have had, intoxication, it is too well known, being much more common now than in the days of the Greeks and Romans. Galen, in his Commentary, remarks that there is no limit for the effects of intoxication to pass off, that in some this takes place next day, and in others they last till the third day. See II Morb. iv, 16, xxii, 2, 3, 4; Celsus, ii, 6.

6. Such persons as are seized with tetanus die within four days, or if they pass these they recover.

No doubt this prognosis is generally applicable in hot countries. See further, Judicat. viii, 19; III Morb. xiii, 11; Celsus, ii, 1.

7. Those cases of epilepsy which come on before puberty may undergo a change; but those which come on after twenty-five years of age, for the most part terminate in death.

The prognosis in this case is in accordance with Aphor. ii, 45. See further, II Prorrh. xvi, and Morb. Sac.; also Celsus, ii, 8, and iii, 23. It is to be lamented that, at the present day, no more favorable prognosis can be made in this case.

8. In pleuritic affections, when the disease is not purged off in fourteen days, it usually terminates in empyema.

The subject of empyema after acute inflammations of the chest is treated of in the annotations on the Prognostics. On this interesting subject, see further, Aph. v, 15; Loc. in Hom. xxvii, 4; Coac. iii, 131, 132, 171; VII Epid. xlvii, 16; I Morb. iii, 29, x, 12, xi, 6-11, xxiii, 15, 16, xxiv, 10; III Morb. xvi, 30; Affect. viii, 19, 20, ix, 13; Int. Affect. i, 26; Vict. Acut. vii, 1, 2. The Commentary of Heurnius on this Aphorism is interesting.

9. Phthisis most commonly occurs between the ages of eighteen and thirty-five years.

This agrees with Aphor. iii, 29. See further, viii, 7, and Coac. iii, 260; also Celsus, iii, 22. It is to be borne in mind that the terms here specified comprehend the age of puberty (*μετακίων*) and that of adults (*νεανίσκων*). See the Commentary of Galen. I beg to quote, under this head, the opinion of our great English authority on Phthisis, I mean Sir James Clark: "The opinion of Hippocrates on this subject corresponds still more clearly with the results obtained from our tables; that accurate observer fixed the age at which phthisis most frequently occurs between the 18th and 35th year." (On Tubercular Phthisis.) Louis, as is too frequently the case with him, is undecided on this point.

10. Persons who escape an attack of quinsy, and when the disease is turned upon the lungs, die in seven days; or if they pass these they become affected with empyema.

We have here clearly the case of ulcerous sore-throat referred to, in which the

disease passes down to the lungs. That such cases generally prove fatal in the course of a few days is well known; but that they terminate in empyema, according to the modern acceptation of that term, will not be so readily admitted. It is probable, however, that our author meant by the term any purulent expectoration from the lungs. In fact, the literal translation of the last clause would be, "they become purulent." Heurnius, by the way, relates a case in point. See his Commentary; also Prognost. xxiii, 15; Coac. iii, 100, 101, 105, 106; II Morb. xxvii, 15-19; and Celsus, ii, 6.

11. In persons affected with phthisis, if the sputa which they cough up have a heavy smell when poured upon coals, and if the hairs of the head fall off, the case will prove fatal.

The test of phthisis here proposed is taken from Coac. iii, 252. It is approved of by Galen, and most of the commentators, even down to Heurnius in the 17th century, who relates an instance in which he founded a correct diagnosis upon it. Aretæus, however, objects to it, Morb. Acut. i, 8. See further, II Morb. xlvi, 16-20, lv, 20-23; Affect. viii, 19; also Celsus, ii, 8, and iii, 22.

12. Phthisical persons, the hairs of whose head fall off, die if diarrhœa set in.

The two symptoms here mentioned, are very characteristic of the last stage of phthisis. See further, Aph. v, 14, vii, 78; Coac. iii, 144, 255; I Morb. x, 36; II Morb. xlvi, 12; also Celsus, ii, 8.

13. In persons who cough up frothy blood, the discharge of it comes from the lungs.

No doubt, as a general rule, this statement is true, and is confirmed by many of the ancient authorities. See those referred to in the Commentary on PAULUS ÆGINETA, B. III, 31; and further, Coac. iii, 216, 250, 254, 273; II Morb. li, 4. The Commentaries of Galen and Heurnius on this head are interesting, but too lengthy for my limits. The former of these informs us, that in some of the editions he found "vomit" (ἐμέουσι), instead of "spit" (πτύουσιν).

14. Diarrhœa attacking a person affected with phthisis is a mortal symptom.

This symptom is already alluded to, Aph. v, 12. See further, vi, 17, vii, 78; Coac. iii, 244, 256; I Morb. vi, 5, x, 36, 39, xi, 41, xiv, 10; also Celsus, ii, 8, iii, 22.

15. Persons who become affected with empyema after pleurisy, if they get clear of it in forty days from the breaking of it, escape the disease; but if not, it passes into phthisis.

I need scarcely remark, that what is stated in this Aphorism strongly confirms the opinion expressed by me in my Annotations on the Prognostics, that our author applied the term empyema both to the purulent expectoration that follows inflammation of the lungs and pleurisy, and to that which proceeds from a cavity of the lungs in tubercular phthisis. See further, Aph. v, 12, vi, 16; Loc. in Hom. xxv, 10; Coac. iii, 141, 171, 209, 215; VII Epidem. xlvii, 16, 17; I Morb. x, 15, 17, 20; II Morb. lv, 23; III Morb. xvi, 35; also Celsus, ii, 7.

16. Heat produces the following bad effects on those who use it frequently: enervation of the fleshy parts, impotence of the nerves, torpor of the understanding, hemorrhages, deliquia, and, along with these, death.

Upon reference to my analysis of the work "De Usu Humidorum," in the second section of the Preliminary Discourse, it will be seen that the contents of it are in a great measure identical with the series of Aphorisms (16-25) upon which we are now entering. It will also be seen from the Commentary of Galen, that there was a variety of readings with regard to the last words of the sentence here translated, "and, along with these, death." By "heat" is meant "hot water," or "a hot fomentation." The effects here described apply, of course, only to the immoderate use of it. See further, Humid. Us. iii, 2, 3; Offic. Medic. viii, 14; Artic. lvii, 3; Aphor. 1-23. Celsus tersely renders it thus: "(Calor) si nimius est, corpus effœminet, nervos emollit, stomachum solvit." (i, 9.)

17. Cold induces convulsions, tetanus, mortification, and febrile rigors.

See Aph. v, 20; Humid. Us. iii, 4, iv, 5; Tract. xxxvii, 6; Artic. lxxiv, 10.

18. Cold is inimical to the bones, the teeth, the nerves, the brain, and the spinal marrow, but heat is beneficial.

See Humid. Us. iv, 1, 4, and Celsus, i, 9. The commentators, and especially Theophilus, explain that the parts of the body here mentioned are of a cold nature, as being possessed of little vascularity, and hence they are readily hurt by cold, and are benefited by heat.

19. Such parts as have been congealed should be heated, except where there either is a hemorrhage, or one is expected.

See further, Aph. ii, 22, v, 23; Humid. Us. i, 21, xi, 28. The practice here recommended is obviously founded on the rule "contraria contrariis."

20. Cold pinches ulcers, hardens the skin, occasions pain which does not end in suppuration, blackens, produces febrile rigors, convulsions, and tetanus.

The only expression here of ambiguous meaning is *ὁδύνην ἀνεκπύητον ποιεῖ*, the import of which would seem either to be, "that it aggravates pains not connected with suppuration," as explained by Theophilus, or "that it prevents painful parts from coming to suppuration," as explained by Heurnius. See Aph. v, 17; Humid. Us. iii, 4, ix, 5, xi, 15; Tract. xxxvii, 6; Artic. lxxiv, 10; also Celsus, i, 9.

21. In the case of a muscular youth having tetanus without a wound, during the midst of summer, it sometimes happens that the affusion of a large quantity of cold water recalls the heat. Heat relieves these diseases.

We have here as safe directions as can be well imagined for the application of the cold affusion in tetanus, and very different from the circumstances under which it was proposed by Dr. Currie, of Liverpool. It is only in the case of a muscular person, and

when unconnected with a wound, that he recommends the practice; and even under these circumstances it was discontinued by succeeding authorities. See the Commentary on PAULUS ÆGINETA, Book III, 20. See further, Humid. Us. xi, 16; Aphor. v, 25; III Morb. xiv, 17 — xv. Galen, in his Commentary, explains that the cold acts in this place, not by extinguishing, but by rousing the vital heat.

22. Heat is suppurative, but not in all kinds of sores, but when it is, it furnishes the greatest test of their being free from danger. It softens the skin, makes it thin, removes pain, soothes rigors, convulsions, and tetanus. It removes affections of the head, and heaviness of it. It is particularly efficacious in fractures of the bones, especially of those which have been exposed, and most especially in wounds of the head, and in mortifications and ulcers from cold; in herpes exedens, of the anus, the privy parts, the womb, the bladder, in all these cases heat is agreeable, and brings matters to a crisis; but cold is prejudicial, and does mischief.

The important matters contained in this Aphorism are also treated of in the following parts of the Hippocratic Collection: Humid. Us. xi, 18-28, xi, 10, i, 10, 19, v, 13, vi, 2, 3; Ulcer. v, 1; I Morb. vi, 14. Galen and Theophilus, among the ancients, and Heurnius, among the modern commentators, have given some very interesting observations on this Aphorism, but they are far too lengthy for my limits. Heat, it will be remarked, is said to be a test, as it were, of ulcers, whether they are of a mild nature or not; for if it produce suppuration, they may be regarded as mild, but if otherwise, as malignant.

23. Cold water is to be applied in the following cases: when there is a hemorrhage, or when it is expected, but not applied *to* the spot, but *around* the spot whence the blood flows; and in inflammations and inflammatory affections, inclining to a red and sub-sanguineous colour, and consisting of fresh blood, in these cases it is to be applied, but it occasions mortification in old cases; and in erysipelas not attended with ulceration, as it proves injurious to erysipelas when ulcerated.

I need scarcely remark, that the good and bad effects of cold, when applied medicinally, are here given with admirable judgment. What a valuable fact is here stated with regard to the effects of cold in checking hemorrhage! And how excellent the advice not to apply it *to* the wound, for this might occasion pain and increase vascular action, but to the parts *around*! It will be remarked, that he further recommends cold applications to inflammation, and to erysipelas, when not ulcerated. Popular opinion is against the use of it in the latter case, but very probably without much cause. The substance of this Aphorism is given by Celsus, i, 9. No part of this Aphorism is to be found in the treatise De Humid. Us., and the only passage which is at all parallel to it is Aph. v, 19.

24. Cold things, such as snow and ice, are inimical to the

chest, being provocative of coughs, of discharges of blood, and of catarrhs.

The matter contained in this important Aphorism is also to be found at Humid. Us. iv, 8, v, 16; VI Epid. iii, 22. Although intensely cold applications to the chest are condemned by all the ancient authorities, moderately cold applications are recommended by many of them. But even these, Galen affirms, have sometimes the contrary effect to what they are intended to produce. (Meth. Med., v, 6.) See the Commentary on PAULUS ÆGINETA, Book III, 26, Syd. Soc. edition. I would remark in this place, as confirmatory of the views laid down by our author in this and the preceding Aphorism, that, in my opinion, snow and ice, when applied in uterine hemorrhage, often do harm rather than good. I am confident that the hemorrhage is to be checked, not by intensely cold, but by cooling things; for I verily believe, with Hippocrates, that ice and snow, by creating pain and bringing on a violent reaction, may often increase the hemorrhage rather than allay it. "Ubi dolor ibi fluxus."

25. Swellings and pains in the joints, without ulceration, those of a gouty nature, and sprains, are generally improved by a copious affusion of cold water, which reduces the swelling, and removes the pain; for a moderate degree of numbness removes pain.

See further, Humid. Us. x, 14, 15. With the exception of gouty swellings, it will scarcely be questioned, at the present day, that the practice advocated in this Aphorism is sound and judicious; and even in the gout there have not been wanting modern authorities who have advocated the practice of Hippocrates, including Kinglake, the celebrated Harvey, and Mason Good. See Dr. Copland's Dictionary of Practical Medicine, under *Gout*, § 65. It should be kept in mind, moreover, that it is not cold applications, but the affusion of cold water which our author recommends in these cases; and that all the commentators hold that it acts, not by producing cold, but by rousing the vital heat of the part. See, in particular, the very interesting commentaries published by Dietz, *Anecdota Græca*, tom. ii, 458.

26. The lightest water is that which is quickly heated and quickly cooled.

See *Aër.*, Aq., Loc., xvii, 1; II Epid. ii, 29; Celsus, ii, 18.

27. When persons have intense thirst, it is a good thing if they can sleep off the desire of drinking.

This I believe to be a very judicious rule of practice, whether the thirst be occasioned by drinking wine or by the presence of fever. As Galen remarks, if the thirst be intense, a moderate quantity of liquids is to be taken; and if less so, drink is to be abstained from altogether, and the person should be left to sleep off his thirst. See the Comment. of Galen; also VI Epid. iv, 42.

28. Fumigation with aromatics promotes menstruation, and would be useful in many other cases, if it did not occasion heaviness of the head.

This agrees with what is said, *Natur. Mulieb.* xix, 161-187. All the ancient authorities

trusted much to fomentations and pessaries, consisting principally of aromatics, for the cure of amenorrhœa. See the Commentary on PAULUS ÆGINETA, Book III, 71. The aromatics, being of a diffusible nature, affect the heads of delicate women when so applied. Those mentioned by Galen are costus, cassia, cinnamon, and amomum, on which see Dierbach, as to the medicinal articles used by Hippocrates, and PAULUS ÆGINETA, Vol. III, Syd. Soc. edit.

29. Women in a state of pregnancy may be purged, if there be any urgent necessity (*or*, if the humours be in a state of orgasm?), from the fourth to the seventh month, but less so in the latter case. In the first and last periods it must be avoided.

Galen, in his Commentary, remarks, that this Aphorism occurs previously, among those relating to purging, and is here repeated among those devoted to female complaints. He adds, however, that some had suppressed it. See Celsus, ii, 6.

30. It proves fatal to a woman in a state of pregnancy, if she be seized with any of the acute diseases.

How often have I seen the truth of this prognosis verified! Galen instances epilepsy, apoplexy, spasm, and tetanus; and Theophilus, phrenitis and pleurisy, as diseases particularly fatal when they attack a pregnant woman. See further, I Morb. iii, 9; I Epidem. ii, 141; also Celsus, ii, 6.

31. If a woman with child be bled, she will have an abortion, and this will be the more likely to happen, the larger the foetus.

That a large evacuation of blood, by depriving the foetus of its pabulum, should prove fatal to it, seems very natural, and accordingly most of the ancient authorities, as a general rule, forbid pregnant women to be bled. Celsus mentions it as a recent discovery, that a vein might be opened even in a woman with child. (ii, 10.) Heurnius accounts for the difference between modern views and those of Hippocrates on this head, from the difference in the mode of living, which he supposes must have been very simple in the age of Hippocrates, and consequently persons could not bear the loss of blood so well as they do in modern times, when the diet is more full and luxurious. Perhaps this is the proper way of reconciling the rules of Hippocrates and Celsus.

32. Hæmoptysis in a woman is removed by an eruption of the menses.

The very same prognosis occurs at I Morb. vi, 11. Galen explains the relief obtained in this case upon the principle of revulsion, and states that, in imitation of this natural cure, he had often opened a vein with the same intention, and with good effects.

33. In a woman when there is a stoppage of the menses, a discharge of blood from the nose is good.

See, in like manner, Virgin. Morb. iii, 2. This also looks like a natural cure of the plethora induced by the suppression of the menstrual discharge. Galen remarks, that it points out the propriety of letting blood from other parts of the body in such a case.

34. When a pregnant woman has a violent diarrhœa, there is danger of her miscarrying.

See, in like manner, II Prædict. xxx, 14; Coac. iii, 416; I Morb. Mulier. xxxvii, 5; xli, 3, 6. The danger of abortion when a woman is seized with a violent discharge from the bowels is well known.

35. Sneezing occurring to a woman affected with hysterics, and in difficult labour, is a good symptom.

The meaning of hysterics in this Aphorism is somewhat ambiguous. Damascius understands by it (*ὕστερικῶν*) "the secundines," and refers the case to retention of the placenta. Galen rejects this interpretation, and also that of those commentators who applied it to all diseases of the uterus, whereas he contends it is only applicable to uterine suffocation, that is to say, the hysterical fit. That in it, and in certain cases of tedious labour, sneezing, by rousing the natural powers, may prove useful, can be well conceived. On this subject, see further, Aph. v, 49; Prænot. xiii, 11; Coac. iii, 175; Morb. Mulier. xciii, 1, 6, 7.

36. When the menstrual discharge is of a bad colour and irregular, it indicates that the woman stands in need of purging.

It appears from Galen, that in his time both the reading and meaning were considered doubtful. From the nature of the remedy, one may conjecture that it means to apply to deficient menstruation, the discharge being deficient both in quantity and quality. The term purging may also apply either to purgatives of the bowels, or to those which act upon the uterus, that is to say, emmenagogues. In these cases hellebore was used by the Hippocratists. (De Verat. Us. i, 11.) Emmenagogues, in the form of a pessary, were usually administered in like manner. See the Commentary on PAULUS ÆGINETA, Book III, 61, Syd. Soc. edit.

37. In a pregnant woman, if the breasts suddenly lose their fulness, she has a miscarriage.

The prognostic contained in this Aphorism no doubt generally holds true, and is still much relied upon by females themselves. See further, in connexion with this Aphorism, Aph. v, 53; II Epid. i, 42; I Morb. Mulier. xlv, 1, 2, 3.

38. If, in a woman pregnant with twins, either of her breasts lose its fulness, she will part with one of her children; and if it be the right breast which becomes slender, it will be the male child, or if the left, the female.

This Aphorism is founded on the physiological notion which generally prevailed in antiquity, that the uterus consists of two cavities, a right and a left, and that the male fœtus was contained in the former, and the female in the latter. See, in particular, Theophilus, ed. Dietz., ii, p. 469. However, Moschion, Soranus, and Galen would appear to have been better informed. See Comment. on PAULUS ÆGINETA, Book III, 65, Syd. Soc. edit.

39. If a woman who is not with child, nor has brought forth, have milk, her menses are obstructed.

Galen and Theophilus enter into a physiological explanation of the reason of the fact here stated, the summary of which amounts to this, that there is a strong sympathy between the uterus and mammae, according to Theophilus, owing to a vascular connexion between them. Galen's Commentary is very interesting, but too lengthy for my limits. See further, II *Prorrh.* xxxv, 5.

40. In women, blood collected in the breasts indicates madness.

This prognosis is repeated, *Epidem.* ii, at the end. Galen, however, states, that he had never seen such a case, and declares that if ever such do occur, it must be very rarely. But supposing it true, he attempts to explain the rationale of it. A commentary published by Dietz (tom. ii, p. 465) states, that Galen rejected this Aphorism, as being false and supposititious. I can well believe, however, that it refers to some rare cases of puerperal mania, which is often connected with disorders of the mammae.

41. If you wish to ascertain if a woman be with child, give her hydromel to drink when she is going to sleep, and has not taken supper, and if she be seized with tormina in the belly, she is with child, but otherwise she is not pregnant.

This test is founded on the nervous irritability which is so common in the state of pregnancy. See also *Steril.* vi, 6, 7, 8, 11. There is some incongruity, as M. Littré remarks, between the text and the Commentary of Galen, which would lead to the supposition that the text may be corrupted.

42. A woman with child, if it be a male, has a good colour, but if a female, she has a bad colour.

Women, in some parts of the country, still repose confidence in this diagnostic rule, and it was admitted by all the commentators which have come down to us. It is repeated, *Steril.* vii, 1. Ambrose Paré quotes it with approbation. (xxiii, 12.)

43. If erysipelas of the womb seize a woman with child, it will probably prove fatal.

Galen remarks that not only erysipelas, but also inflammation, when it attacks the impregnated uterus, generally proves fatal. In fact, as stated formerly, all acute diseases which attack pregnant women are usually fatal. See *Aph.* v, 30; *I Morb.* iii, 9; *Natur. Mul.* xii, 17, 27; *II Morb. Mul.* lviii, 12, 29.

44. Women who are very lean, have miscarriages when they prove with child, until they get into better condition.

It will be seen by the Commentary of Galen, that this Aphorism had been differently interpreted. That in women who are much emaciated, the fœtus should perish for want of food is a very natural supposition, and yet I know from experience that it does not always happen. None of the ancient authorities, however, venture to question the truth of this prognostic.

45. When women, in a moderate condition of body, miscarry in the second or third month, without any obvious cause, their

cotyledones are filled with mucosity, and cannot support the weight of the foetus, but are broken asunder.

The term cotyledones was originally applied to the uterine glandulæ of the sheep, with which their placentulæ are connected. It was afterwards applied also first to the ruminants and then to the tufts of the human placenta. All the ancient physiologists believed that the band of connexion between the mother and the foetus, in ruminants and in women, is analogous. It was supposed, then, that abortion was occasioned by the weakness and softness of the parts which connect the uterus and foetus. See further, Nat. Mulier. xxvii, 1-5; I Morb. Mulier. lxxxiv, 1, 2, 3.

46. Such women as are immoderately fat, and do not prove with child, in them it is because the epiploon (*fat?*) blocks up the mouth of the womb, and until it be reduced, they do not conceive.

Our author would seem to use epiploon here as being synonymous with fat, as is stated in the Commentary of Theophilus. See further, Aër., Aq., Loc., ix, 12; II Prædict. xxxiii, 12; Nat. Mulieb. xix, 4, 5, 7; Steril. x, 7.

47. If the portion of the uterus seated near the hip-joint suppurate, it gets into a state requiring to be treated with tents.

Our author evidently treats of chronic abscess of the womb, which, as I have seen, is apt to end in a sinous ulcer. This is what he means by an ulcer requiring to be treated by tents. See Nat. Mulier. vi, 5; I Morb. Mulier. xci, 32.

48. The male foetus is usually seated in the right, and the female in the left side.

I have referred to the anatomical opinions of the ancients with respect to the uterus at Aph. v, 38.

49. To procure the expulsion of the secundines, apply a sternutatory, and shut the nostrils and mouth.

This is the popular practice in the north of Scotland at the present day. The object evidently is to rouse the action of the uterus and abdominal muscles to expel the placenta. Theophilus, in his Commentary, remarks, that if the placenta be not expelled, it becomes putrid, and occasions much mischief. See further, Aph. v, 35; Coac. iii, 175; Prænot. xiii, 11; II Epid. v, 42; I Morb. Mulier. lxxvi, 6, 7, xciii, 1, 6, 7; II Morb. Mulier. xliii, 6, 7.

50. If you wish to stop the menses in a woman, apply as large a cupping instrument as possible to the breasts.

I need scarcely remark that we have here given a most important rule of practice, founded on the connexion and sympathy between the uterus and mammæ. Upon this principle, as Heurnius in his Commentary remarks, we may see the advantage of determining to the mammæ in uterine hemorrhage after delivery. It is well known that, in modern practice, the child is generally applied, which often proves very efficacious, by producing a rush of fluids to the breasts. On this head, see further, II Epid. vi, 33; II Morb. Mulier. i, 4, 11, 17.

51. When women are with child, the mouth of their womb is closed.

The great anatomical authority, Herophilus, stated, that in pregnancy the mouth of the womb is so closely shut up, that it cannot admit the end of a probe. See Dietz, &c., tom. ii, p. 470.

52. If in a woman with child, much milk flow from the breasts, it indicates that the foetus is weak; but if the breasts be firm, it indicates that the foetus is in a more healthy state.

This Aphorism is also evidently founded on the same principle. See further, II Epid. vi, 35, 36.

53. In women that are about to miscarry, the breasts become slender; but if again they become hard, there will be pain either in the breasts, or in the hip-joints, or in the eyes, or in the knees, and they will not miscarry.

The drift of this Aphorism is somewhat obscure to me, after reading the elaborate Commentaries of Galen, Heurnius, and others, both ancient and modern. I am much inclined to adopt one of the interpretations given by Galen, namely, that of supposing that "again" (παλιν), in this place, signifies "on the contrary," and that the swelling up of the mammæ announces that the danger of abortion is over, while the pains mentioned in other organs indicate that the mischief had passed to them. On the connexion between pain in the hip-joint and pregnancy, see further, II Epid. ii, 42.

54. When the mouth of the uterus is hard, it is also necessarily shut.

Allusion seems to be here made to amenorrhœa connected with organic disease of the uterus. See the Commentaries of Galen and Theophilus. Heurnius holds this to be a very important Aphorism, as it indicates the source of the many bad consequences which women experience from retention of the menses connected with a cause which the obstetric practitioner has it in his power to remove. See further, II Morb. Mulier. xlv, 11, 12, xlvi, 1, 2, 1, 1, 2.

55. Women with child who are seized with fevers, and who are greatly emaciated, without any (other?) obvious cause, have difficult and dangerous labours, and if they miscarry, they are in danger.

Upon reference to Galen, Theophilus, Heurnius, and Littré, it will be seen that there is considerable uncertainty respecting the meaning of this Aphorism. I am inclined to think that what is meant is this, that pregnant women who are greatly emaciated by fevers are apt to have either dangerous deliveries or abortions. Compare Aph. v, 30, 43; Coac. iii, 408.

56. In the female flux (*immoderate menstruation?*), if convulsion and deliquium come on, it is bad.

The term "female flux" was applied by the ancient authorities to any vitiated state of the menstrual discharge. See the Commentary on PAULUS ÆGINETA,

Book III, 63, Syd. Soc. edit. The danger from convulsions and deliquium, in such cases, is well understood. See, in connexion with this Aphorism, Aph. v, 3; Coac. iii, 424; II Morb. Mulier. xiii, 7, 9.

57. When the menses are excessive, diseases take place, and when the menses are stopped, diseases from the uterus take place.

This Aphorism is rather ambiguously expressed, as may be seen on reference to the Commentaries of Galen and Theophilus. Perhaps all that is meant is, that diseases are engendered both by immoderate menstruation and by a stoppage of the same. There are many parallel passages in the Hippocratic Collection, such as Nat. Mul. xiii, 5, xxxix, 1, 2, 5, 6, xl, 2, 5, 6; I Morb. Mulier. xiv, 1, 12; II Morb. Mulier. iii, v, vi, &c; Nat. Puer. vi, 14, xiii, 1; Virg. Morb. ii, 5-14; Nat. Mul. iii, 1, x, 1-5.

58. Strangury supervenes upon inflammation of the rectum, and of the womb, and strangury supervenes upon suppuration of the kidney, and hiccup upon inflammation of the liver.

This important Aphorism is so plain as not to stand in need of any comment. See further, in connexion with it, Hæmorrhoid. iii, 1, iv, 1; Aph. vii, 13; Int. Affect. xli, 6.

59. If a woman do not conceive, and wish to ascertain whether she can conceive, having wrapped her up in blankets, fumigate below, and if it appear that the scent passes through the body to the nostrils and mouth, know that of herself she is not unfruitful.

This practice of fumigating the uterus, either on account of the state of the menstrual discharge, or for the purpose here indicated, is adverted to in various parts of the Hippocratic treatises; as Nat. Mul. vii, 9; I Morb. Mul. cvii, 1; II Morb. Mul. xl, 20, 21; Steril. vi, 3; Superfæt. ix, 3, x, 9, 11. Theophilus describes the process very minutely, but it will readily be understood that it consisted in introducing the fumes of strong-smelling things, such as frankincense, spikenard, cassia, and storax, into the vagina by means of a funnel. As a remedial means in certain diseases of the uterus, I can think of nothing more likely to prove efficacious. Whether or not it would prove a suitable test of a woman's capability for conceiving, I am not able either to affirm or deny. As Galen remarks, Plato refers to this practice in his Theætetus.

60. If woman with a child have her courses, it is impossible that the child can be healthy.

See, in connexion with this Aphorism, Nat. Puer. v, 3; I Morb. Mul. xl, 2, 5, 9, 11, xliv, 4, 5, 6, xcix, 2. Theophilus has a very interesting Commentary on this head, in which he states that it is a fact ascertained by experience, that, during pregnancy, there is sometimes a discharge up to the fifth or sixth month; but, he properly remarks, in such a case the blood does not come from the inside of the uterus, but from the veins situated in the neck of it. Galen expresses himself to the same effect, but not so fully.

61. If a woman's courses be suppressed, and neither rigor nor fever has followed, but she has been affected with nausea, you may reckon her to be with child.

I need scarcely remark that, as a general rule, what is here stated by our author holds good. See further, Aph. v, 41; I Morb. Mulier. xcix, 2; Steril. vi, 9, 10.

62. Women who have the uterus cold and dense (*compact?*) do not conceive; and those also who have the uterus humid, do not conceive, for the semen is extinguished, and in women whose uterus is very dry, and very hot, the semen is lost from the want of food; but women whose uterus is in an intermediate state between these temperaments prove fertile.

The principal cause of sterility, it will be remarked, is here held to be the intemperaments of the uterus. Galen has given a very lengthy dissertation on this subject in his Commentary, and the subsequent authorities all adopt the views of our author. See PAULUS ÆGINETA, Book III, 74, Syd. Soc. edit. Compare I Morb. Mulier. xxvi, 27, xxxiii, 5, xxxiv, 1; II Prædict. xxxiii, 2-6.

63. And in like manner with respect to males; for either, owing to the laxity of the body, the pneuma is dissipated outwardly, so as not to propel the semen, or, owing to its density, the fluid (*semen?*) does not pass outwardly; or, owing to coldness, it is not heated so as to collect in its proper place (*seminal vessels?*), or, owing to its heat, the very same thing happens.

Galen finds many things in this Aphorism altogether foreign to the doctrines of Hippocrates, and, in a word, does not hesitate to pronounce it to be supposititious. Theophilus and Damascius adopt the same views as Galen regarding it.

64. It is a bad thing to give milk to persons having headache, and it is also bad to give it in fevers, and to persons whose hypochondria are swelled up, and troubled with borborygmi, and to thirsty persons; it is bad also, when given to those who have bilious discharges in acute fevers, and to those who have copious discharges of blood; but it is suitable in phthisical cases, when not attended with very much fever; it is also to be given in fevers of a chronic and weak nature, when none of the aforementioned symptoms are present, and the patients are excessively emaciated.

I need scarcely call attention to this Aphorism as containing most excellent rules for the use of a very important article, both in regimen and medicine. Milk, it will be seen, is said to be prejudicial in febrile and bilious complaints; but is beneficial in phthisical cases, and when there is much emaciation without any acute fever. See, in connexion with this subject, III Epid. iii; Ægr. xiii, 7; I Morb. Mulier. lxxxviii, 22;

Aph. iv, 73; Int. Affect. iv, 35, xi, 2; II Morb. Mul. viii, 21; also the Commentaries of Galen and Theophilus, which are interesting, although they contain no new views on the subject.

65. When swellings appear on wounds, such cases are not likely to be attacked either with convulsions or delirium, but when these disappear suddenly, if situated behind, spasms and tetanus supervene, and if before, mania, acute pains of the sides, or suppurations, or dysentery, if the swellings be rather red.

This Aphorism evidently relates to the consequences of metastasis in wounds, or ulcers. It is founded on II Epidem. iii, 129, and is thus translated by Celsus: "*Si tumores super ulcera subito esse desierunt, idque a tergo incidit, vel distensio nervorum, vel rigor timeri potest; et si a priore parte id evenit, vel lateris acutus dolor, vel insania expectanda est; interdum etiam ejusmodi casum, quæ tutissima inter hæc est, profusio alvi sequitur.*" (ii, 7.) The greatest difficulty about it is the distinction which is recognised among the affections according as the wound is situated in the fore or back part of the body. Galen says, in explanation, that the back parts are nervous, and hence the affections are spasm and tetanus; while the fore parts are vascular, that is to say, contain many arteries and veins; and hence, when the metastasis is upwards, it produces mania; when to the chest, pleurisy and empyema; and when to the bowels, bloody dysentery, that is to say, an evacuation of pure blood by the bowels. See PAULUS ÆGINETA, B. III, 42. See the Annotations of M. Nasse on this passage in M. Littré's edition, tom. iv, p. 550, which, however, do not appear to me to throw much light on the subject of this Aphorism.

66. When no swelling appears on severe and bad wounds, it is a great evil.

See II Epidem. iii, 128, xxiii, 1. Galen, in his Commentary, explains that by "bad" is meant, in this place, wounds situated in nervous and muscular parts, wounds of which, it is well known, are apt to prove dangerous. This Aphorism is evidently connected with the preceding one.

67. In such cases, the soft are favorable; and crude, unfavorable.

This Aphorism is also clearly connected with the two preceding. By "crude" is meant tumours which are hard, and have not come to a suppuration.

68. When a person is pained in the back part of the head, he is benefited by having the straight vein in the forehead opened.

This practice is also alluded to at Loc. in Homine, xlix, 10; VI Epid. ii, 48; Affect. ii, 10, 11. The practice here recommended is founded on the principle of evacuation by revulsion. Galen, in his Commentary, mentions, that, from analogy, he had often bled by cupping the back part of the head in the affections of the eye. By "the straight vein in the forehead" our author evidently means either the temporal vein or artery; but which of these, it is impossible to say, as he applies the term

vein ($\phi\lambda\epsilon\psi$) in the modern sense of "blood-vessel." See the Commentary on PAULUS ÆGINETA, B. VI, 5, Syd. Soc. edit.

69. Rigors commence in women, especially at the loins, and spread by the back to the head; and in men also, rather in the posterior than the anterior side of the body, as from the arms and thighs; the skin there is rare, as is obvious from the growth of hair on them.

See II Epid. iii, 111; VI Epid. iii, 30-35; Nat. Puer. xvii, 2, 3, 14, xviii, 1. There is considerable ambiguity in this sentence, on which compare the Commentaries of Galen and Theophilus with the Annotations of M. Littré (tom. iv, p. 561). In my opinion the meaning is this:—rigors commence in those parts of the body which are coldest, as the back in women, and back parts of the arms and legs in men; that the back parts are coldest is evident from their rarity, as not being covered with hair so much as the anterior parts.

70. Persons attacked with quartans are not readily attacked with convulsions, or if previously attacked with convulsions, they cease if a quartan supervene.

This Aphorism is founded upon a highly important principle which our author announces elsewhere, namely, that a quartan fever is not only free of danger itself, but often carries off other serious diseases of the system, I Epidem. iii, 18. In connexion with this important fact in therapeutics, consult further, Aph. ii, 26; VI Epid. vi, 16, viii, 96, 97; San. Tuend. 12; Aph. iv, 57. The commentator Damascius by convulsions here understands epilepsy, and all the commentators explain the cure in this case upon the principle, that the viscid and pituitous humour which occasions the convulsion is excreted and concocted by the fever. In a word, our author means that the fever proves an alterative of the system. I need scarcely remark, that this subject, that is to say, the removing of fatal diseases by the substitution of others less dangerous, has been lately attracting the attention of the profession.

71. In those persons in whom the skin is stretched, and parched and hard, the disease terminates without sweats; but in those in whom the skin is loose and rare, it terminates with sweats.

Theophilus applies this observation both to favorable and fatal crises, but Galen restricts it to the latter. Heurnius and Littré follow Galen. See further, VI Epidem. vi, 29.

72. Persons disposed to jaundice are not very subject to flatulence.

The reason of this, assigned by Galen, is, that flatulence is engendered by a pituitous humour, whereas icterus is of a bilious nature. Heurnius understands the Aphorism to refer to persons of a bilious temperament.

SECTION VI.

1. In cases of chronic lientery, acid eructations supervening when there were none previously, is a good symptom.

See further II Epid. 49, 50, 51; I Morb. vi, 10. By lientery was meant a rapid passage of undigested food through the bowels, as is fully explained by Galen in his elaborate Commentary, which contains a great variety of interesting matters regarding the opinions of Erasistratus, Herophilus, Diocles, and other of the ancient commentators, but little that bears on the subject in question. The rationale of the fact stated in this Aphorism would appear to be, as stated by Jacobus Forliviensis in his Commentary, that lientery being a preternatural determination of the matters downwards, acid eructations indicate that the stomach is resuming its tone. On lientery, see further, PAULUS ÆGINETA, Book III, 50, Syd. Soc. edit.

2. Persons whose noses are naturally watery, and their seed watery, have rather a deranged state of health; but those in the opposite state, a more favorable.

That is to say, as Galen in his Commentary explains, persons of a humid temperament are subject from slight causes to catarrhal affections in the head, throat, and lungs, and perhaps to dysenteries. He adds, that this subject is treated of in the work, On Airs, Waters, and Places, and in those On Diseases, and On Affections. See further, VI Epid. vi, 37.

3. In protracted cases of dysentery, loathing of food is a bad symptom, and still worse, if along with fever.

As Galen, in his Commentary, remarks, the anorexia indicates that the intestinal derangement extends upwards as far as the stomach. A fever of course adds an additional feature to the unfavorable aspect of the case. See further, VI Epid. viii, 1; Coac. vi, 100.

4. Ulcers, attended with a falling off of the hair, are *mali moris*.

The falling off of the hair, as Galen remarks, indicates that the humours causing the ulcer are of a very vitiated nature. See further, VI Epid. viii, 2.

5. It deserves to be considered whether the pains in the sides, and in the breasts, and in the other parts, differ much from one another.

I need scarcely remark, that the question here put is one of vital importance in the treatment of diseases. It is previously alluded to, as Galen remarks, in the work On Regimen in Acute Diseases. See lii, 1, 2, 3, ed. Linden; also VI Epid. vi, 83; and II Prædic. xvii, 4, xix, 6, 7, xx 4. Galen under this head has many interesting observations on the nature of pain, and the different kinds of it, but they are too lengthy for my limits. Theophilus remarks, that Hippocrates evidently recognised diagnosis as the foundation of therapeutics. See further Littré.

6. Diseases about the kidneys and bladder are cured with difficulty in old men.

Galen remarks, that the office of the kidneys and bladder being incessant, these parts, if diseased, having no rest, can scarcely get well when in state of ulceration, or when inflamed, especially in old persons. The fact here stated is but too well known. See further, VI Epid. viii, 4.

7. Pains occurring about the stomach, the more superficial they are, the more slight are they; and the less superficial, the more severe.

The meaning seemingly is, that in diseases about the epigastric region, the more superficial they are, that is to say, the nearer to the surface, they are in so far less serious. Galen remarks, that all diseases situated external to the peritoneum are held to be superficial. No practical physician will doubt the importance of the fact indicated in this Aphorism; for who has not seen an incipient abscess in the abdominal muscles confounded with serious disease of the deeper-seated parts?

8. In dropsical persons, ulcers forming on the body are not easily healed.

This is a well-known fact, and the Aphorism needs no comment. Heurnius, however, properly remarks, that this should render the physician cautious in forming artificial ulcers in dropsical patients, as he had known such terminate in gangrene.

9. Broad exanthemata are not very itchy.

It is difficult to determine what disease is here meant by exanthema; most probably, however, it was a pustular disease, as understood by Jacobus Forliviensis and Heurnius. The former of these insinuates that it was scabies; and this conjecture is in so far applicable, that the kind of itch in which the pustules are small, is known to be attended with more tingling than when the pustules are broader. The Commentaries of Galen, Theophilus, and Damascius supply no information of any interest. See further, VI Epid. ii, 52.

10. In a person having a painful spot in the head, with intense cephalalgia, pus or water running from the nose, or by the mouth, or at the ears, removes the disease.

This Aphorism occurs again at Judicat. xii, 3, See further, Coac. ii, 25, 26, 27, 59. Three natural modes of cure in severe cephalalgia are here indicated, namely, a discharge by the nose, the ears, and the mouth. Heurnius remarks, that this fact has furnished a hint towards the artificial modes of cure now adopted.

11. Hemorrhoids appearing in melancholic and nephritic affections are favorable.

The truth of the fact announced in this Aphorism is not questioned by any of the ancient authorities, and is further attested by many modern, such as Plater, Obs. i, 1; A. Vega, de Art. Med. ii, 4; Zacut. Lusit. Prax. Hist. ii, 6; Primros. de Vulg. Error. iv, 51; Horstius, ii, 7; Salmuth. i, 72; River. Prax. xl, 6; Albertus de Hæmorrh. See further, in confirmation of our author's opinion, Copland's Dictionary, art. Hæmorrhoids, p. 128.

12. When a person has been cured of chronic hemorrhoids, unless one be left, there is danger of dropsy or phthisis supervening.

See the authorities quoted under the preceding Aphorism; also Humor. xi, 3; IV Epid. xxxi, 1, 2; V Epid. x, 18-21; VI Epid. iii, 65. The ancient commentators explain the fact, upon the hypothesis that the hemorrhoidal discharge is an effort of Nature to relieve the system of impurities, and that when the outlet is entirely stopped, they are determined either to the liver, and produce dropsy, or to the lungs, and produce phthisis. See Galen and Theophilus.

13. Sneezing coming on, in the case of a person afflicted with hiccup, removes the hiccup.

See further Prænot. xiii, 11; Coac. iii, 175; Celsus, ii, 8. The ancient commentators state, that hiccup is a spasmodic affection of the stomach, connected either with repletion or inanition. The present Aphorism refers to it when connected with plethora. The fact here stated is notorious.

14. In a case of dropsy, when the water runs by the veins into the belly, it removes the disease.

I need scarcely remark, that the fact here stated is a most important one, namely, that dropsy is cured naturally by a spontaneous discharge of water from the bowels. As stated by Galen, the cure of dropsy by hydragogues is founded on it. Of these, the most efficacious are said by Heurnius to be elaterium and euphorbium. See his Commentary on this Aphorism. Compare Aph. vii, 29; Flat. xvii, 8, 9; Judicat. xi, 10; Coac. iii, 285, 289; I Morb. vi, 7; II Morb. lxix, 11, 12.

15. In confirmed diarrhœa, vomiting, when it comes on spontaneously, removes the diarrhœa.

As Galen states in his Commentary, this is an example of a natural cure, upon the principle of revulsion. See further, II Diæt. xxvi, 15, 16; Loc. in Hom. xlv, 8; Coac. iii, 7; I Morb. vi, 10; vii, 7; also Celsus, ii, 8.

16. A diarrhœa supervening in a confirmed case of pleurisy or pneumonia is bad.

Galen, in his Commentary, makes the acute remark, that although in an incipient attack of pleurisy or pneumonia a diarrhœa may prove critical, in a case where the patient is mastered by the disease, a diarrhœa may be set down as being occasioned by the liver's sympathising with the organs of respiration, and the process of sanguification being thus deranged, Nature makes an effort to expel the depraved humours by the intestines. The explanation given by the other commentators, ancient and modern, is to the same effect. See further, Aph. v, 12, 14; Loc. in Hom. xxix, 15, 16, 17; I Morb. vi, 5, x, 41; III Morb. xvii, 59.

17. It is a good thing in ophthalmy for the patient to be seized with diarrhœa.

Every experienced physician must be able to confirm the truth of this remark. Galen, in his Commentary, states that, in imitation of this natural method of cure, physicians were in the practice of determining to the bowels by clysters and purgatives. See further, Judicat. xii, 9; Coac. ii, 130, 133.

18. A severe wound of the bladder, of the brain, of the heart, of the diaphragm, of the small intestines, of the stomach, and of the liver, is deadly.

Galen, in his Commentary on this Aphorism, gives a variety of interesting remarks, which I regret that my limits do not admit of my copying entire. He states, in the first place, that the term used by our author in this place signifies a great or severe wound, and that the epithet "deadly" is often applied in the sense of "very dangerous." He further remarks, that although wounds of the heart and diaphragm be necessarily fatal, those of the brain, the liver, the bowels, and the bladder are not necessarily so. In proof of this, he mentions cases of wounds of the brain which he had known not to prove fatal, and refers to the operation of lithotomy, as a proof that the muscular part of the bladder, that is to say, its neck, may be cut without occasioning death. The other commentators add nothing of much interest. See further, Aph. vi, 24; II Prædict. xix, 2-6, 11, 12, xxii, 1; Coac. iii, 387, 388, 389; I Morb. iii, 4, vii, 21; and Celsus, v, 26. This commentary is well illustrated by Tagaultius, De Vuln. ii, and also by Dinus de Garbo, in his Commentary on Avicenna, ed. Venet. p. 59.

19. When a bone, cartilage, nerve, the slender part of the jaw, or prepuce, are cut out, the part is neither restored, nor does it unite.

Galen, Theophilus, and Damascius understand the meaning of this Aphorism to be, that when any portion of a bone, or other part here enumerated, is fairly taken away, the substance by which the loss is supplied is not exactly the same as the part which is lost. For example, callus is not exactly bone. Still Galen admits that there is some difficulty in reconciling the terms used by our author with the facts of the case. See further, Aph. vii, 28; Coac. iii, 379-382; II Prædict. xxiv, 1; I Morb. iii, 32, 33; vii, 21; Celsus, ii, 10; Aristot. H. N. i, 13. Tagaultius makes some good remarks on this Aphorism. He holds that it is meant that a part is fairly cut out. (Inst. Chirurg. ii.)

20. If blood be poured out preternaturally into a cavity, it must necessarily become corrupted.

By cavity in this place is to be understood, as elsewhere, not only the stomach, but the chest, the ventricles of the brain, &c. Our author, like all the ancient authorities, holds that pus is corrupted blood. See further, Aph. vii, 38; Flat. xvii, 3; I Morb. iii, 37, x, 42-48, xii, 4, xv, 4; Celsus, ii, 7.

21. In maniacal affections, if varices or hemorrhoids come on, they remove the mania.

All the commentators are agreed that by maniacal affections in this place our author understands melancholy. The cure is to be referred to the principle of metastasis. See further, Aph. vii, 5; Humor. xi, 1.

22. Those ruptures in the back which spread down to the elbows are removed by venesection.

By ruptures in this place Galen understands *pains*; and Theophilus has this

reading. That these severe pains will be removed by bleeding, on the principle of revulsion, seems very likely. See further, II Morb. lix, 22; Celsus, ii, 10.

23. If a fright or despondency last for a long time, it is a melancholic affection.

That mental emotions, when long protracted, are morbid, may generally be concluded; and in such cases, the ancients ascribed the disease to the melancholic humour. See Galen and the other commentators.

24. If any of the small intestines be transfixed, it does not unite.

This is a mere repetition of the general statement made in Aph. vi, 18; and Galen thinks the present Aphorism deserves to be erased.

25. It is not a good sign for an erysipelas spreading outwardly to be determined inwards; but for it to be determined outwards from within is good.

This is an important and now generally admitted fact. Consult, in particular, Copland's Dictionary of Medicine, under Erysipelas, § 33. See further, Prænot. vii, 3, xxiii, 9; Coac. iii, 103; I Morb. vi, 8, 9; and Aph. vi, 37.

26. In whatever cases of ardent fever tremors occur, they are carried off by a delirium.

Galen is not at all satisfied with this Aphorism, and hints at its being an interpolation. At all events, he states that it is well known that a delirium coming on after shivering in fevers, does not carry off the fever, so that he holds the meaning must be understood to be that the tremors are replaced by the delirium, that is to say, delirium succeeds to the tremors. He and Theophilus attempt to explain the rationale of this rule physiologically. Heurnius entertains the notion (but it appears to me fanciful) that Hippocrates in this case uses the words "carries off" (ἀνέι) ironically, and that he means that the delirium carries off the patient, not the disease.

27. Those cases of empyema or dropsy which are treated by incision or the cautery, if the water or pus flow rapidly all at once, certainly prove fatal.

This, I need scarcely remark, is a most important rule in practical surgery. By empyema, as Galen remarks, our author *principally* means a collection of matter between the thorax and the lungs. (See the Annotations on the Prognostics.) He and Theophilus account for the fatal termination, upon the principle that a great evacuation of the fluids is attended with a fatal loss of the animal and vital spirits. On the subject of empyema and ascites, see further, Aph. ii, 51, vii, 44; Coac. iii, 91, 92; II Morb. xlv, 24-28; III Morb. xxvii, 1, 8, 14; Int. Affect. iv, 30, x, 20-23, xxv, 30-36, xxvii, 5; VI Epid. vii, 62; also Celsus, ii, 8.

28. Eunuchs do not take the gout, nor become bald.

According to Galen, the reason is, that eunuchs, by being emasculated, become of cold temperament like women. He states, however, that although it was true that in the age of Hippocrates eunuchs did not take the gout, they were exposed to the disease in his time, owing to their indolence and effeminacy. He gives a most ingenious

and philosophical explanation of the origin of the disease, which he ascribes to debauchery, intemperance, and an hereditary taint. The freedom of eunuchs from baldness, the commentators ascribe in like manner to the coldness of their temperament. See further, *Nat. Puer.* xviii, 4, 5, 6, xix, 1; *Celsus*, iv, 24.

29. A woman does not take the gout, unless her menses be stopped.

Galen, in his Commentary, states that, in his age, women, from excess of luxury, had become subject to the gout; and Seneca affirms the same of his age. (*Epid.* xcv.) See V *Epid.* xxxiii, 4; VI *Epid.* viii, 98-101; VII *Epid.* xlix, 12; I *Morb. Mulier.* xiii, 6, 11.

30. A young man does not take the gout until he indulges in coition.

This will still be generally admitted to be true. All the ancient authorities hold that venery is a great predisposing cause of gout.

31. Pains of the eyes are removed by drinking pure wine, or the bath, or a fomentation, or venesection, or purging.

This Aphorism contains, as Galen remarks, an empirical enumeration of the various means used for the cure of ophthalmy. He gives some most interesting observations on the subject in his Commentary, which, however, is so lengthy, that I cannot introduce its contents in this place. He relates a most instructive case, in which he immediately succeeded in appeasing the pains of the eyes by the warm bath, after an oculist had failed to relieve them by cooling applications. When the pain is connected with plethora, he says it is to be cured by venesection, when with cacochymy, by purging, and when with debility, by drinking wine, which attenuates and discusses thick humours in the eye. The commentaries published by Dietz are also well deserving of being consulted on this head. See further *Aph.* vii, 46; II *Epid.* vi, 26; *Celsus*, vi, 26.

32. Persons whose speech has become impaired are likely to be seized with chronic diarrhœa.

The commentators explain this Aphorism as follows:—An impediment in the speech is occasioned by a fulness of the brain (as is illustrated in the case of a drunken man), and Nature often endeavours to relieve this state by a determination downwards. Compare *Præcept.* xii, 1-5; *Coac.* ii, 147; *Veratr. Us.* i, 12; and see *Foës*, *Annot. h. l.*

33. Persons having acid eructations are not very apt to be seized with pleurisy.

Galen and the other commentators account for this fact from acidities of the stomach being connected with phlegm, whereas pleurisy is connected with yellow bile; and, moreover, acidity of the stomach is of a cold nature, whereas pleurisy is an inflammation. As Galen remarks, Hippocrates has stated in his work, *On Airs, Waters, and Places*, that persons who have a humid stomach are not subject to pleuritic diseases.

34. Persons who have become bald are not subject to large

varices; but should varices supervene upon persons who are bald, their hair again grows thick.

Taken literally, as Galen states, this Aphorism is ridiculous and inadmissible; for who does not know that baldness is not cured by the supervention of varices in the limbs? He supposes, however, that allusion may be made to the diseases alopecia and ophiasis (*porrigo decalvans?*), and that these may be cured by the determination of the humours which occasion them to the veins of the limbs.

35. Hiccup supervening in dropsical cases is bad.

The hiccup supervening in an advanced stage of dropsy is attributed, by the commentators, to the increase of the watery humours, so as to intercept the trachea, and hence hiccup, and danger lest the patient be suffocated. From whatever cause it originate, there can be no doubt of the fact that hiccup in dropsy, and other diseases of a like nature, is a fatal symptom. See further, Aph. vii, 47; II Prædict. xi, 1-16; II Epid. v, 28; Celsus, ii, 8.

36. Venesection cures dysuria; open the internal veins of the arm.

Galen is not at all satisfied with this Aphorism, and hints that it is interpolated. In the first place, it is not true that venesection will remove dysuria, unless connected with inflammation and a redundance of humours. Then he holds that bleeding in the arm is not applicable in diseases below the diaphragm, but in the ankle. Theophilus in the present instance supposes that it is the inner vein of the arm, but Damascius of the ankle.

37. It is a good symptom when swelling on the outside of the neck seizes a person very ill of quinsy, for the disease is turned outwardly.

As Galen remarks, the reason of this fact is obvious, namely, a determination outwardly of the humours which necessarily relieves the internal complaint. See Aph. vii, 49, and Celsus, iv, 4. This rule holds good frequently, but not universally, in epidemical sore throat.

38. It is better not to apply any treatment in cases of occult cancer; for, if treated, the patients die quickly; but if not treated, they hold out for a long time.

All the ancient commentators explain, that by "occult" may be meant either "not ulcerated" or "deep seated." The latter seems the better interpretation, and then the meaning will be, that when the cancer is superficial, it admits of being removed by an operation, that is to say, by the knife or the cautery; but when the disease is deep seated, it is better to let it alone. Galen's Commentary contains many interesting remarks on cancer. See further, II Prædict. xviii, 5, 9, xxi, 5; II Morb. xxiii, 25.

39. Convulsions take place either from repletion or depletion; and so it is with hiccup.

I need scarcely remark, that this is a most important fact both in therapeutics and prognostics. How important is it, for example, in puerperal convulsions! The

whole treatment turns upon the question whether the convulsion be connected with plethora or inanition. It is evidently the same with hiccup.

40. When pains, without inflammation, occur about the hypochondria, in such cases, fever supervening removes the pain.

The commentators hold that it is by attenuating and dissipating the flatus or humour causing the obstruction, that a fever operates the cure in this case. Aph. vii, 52; Coac. iii, 272; Celsus, ii, 8.

41. When pus formed anywhere in the body does not point, this is owing to the thickness of the part.

According to Galen, some of the commentators read thickness of the pus (πύου) and some of the place (τόπου). See further, Coac. iii, 238, 239; II Morb. xlv, 14; III Morb. xxvii, 1.

42. In cases of jaundice, it is a bad symptom when the liver becomes indurated.

It is a well-known pathological fact, that jaundice attended with scirrhus of the liver is necessarily all but hopeless. See further, Aph. iv, 641; Coac. ii, 223, 225-229; also Celsus, ii, 8.

43. When persons having large spleens are seized with dysentery, and if the dysentery pass into a chronic state, either dropsy or lientery supervenes, and they die.

There can be no doubt as to the fatal nature of dropsy or lientery supervening upon dysentery complicated with enlarged spleen. The ancient authorities generally hold that enlargement of the spleen is a common cause of dropsy. See further, Aph. vi, 48; Coac. iii, 295, 296; I Morb. iii, 27; Affect. xxi, 23.

44. When ileus comes on in a case of strangury, they prove fatal in seven days, unless, fever supervening, there be a copious discharge of urine.

This Aphorism is of ambiguous meaning, and Galen finds so many things in it which he cannot admit to be true, that he hesitates whether he should sustain it as genuine. Celsus seems to understand the meaning to be, that a fever alleviates ileus connected with difficulty of water, if by its heat it promotes the flow of urine. M. Hallemand, as quoted by Littré (h. l.), understands our author to mean, that when fever sets in, the case proves fatal, unless an abundant flow of blood take place. This seems the most likely explanation. It is reported *totidem verbis* at Coac. iii, 314.

45. When ulcers continue open for a year or upwards, there must necessarily be exfoliation of bone, and the cicatrices are hollow.

There can be no doubt that, as here stated, the majority of ulcers which are slow of healing are complicated with disease of a bone, which must be cast off before the sore can heal, and in that case there must necessarily be a hollow in the place from which the bone has separated. See further Fract. xxx, 2; Ulcer. v, 4.

46. Such persons as become hump-backed from asthma or cough before puberty, die.

The subject of spinal disease is treated of at Articuli. xxxvii, xxxviii, and Moch. xxi, 6. Galen and Theophilus give interesting commentaries on this Aphorism, but they contain little or nothing that is not to be found in the part of the Articulations referred to. Whether derangement of the spine be occasioned by external violence, or by disease, it must prove fatal when it occasions pressure on the chest and difficulty of breathing.

47. Persons who are benefited by venesection or purging, should be bled or purged in spring.

See further Aph. vii, 53. Galen, in his interesting Commentary on this head, gives an account of various cases of confirmed disease, such as gout, epilepsy, elephantiasis, and so forth, which were greatly benefited by being put under a course of treatment by bleeding and purging in the spring. That this, in fact, is the season of plethora both in vegetables, and in animals, is well known; and hence Virgil, describing spring, truly says, "Superat tener omnibus humor." I may here remark that the month of April is the time when birch trees are bled (so to speak) in order to procure their juice for making birch wine. Spring also is the season at which the temperature is intermediate between the extremes of cold and heat, when all great evacuations are to be avoided. The soundness of the rule of practice here laid down cannot be doubted. See Sanctorius, ii, 48, 49; Fernel, ii, 1, de Ven. Sect.; Fallopius de Med. Purg. 24.

48. In enlargement of the spleen, it is a good symptom when dysentery comes on.

See under Aph. vi, 43; also Coac. iii, 295; I Morb. vi, 7; and Celsus, ii, 8.

49. In gouty affections, the inflammation subsides in the course of forty days.

This Aphorism evidently refers to prognostics and the critical days. See Prædict. vi, 3; and Celsus, iv, 24. Forty days are meant as the utmost limit, provided no error in treatment be committed.

50. When the brain is severely wounded, fever and vomiting of bile necessarily supervene.

As Galen remarks, the vomiting of bile is evidently produced by the stomach's sympathising with the brain, in consequence of its connexion with that organ by means of a pair of considerable nerves. Fever is no doubt a likely consequence of a severe wound of the brain, and the term used by our author implies a severe injury. See II Prædict. xxii, 12, 16, xxiii, 5-11; Coac. iii, 271, 383, 384; I Morb. iii, 35; Celsus, v, 26.

51. When persons in good health are suddenly seized with pains in the head, and straightway are laid down speechless, and breathe with stertor, they die in seven days, unless fever come on.

The state here described is evidently apoplectic. Stertor, as Galen remarks, is indicative of strong apoplexy, and is occasioned by debility of the nervous energy. Galen

says, when it proceeds from a pituitous (*or* serous) humour, it is dissipated by the heat of the fever. Theophilus gives the same explanation of this Aphorism. See further, *Judicat.* xii, 4; *Coac.* ii, 6, iii, 320-323; *II Morb.* vi, 1, 2, 3, 4, 7, xxi, 2-12; *III Morb.* viii, 2; *I Prædict.* x, 13, xii, 8.

52. We must attend to the appearances of the eyes in sleep, as presented from below; for if a portion of the white be seen between the closed eyelids, and if this be not connected with diarrhœa or severe purging, it is a very bad and mortal symptom.

This Aphorism is entirely taken from the Prognostics. See § 2 of this edition; also *Prorrh.* xi, 2; *Coac.* ii, 121; *Celsus*, ii, 6. In the edition of the Aphorisms published by Dietz, with the Scholia of Theophilus and Damascius, this and the preceding Aphorism are joined together.

53. Delirium attended with laughter is less dangerous than delirium attended with a serious mood.

According to Galen, delirium attended with laughter is connected with yellow bile, and the same attended with despondency is produced by black bile. See further, *Coac.* i, 141; *Celsus*, iii, 18.

54. In acute diseases, complicated with fever, a moaning respiration is bad.

Galen gives several conjectural explanations of the cause of this moaning respiration; such as that it proceeds from coldness of the nerves, hardness of the muscles about the chest, or a spasmodic movement of the chest;—at the present time we would suspect valvular disease of the heart.

55. For the most part, gouty affections rankle in spring and in autumn.

In Aphorism iii, 20, arthritic diseases are enumerated among those of spring. In autumn, exacerbations take place, owing to the inequality of temperature and unhealthiness of that season. Theophilus explains the autumnal exacerbation as being occasioned by an effort of Nature to expel to the extremities the cacochymy, *or* peccant humour, engendered during the summer. See *Celsus*, ii, 1, 16, iii, 24.

56. In melancholic affections, determinations of the humour which occasions them produce the following diseases: either apoplexy of the whole body, or convulsion, or madness, or blindness.

This Aphorism contains a statement of the diseases which were supposed by the ancients to be connected with the prevalence of black bile, namely, apoplexy, spasm, mania, and blindness. The subject is treated of in an interesting manner by Galen, in his work, *On Black Bile*. See further, *Aph.* vii, 40; *Vict. Acut.* xlv, 3; *II Prædict.* xiii, 3; *Coac.* iii, 316, 317.

57. Persons are most subject to apoplexy between the ages of forty and sixty.

That apoplexy is a disease most common in declining years, is a fact quite well

known and admitted by the best of our modern authorities. Hippocrates ranks it among the diseases of old age, at Aph. iii, 31. All the ancient commentators ascribe the frequency of the disease in old age to the prevalence of black bile.

58. If the omentum protrude, it necessarily mortifies and drops off.

Galen and all the other commentators understand this Aphorism as referring to protrusion of the epiploon through a wound. When a piece of it, then, has protruded, and has been allowed to remain so for some time, and has become much cooled, it will necessarily mortify, and should be cut off before having recourse to the *gastrorhaphé*; but, as stated by Galen and the others, if reduced immediately, the Aphorism does not hold true. Galen remarks, that in this, as in many other of the Aphorisms, our author states the common results as the general rule, but does not think it necessary to mind the exceptions. Compare *Coac.* iii, 378; *I Morb.* iii, 36.

59. In chronic diseases of the hip-joint, if the bone protrude and return again into its socket, there is mucosity in the place.

The subject of dislocation at the hip-joint from disease is fully treated of in the work, *On the Articulations*. See the Argument. Compare *I Morb.* iii, 16; *Int. Affect.* lviii, 2; *Aër, Aq., Loc.*, xlviii, 5; *Affect.* xxx, 12; and *Celsus*, iv, 23.

60. In persons affected with chronic disease of the hip-joint. if the bone protrude from its socket, the limb becomes wasted and maimed, unless the part be cauterized.

This also is treated of in the same work; in fact, as Galen states, this Aphorism and the preceding should have been joined together.

SECTION VII.

1. In acute diseases, coldness of the extremities is bad.

I need scarcely remark that coldness of the extremities is a symptom often noticed in the febrile cases related in the *Epidemics*. All the ancient commentators account for the coldness of the extremities, from the congestion of the febrile heat in the internal viscera. See further, *Aph.* iv, 48, vii, 26; *Prænot.* xv, 9; *Coac.* i, 165; *VI Epid.* viii, 93; *Celsus*, ii, 4, 6.

2. Livid flesh on a diseased bone is bad.

This Aphorism would seem to refer to gangrene along with disease of the bone. The case, however, is not quite clear, and the commentators do not supply much information under this head.

3. Hiccup and redness of the eyes, when they supervene on vomiting, are bad.

The commentators ascribe the hiccup either to inflammation of the stomach or an affection of the brain, with which the stomach sympathises. The redness of the eyes they hold to be symptomatic of a cerebral affection. See also, *Coac.* iv, 20; *Celsus*, ii, 4.

4. A chill supervening on a sweat is not good.

This is a well-known fact. Galen explains it as indicating that Nature is overpowered by the disease. See *Prædict.* vii, 14, 15; *Celsus*, ii, 4.

5. Dysentery, or dropsy, or ecstasy coming on madness is good.

The commentators explain, that by dysentery or dropsy supervening in a case of mania, a metastasis of the disease takes place. By ecstasy, they understand a violent exacerbation of the maniacal symptoms, which brings the disease to a crisis.

6. In a very protracted disease, loss of appetite and unmixed discharges from the bowels are bad symptoms.

That loss of appetite is a bad symptom in protracted diseases can admit of no doubt. By "unmixed discharges" our author probably means "colliquative diarrhœa," which, of course, is also a very bad symptom in all such cases. In the edition of Dietz often referred to above, the reading would signify "unmixed vomitings and bilious dejections," but it does not appear to have been recognised by Galen.

7. A rigor and delirium from excessive drinking are bad.

This seems clearly a case of *delirium tremens*. The chill is explained by Damascius as being occasioned by the extinction of the innate heat, induced by the immoderate drinking of wine.

8. From the rupture of an internal abscess, prostration of strength, vomiting, and deliquium animi result.

The term *phyma* is explained by the Greek commentators to signify, in this place, an internal abscess either in the chest or in the belly. The symptoms of collapse here enumerated are said by Galen to be superinduced by an escape of the vital pneuma (*or* breath). No one can question the fact, however it may be explained.

9. Delirium or convulsion from a flow of blood is bad.

This is nearly allied to Aphor. v, 3. See also *Coac.* iii, 57. Galen remarks, that this is an important Aphorism, as intimating to us that delirium may be connected with inanition, like tremors in the limbs, which are produced by weakness of the motor powers.

10. Vomiting, or hiccup, or convulsion, or delirium, in ileus, is bad.

The symptoms here mentioned are known to be very fatal in ileus. See *Coac.* iii, 303; *Celsus*, ii, 8.

11. Pneumonia coming on pleurisy is bad.

That it is a bad symptom when the disease extends from the pleura to the lungs, cannot be doubted. See *Coac.* iii, 172; *Affect.* ix, 12; *Celsus*, ii, 7.

12. Phrenitis along with pneumonia is bad.

No one will question the truth of this prognosis. Damascius remarks that the fumes of the disease in this case ascend from the lungs to the brain.

13. Convulsion or tetanus, coming upon severe burning, is bad.

There are different readings and interpretations of this Aphorism, as may be seen

on consulting Galen. By burning may either be meant exposure to great heat, or burning by the cautery.

14. Stupor or delirium from a blow on the head is bad.

This also will be admitted as an unquestionable fact. See Coac. ii, 8; Cap. Vuln. xv, 1; and Celsus, ii, 7.

15. From a spitting of blood there is a spitting of pus.

That hæmoptysis is frequently either the cause or the index of consumption is now well ascertained. Still, as Galen remarks, spitting of blood is not always followed by consumption. Compare Nat. Hum. xxiii, 1; II Prædict. xiv, 13.

16. From spitting of pus arise phthisis and a flux; and when the sputa are stopped, they die.

The phenomena of phthisis here stated are now well known and admitted. Compare Coac. iii, 257; I Morb. x, 17, 20, xi, 40.

17. Hiccup in inflammation of the liver is bad.

Perhaps, in this case, as suggested by Galen, the enlarged liver presses on the stomach, and occasions the hiccup. See Aph. v, 58.

18. Convulsion or delirium supervening upon insomnolency is bad.

Insomnolency, according to Galen, is connected with a dry intemperament of the brain, and hence convulsion or delirium supervening on such a condition of it is necessarily bad. He states, however, that in some of the copies, "delirium" was omitted. Compare Celsus, ii, 7.

18.* Trembling upon lethargus is bad.

This Aphorism is omitted in the editions of Galen, but occurs in the edition of the Aphorisms published by Dietz, with the Commentaries of Theophilus and Damascius. Theophilus states that the lethargus is attended with a low fever, and a disposition not to be roused. A trembling in such a febrile disease would now be suspected to be connected with a typhoid form of the affection.

19. Erysipelas upon exposure of a bone (is bad?).

This Aphorism is to be understood as referring principally to the bones of the cranium, and in that case I need not say that erysipelas is a very serious affair. See Cap. Vuln. xxvii, 4.

20. Mortification or suppuration upon erysipelas is bad.

This Aphorism needs no comment, as everybody will admit that either gangrene or suppuration is a most untoward termination of erysipelas.

21. Hemorrhage upon a strong pulsation in wounds is bad.

By pulsation in this place is evidently meant a violent throbbing of the arteries; or, as the commentators explain it, a painful feeling connected with the action of the arteries. It applies then to hemorrhage connected with increased action of the vessels, and it is now well known that in such cases the flow of blood is violent.

22. Suppuration upon a protracted pain of the parts about the bowels is bad.

The ancient commentators naturally understand this Aphorism as referring to inflammation terminating in suppuration.

23. Dysentery upon unmixed alvine discharges is bad.

See Aph. vii, 6. Galen remarks, that in such a case, there is danger lest a portion of the intestine may be corroded. I need scarcely remark, that it is now well known, that in dysentery, there is danger of the gut being completely ulcerated, so as to allow of the escape of its contents.

24. Delirium upon division of the cranium, if it penetrate into the cavity of the head, is bad.

There is a good deal of uncertainty as to the reading and meaning of this Aphorism. See Galen, Littré, and Foës. Most probably it refers to a severe fracture of the skull extending its violence to the membranes.

25. Convulsion upon severe purging is mortal.

This is little else than a repetition of Aph. v, 1.

26. Upon severe pain of the parts about the bowels, coldness of the extremities coming on is bad.

Without doubt this Aphorism refers to inflammation of the bowels ending in mortification. In this case, as it is well known, the fatal termination is preceded by coldness of the extremities. See Aph. iv, 48, vii, 1, 22.

27. Tenesmus coming on in a case of pregnancy causes abortion.

Damascius remarks that this proceeds from sympathy of the uterus with the rectum.

28. Whatever piece of bone, cartilage, or nerve (*tendon?*) is cut off, it neither grows nor unites.

This is a repetition of Aph. vi, 19.

29. When strong diarrhœa supervenes in a case of leucophlegmatia, it removes the disease.

By leucophlegmatia was understood incipient anasarca. See Galen's Commentary, h. l., and Celsus, iii, 21. It will readily be understood that a violent diarrhœa may carry off such a disease. See further Flat. xviii, 8, 9; Judicat. xi, 21; Coac. iii, 285, 326; I Morb. vi, 7; II Morb. lxix, 11, 12; Int. Affect. xxiii, 12.

30. In those cases in which frothy discharges occur in diarrhœa there are defluxions from the head.

There is not perhaps in the whole collection an announcement so difficult to reconcile with modern ideas, and so thoroughly based on hypothesis, as that contained in the present Aphorism. It is altogether founded on the humoral pathology, of which traces may be recognised in many other parts of our author's work. We shall see a pretty distinct explanation of it in the work, On the Sacred Disease. See Vol. II, 353,

ed. Linden. It also occurs in the *Coacæ Prænotiones*, v, 13, 14. I cannot afford room for an exposition of its principles in this place. See the Commentary of Galen, h. l.; and the note of Littré, h. l., and tom. i, p. 193; also PAULUS ÆGINETA, Book III, 29, Syd. Soc. edit.

31. When there is a farinaceous sediment in the urine during fever, it indicates a protracted illness.

Farinaceous sediments were held to be unfavorable by all the authorities on the subject. See PAULUS ÆGINETA, Book II, 14. Galen, in his Commentary, pronounces the most of these cases to be fatal. Compare *Prænot.* xi, 7; *Coac.* ii, 199, v, 12, 64, 65.

32. In those cases in which the urine is thin at first, and the sediments become bilious, an acute disease is indicated.

It will be seen, upon reference to the Commentaries of Galen and Theophilus, and also to those of Marsilius and Littré in modern times, that there is an ambiguity in this Aphorism; that the words (*ἀνωθεν δε λεπτάι*), which are here rendered "thin at first," may also signify "thin above." I incline to adopt the former interpretation, which is also favoured by Galen and Theophilus. I have repeatedly desired to call the attention of the profession to the state, and in particular to the specific gravity, of the urine in febrile diseases. Compare *Coac.* v, 6, 8; *I Morb.* xxvii, 28; *Vict. Acut.* liv, 5.

33. In those cases in which the urine becomes divided there is great disorder in the body.

Galen and the modern expositors, Heurnius and Marsilius, feel at a loss how to explain this Aphorism; but for my own part I see no difficulty about it, for I believe it to refer to a condition of the urine which I have seen in cases of organic disease of the liver, where the sediment is so thick that there is a strongly-marked line of separation between it and the watery part. Such a state of the urine would no doubt be much more common in warm climates, where intermittent and remittent fevers prevail, and consequently it was not likely to escape the acute observation of Hippocrates.

34. When bubbles settle on the surface of the urine, they indicate disease of the kidneys, and that the complaint will be protracted.

It can scarcely admit of a doubt, that our author here refers to *albuminous* urine, which it is well known is also *frothy*, and is now generally admitted to be connected with disease of the kidneys. See PAULUS ÆGINETA, Vol. I, p. 352, and the authorities there quoted.

35. When the scum on the surface is fatty and copious, it indicates acute diseases of the kidneys.

It appears from Galen, that in some copies he found *epistasis*, and in others *hypostasis*; the one evidently referring to the scum on the surface, and the latter to the sediment: he favours the former reading, and understands it to refer to melting of the fat in the neighbourhood of the kidneys. Compare *Prænot.* xii, 1, 2; *Coac.* v, 43; *IV Epid.* vi, 12, 13.

36. Whenever the aforementioned symptoms occur in nephritic diseases, and along with them acute pains about the muscles of the back, provided these be seated about the external parts, you may expect that there will be an abscess; but if the pains be rather about the internal parts, you may also rather expect that the abscess will be seated internally.

This Aphorism evidently refers to what is supposed by our author to be abscess in the region of the kidneys; the symptoms by which it may be ascertained whether the abscess will point externally or internally are clearly given. On Renal Abscess, see in particular Ruffus Ephesius. (*De Ves. Ren. Affect.*) Galen and Theophilus both state that the matter sometimes points behind, and sometimes in the direction of the psoas muscle. I am inclined therefore to believe that lumbar abscess may be comprehended under this head.

37. Hæmatemesis, without fever, does not prove fatal, but with fever it is bad; it is to be treated with refrigerant and styptic things.

As a general rule, no doubt, as stated by our author, hæmatemesis unattended with fever is not often dangerous; whereas, when it occurs in the last stage of fevers, danger may be inferred. Compare the prognosis in hemorrhage from the stomach, as given by Dr. Copland in the Dictionary of Practical Medicine, vol. iv, p. 97. Cooling and astringent things are recommended, evidently under the impression that the disease is connected with relaxation of the exhalents of the stomach.

38. Defluxions into the cavity of the chest suppurate in twenty days.

In this Aphorism we recognise traces of the humoral pathology referred to above. See further Aph. vi, 20; Loc. in Homin. xviii, 7; I Morb. xi, 2, 3. The doctrine that catarrhs are defluxions from the head to the chest is sanctioned by the great discoverer of the system of auscultation, Laennec. See PAULUS ÆGINETA, Vol. I, p. 474.

39. When a patient passes blood and clots, and is seized with strangury and pain in the perineum and pubes, disease about the bladder is indicated.

This Aphorism is nearly word for word the same as Aph. iv, 80.

40. If the tongue suddenly lose its powers, or a part of the body become apoplectic, the affection is of a melancholic nature.

By apoplectic, in this place, our author evidently means paralysed. (See PAULUS ÆGINETA, Book III, 18.) Even Galen admits that he is at a loss to account for Hippocrates setting down apoplexy as a disease connected with melancholy or black bile; for, he says, cancer, elephantiasis, leprosy, psora, and black alphas are known to be diseases which originate in black bile, but apoplexy has seemingly no alliance to them. Compare II Prædict. xvi, 12; Coac. iii, 87, 88, 315, 317. Damascius the commentator also says that he cannot account for the disease being called melancholic.

41. In hypercatharsis, of old persons, hiccup supervening is not a good symptom.

Hypercatharsis being dangerous in persons of all ages, must be peculiarly so in the case of old men, owing to their infirmities. Hence, as Heurnius remarks, we see the propriety of being guarded in administering drastic purgatives to old men.

42. In a fever, which is not of a bilious nature, a copious affusion of hot water upon the head removes the fever.

We have seen from the work, *On Regimen in Acute Diseases*, that our author used the affusion of hot water on the head in febrile diseases; here he speaks favorably of it, unless when the fever originates in bile. According to Damascius, he is to be understood as pointing to ephemeral fevers, excepting those connected with inflammation of important parts, and those from putrefaction of the humours. Galen's elaborate Commentary comes to the same conclusion. Celsus speaks of this practice as being equivocal in the treatment of tertian fevers. These, we know, are connected with bile.

43. A woman does not become ambidexterous.

The only reason for women not having a dexterous use of both arms is, that being of a feeble constitution, they do not exercise both arms. The fact, however, may be questionable.

44. When empyema is treated either by the cautery or incision, if pure and white pus flow from the wound, the patients recover; but if mixed with blood, slimy and fetid, they die.

We have seen on several previous occasions that the ancients opened the chest in empyema either by the cautery or perforator. I have also stated in the Commentary on the Prognostics, that the ancients applied the term empyema not only to the collection of pus between the chest and the lungs, but also to cavities of the lungs arising from tubercular ulceration. It is worth remarking, that a few years ago a London surgeon attempted to introduce the operation of opening cavities in the lungs which form in tubercular consumption. This, then, was but a revival of the ancient practice in such cases; but both in empyema, properly speaking, and in cavities of the lungs, paracentesis thoracis is a very equivocal operation.

45. When abscess of the liver is treated by the cautery or incision, if the pus which is discharged be pure and white, the patients recover, (for in this case it is situated in the coats of the liver;) but if it resemble the lees of oil as it flows, they die.

The account here given of the operation of opening an abscess in the liver is sufficiently intelligible of itself. One can readily believe that the result of the operation will depend upon whether the pus be good or not, and whether it be situated in the membrane or in the substance of the liver. Compare Celsus, ii, 8. For the results of modern experience on the subject of hepatic abscesses, see the *Cyclopædia of Anatomy*, *Abnormal Anat. of the Liver*.

46. Pains of the eyes are removed by drinking undiluted wine, plenteous bathing with hot water, and venesection.

This is an abridgment of Aphor. vi, 31. Galen makes some very interesting remarks on this Aphorism, and the application of the various methods of treatment here enumerated, in the second chapter of the Third Book of Therapeutics.

47. If a dropsical patient be seized with hiccup the case is hopeless.

This is nearly the same as Aph. vi, 35. Theophilus does not hesitate to pronounce this, and all the Aphorisms which are repeated, to be supposititious, and not the work of Hippocrates.

48. Strangury and dysuria are cured by drinking pure wine, and venesection: open the vein on the inside.

The ancient commentators explain this Aphorism as follows: When the diseases in question are connected with inflammation in the bladder, or a congestion of humours which obstruct the passage, the remedy is bleeding in the vein of the inner ankle or ham; but when produced by flatulent and viscid humours, they are best dispelled by drinking pure wine.

49. It is a good sign when swelling and redness on the breast seize a person very ill of quinsy, for in this case the disease is diverted outwardly.

This Aphorism is nearly the same as Aph. vi, 37. Galen suggests that it is supposititious.

50. When the brain is attacked with sphacelus, the patients die in three days; or if they escape these, they recover.

I have given my opinion regarding sphacelus of the brain previously in this work, and at PAULUS ÆGINETA, Book III, 7. The commentators are all agreed that it signifies incipient mortification; it can mean nothing else in this place seemingly but *ramollissement* of the brain. See II Morb. v, 2, 21, xx, 2, 8, 9, 10; VII Epid. xxx, 7. It is proper to mention, however, that Heurnius and Littré prefer referring it to caries of the bone.

51. Sneezing arises from the head, owing to the brain being heated, or the cavity (*ventricle*?) in the head being filled with humours; the air confined in it then is discharged, and makes a noise, because it comes through a narrow passage.

Galen gives an elaborate discussion on the subject of sneezing, but it contains little worth taking notice of. He held it to be a natural effort to expel substances which are creating irritation in the nasal passages, in like manner as coughing is for the like purpose in the respiratory.

52. Fever supervening on painful affections of the liver removes the pain.

The commentators are agreed that this Aphorism is not generally applicable in diseases of the liver; for example, in cases of inflammation, but that it is to be restricted to those cases which are of a flatulent nature, or connected with obstruction.

53. Those persons to whom it is beneficial to have blood taken from their veins, should have it done in spring.

This is a repetition of Aph. vi, 47, with a slight omission. Galen contends that it must be supposititious.

54. In those cases where phlegm is collected between the diaphragm and the stomach, and occasions pain, as not finding a passage into either of the cavities, the disease will be carried off if the phlegm be diverted to the bladder by the veins.

We learn from Galen that Marinus, the celebrated anatomist, found difficulty in deciding where the phlegm was supposed to be lodged, and it does not appear quite clear what place is meant. Galen describes it as being below the diaphragm, and within the peritoneum of the epigastric region. It will be readily perceived from this Aphorism, that our author looks upon the veins as being the great instruments of absorption.

55. When the liver is filled with water and bursts into the epiploon, in this case the belly is filled with water and the patient dies.

Galen understands this case to refer to hydatids of the liver, but finds difficulty in explaining how they can burst into the epiploon unless by ulceration. It would seem as if our author meant the cavity of the peritoneum. See Galen and Littré. Compare Prænot. viii, 6; Coac. iii, 276, 278; Affect. xxiii, 3-10; Int. Affect. xxvi, 2.

56. Anxiety, yawning, rigor,—wine drunk with an equal proportion of water, removes these complaints.

This Aphorism is based on the humoral pathology: the symptoms here mentioned are supposed to be connected with the prevalence of a flatulent humour, which is attenuated and dispelled by the hot wine. The construction of the sentence, as Galen remarks, resembles a solecism. Compare II Epid. vi, 45; II Morb. xxxviii, 6; Int. Affect. v, 14; II Morb. Mul. lxxxviii, 2.

57. When tubercles (*phymata*) form in the urethra, if they suppurate and burst, the pain is carried off.

This is a repetition of Aph. iv, 82.

58. In cases of concussion of the brain produced by any cause, the patients necessarily lose their speech.

That a severe concussion of the brain, by occasioning a rupture of the nerves, will superinduce loss of speech cannot be doubted. The term here used (*σεισθη*), implies that the concussion was supposed to be violent. Compare Coac. iii, 370; I Morb. iii, 34.

59. In a person affected with fever, when there is no swelling in the fauces, should suffocation suddenly come on, and the patient not be able to swallow, except with difficulty, it is a mortal symptom.

Galen remarks that this Aphorism is nearly the same as Aph. iv, 40. It therefore does not stand in need of any commentary.

59.*¹ In the case of a person oppressed by fever, if the neck be turned aside, and the patient cannot swallow, while there is no swelling in the neck, it is a mortal sign.

This is nearly the same as Aph. iv, 35.

60. Fasting should be prescribed for those persons who have humid flesh; for fasting dries bodies.

By humid flesh is meant flesh abounding with humours. That fasting produces desiccative effects on the body is generally held by our author. Compare II Diæt. xxxviii, 1, 2; III Diæt. xvi, 12, 14; II Prædict. viii, 8, 13; Insomn. xv, 14, 15; Affect. xxviii, 2, xli, 7, 8, 11, 12.

61. When there are changes in the whole body, and the body becomes sometimes cold and sometimes hot, and the colour changes, a protracted disease is indicated.

This is the same as Aph. iv, 40.

62. A copious sweat, hot or cold, constantly flowing, indicates a superabundance of humidity; we must evacuate then, in a strong person upwards, and in a weak, downwards.

This Aphorism is nearly allied to Aph. iv, 42. On febrile sweats, see further Aph. iv, 41, 46, i, 21. It will be remarked that the treatment is founded on our author's favorite principle of revulsion; that is to say, of determining, in the present instance, from the skin to the internal viscera. Galen, however, inclines to think that it is interpolated.

63. Fevers, not of the intermittent type, if they become exacerbated every third day are dangerous; but if they intermit in any form whatever, this shows that they are not dangerous.

This is the same as Aph. iv, 43. Galen thinks it an interpolation here.

64. In cases of protracted fever, either chronic abscesses or pains in the joints come on.

This is the same as Aph. iv, 44. Galen thinks it an interpolation here.

65. When chronic abscesses (*phymata*) or pains in the joints take place after fevers, the patients are using too much food.

This is the same as Aph. iv, 45. Galen thinks it an interpolation here.

66. If one give to a person in fever the same food which is given to a person in good health, what is strength to the one is disease to the other.

This most important principle in Therapeutics is strongly brought forth in the treatise On Ancient Medicine; indeed, our author, in that work, holds that it is the foundation of the whole art of medicine. See further, the treatise On Regimen in Acute Diseases, and more especially what is said in the Argument and notes, on the

¹ *Bis.* It is so in Littré's edition.

administration of food in fevers. Galen is of opinion that the text has been tampered with; but it is not easy to make out exactly in what way, as the text of his commentary would appear to have undergone alterations. Compare Aph. ii, 10, vii, 67; Vet. Med. xii, 11.

67. We must look to the urinary evacuations, whether they resemble those of persons in health; if not at all so, they are particularly morbid, but if they are like those of healthy persons, they are not at all morbid.

Galen states certain verbal objections to this Aphorism, which make him suppose that the language is not that of Hippocrates; it is evidently derived, however, from the great principle upon which the Hippocratic system of prognostics was founded, namely, the comparison of morbid with healthy appearances.

68. When the dejections are allowed to stand and not shaken, and a sediment is formed like scrapings (of the bowels), in such a case it is proper to purge the bowels; and if you give ptisans before purging, the more you give the more harm you will do.

Galen holds decidedly that this Aphorism is supposititious. His Commentary contains many interesting things, but as they principally relate to verbal criticism, I shall not think of introducing them in this place.

69. Crude dejections are the product of black bile; if abundant, of more copious, and if deficient, of less copious collections of it.

This Aphorism is evidently supposititious, as maintained by Galen. It would appear, however, to be of very ancient date, since the very earliest of the commentators, namely, Herophilus, Bacchius, Heraclides, and Zeuxis had found it in the copies which they used. Compare Aph. i, 22; and Judicat. viii, 12. Although I wish to avoid discussions on the text as much as possible, I cannot omit saying in this place, that I have not adopted the emendation of M. Littré, on the text of Galen, and that I prefer reading the passage relating to the earliest commentators as follows: *ὧν ἐστὶν ὁ Ἡρόφιλος, Βακχῆιος, Ἡρακλείδης, κ. τ. λ.* The article is joined to the name of Herophilus, to mark his greater celebrity than the others. Galen was in the practice of prefixing the article to the name of Herophilus. See the preface to his work, entitled *Explanatio vocum Hippocratis*. This, in fact, is in accordance with the classical usage of the article as a prefix to proper names. I have stated my opinions on this subject, in *Hermes Philologicus*, p. 58, and *English and Greek Lexicon*, Edinburgh, 1840, under *Master*.

70. The sputa in fevers, not of an intermittent type which are livid, streaked with blood, and fetid, are all bad; it is favorable when this evacuation, like the urinary and alvine passes freely; and whenever any discharge is suppressed and not purged off it is bad.

This Aphorism is nearly the same as Aph. iv, 47.

71. When you wish to purge the body, you must bring it into

a state favorable to evacuations ; and if you wish to dispose it to evacuations upwards, you must bind the belly ; and if you wish to dispose it to evacuations downwards, you must moisten the belly.

The first part of this Aphorism is taken from Aph. ii, 9 ; the remainder is supposed by Galen to be supposititious.

72. Sleep and watchfulness, both of them, when immoderate, constitute disease.

This Aphorism is repeated from Aphor. ii, 3. It would appear from Galen that he found it wanting in some of the copies which he had consulted.

73. In fevers which do not intermit, if the external parts be cold, and the internal burning hot, and fever prevail, it is a mortal sign.

This aphorism is copied from Aph. iv, 48, with certain alterations which are anything but improvements, as Galen has remarked.

74. In a fever which does not intermit, if a lip, the nose, or an eye be distorted, if the patient lose his sense of sight or of hearing, while now in a weak state,—whatever of these symptoms occurs it is mortal.

This aphorism is repeated from Aph. iv, 49, which is founded on Prognost. iii.

75. Upon leucophlegmatia dropsy supervenes.

By leucophlegmatia, as formerly stated by me, was understood that state of the health which often precedes dropsy. See Aph. vii, 29.

76. Upon diarrhœa dysentery.

This is a repetition of Aph. vii, 6, but evidently, as Galen holds, much altered for the worse.

77. Upon dysentery lientery.

This, as remarked by Galen, is a portion of Aph. vi, 43.

78. Upon sphacelus exfoliation of the bone.

As Galen remarks, the word "supervenes" (*επιγίνεται*) is to be understood in this as in the three preceding Aphorisms. He further remarks that there is an ambiguity in the term sphacelus, which may either apply to disease of the bone (that is to say caries or necrosis), or to that of the soft parts (meaning gangrene).

79 and 80. Upon vomiting of blood consumption, and a purging of pus upwards ; upon consumption a defluxion from the head ; upon a defluxion diarrhœa ; upon diarrhœa a stoppage of the purging upwards ; upon the stoppage of it death.

As is remarked by Galen in his Commentary, the present Aphorism is evidently made up from Aph. vii, 15, 16, incorrectly put together.

81. In the discharges by the bladder, the belly, and the flesh (*the skin?*) if the body has departed slightly from its

natural condition, the disease is slight; if much, it is great; if very much, it is mortal.

This, according to Galen, is the last of the Aphorisms in most of the copies, and yet, he adds, some of them have certain others composed from the genuine Aphorisms of our author, with more or fewer additions. The present Aphorism, he states, is composed of several of the preceding Aphorisms, which embody our author's doctrines respecting the evacuations.

82. Persons above forty years of age who are affected with frenzy, do not readily recover; the danger is less when the disease is cognate to the constitution and age.

This Aphorism is founded on Aph. ii, 34, and Aph. ii, 39.

83. In whatever diseases the eyes weep voluntarily, it is a good symptom, but when involuntarily, it is a bad.

This is a repetition of Aph. iv, 52. It is thus rendered by Celsus, "sine voluntate lacrimare," ii, 4. By "voluntarily" is meant seemingly "from a motive."

84. When in quartan fevers blood flows from the nostrils it is a bad symptom.

This Aphorism is legitimately founded on the following passages: Coac. ii, 37, 38, iii, 433; VI Epid. ii, 40. I see no reason, then, why it should not be received as genuine.

85. Sweats are dangerous when they do not occur on critical days, when they are strong, and quickly forced out of the forehead, either in the form of drops or in streams, and if excessively cold and copious; for such a sweat must proceed from violence, excess of pain, and prolonged squeezing (*affliction?*)

This Aphorism is doubtfully formed from the following passages: Judicat. vi, 9; Prænot. v, 4; I Prædict. v, 7; Coac. iii, 91, iv, 38, 39; Vict. Acut. liii, 8, 9.

86. In a chronic disease an excessive flux from the bowels is bad.

I know not whence this Aphorism is derived, and the language creates a suspicion as to its genuineness. The expression here used for "an excessive flux of the bowels" (*κοιλίης καταφορή*), does not occur elsewhere, as far as I am aware.

87. Those diseases which medicines do not cure, iron (*the knife?*) cures; those which iron cannot cure, fire cures; and those which fire cannot cure, are to be reckoned wholly incurable.

This Aphorism is celebrated in modern literature, but as far as I can recollect, it is nowhere alluded to by any ancient author, and being transferred to this place from Section viii, there must be admitted to be considerable reason to question its genuineness. It is valuable, however, as containing a striking classification of the remedial means used in the practice of medicine. The only passage in the Hippocratic treatises at all parallel to it, is contained in the work De Arte, xiii, 12-18.

THE OATH.

THE OATH

THE OATH.

THE ARGUMENT.

THIS piece, as was stated in the Preliminary Discourse, is often referred to by ancient authors, and there seems little or no reason for questioning its authenticity. It is an interesting document, as exhibiting the practitioners of medicine in a very remote age, already formed into a regular corporation, bound by an oath to observe certain regulations, and having regular instructors in the art. The present piece would seem to be an indenture between a physician and his pupil; and it is most honorable to the profession, that so ancient a document pertaining to it, instead of displaying a narrow-minded and exclusive selfishness, inculcates a generous line of conduct, and enjoins an observance of the rules of propriety, and of the laws of domestic morality.

There are few things in it which require either illustration or comment. M. Littré finds some difficulty in accounting for the circumstance that the noviciate in the art is interdicted from the practice of lithotomy. It is certain, however, that this operation was in antiquity always practised by a separate class of operators, and that the regular members of the profession never meddled with it, on any account. Hence, in the whole compass of ancient medical literature, there is not a single description of the operation by a person who himself had actually performed it. Thus no mention of it is made in the Hippocratic treatises, although there is the clearest evidence that our author used to perform all the regular operations then recognised by the profession as legitimate. Galen also speaks of bold operations performed by him on the head and chest, but he never once hints that he meddled with the operation of lithotomy. The descriptions of the operation given by Celsus and Paulus Ægineta are evidently copied. The Arabians were, if possible,

still more prejudiced against lithotomy; for Avenzoar pronounces the operation to be one, which no respectable physician would witness, and far less perform.¹ And even in this country, at least in the North of Scotland, not perhaps much more than a hundred years ago, it was common for lithotomy to be performed by non-professional persons. Thus I remember having been told in my youth, by an old man residing in the district of Aberdeenshire, called Cromar, that in his younger days there was a miller in that part of the country who was very famous for cutting persons for the stone. In many parts of the East the operation is still cultivated as a separate branch of the profession. See the Commentary on PAULUS ÆGINETA, Vol. II, p. 363. One, therefore, need not be at all surprised at our author's interdicting his pupils from the performance of an operation which, at that time, was not reckoned *respectable*. It is true that, as will be seen in our notice of the Books on Diseases, he makes mention there of the process of sounding a patient for the purpose of discovering whether or not there was a stone in the bladder; we can well suppose, however, that the general practitioner might be called upon to pronounce upon the nature of a case, although he had nothing to do with a particular operation practised for the relief of it. At all events, there can be no doubt that, in ancient times, lithotomy was intrusted to a set of operators separate from the general profession. Why this operation in particular was proscribed, cannot indeed be satisfactorily ascertained; but the fact is as I have stated, that, through all antiquity, the higher medical authorities had nothing to do with it. The conjecture then advanced by René Moreau,² that castration, and not lithotomy, was meant in this place, appears to me utterly inadmissible, and is rejected by M. Littré in his Argument to this piece.

¹ ii, 27.

² Th. Bartholini Epist., Cent. I, epist. lxxxii.

THE OATH.

I SWEAR by Apollo the physician, and Æsculapius, and Health, and All-heal,¹ and all the gods and goddesses, that, according to my ability and judgment, I will keep this Oath and this stipulation—to reckon him who taught me this Art equally dear to me as my parents, to share my substance with him, and relieve his necessities if required; to look upon his offspring in the same footing as my own brothers, and to teach them this art, if they shall wish to learn it, without fee or stipulation; and that by precept, lecture,² and every other mode of instruction, I will impart a knowledge of the Art to my own sons, and those of my teachers, and to disciples bound by a stipulation and oath according to the law of medicine, but to none

¹ Every person who is at all acquainted with ancient literature must be aware that Apollo, in the mythology of the Greeks and Romans, was regarded as the healing god. In this capacity he appears in the very beginning of the Iliad, as the divinity who causes and removes the pestilence; and in the Homeric Hymn to Apollo he is introduced in the same capacity. Hence the epithet "healing" (*ἰήιος*) is applied to him by Sophocles (Ced. Tyr., 154); and its synonyme, "the healer" or "the physician" (*ἰητρος*), by our author in this place. The beautiful lines of Ovid, in reference to the healing powers of Apollo, are in everybody's mouth:

"Inventum Medicina meum est; opiferque per orbem
Dicor, et herbarum subjecta potentia nobis." (Met. i, 521.)

Æsculapius was universally represented as the son of Apollo, according to Pindar, the contemporary of our author, by the nymph Coronis (Pyth. iii); but according to the later myths, by Arsinoë (Apollodor. Bibl. iii, 10). I need scarcely say that he was the patron-god of the Asclepiadæ, or priest-physicians, to which order Hippocrates belonged. In the ancient systems of mythology he is described as having two sons, Podalirius and Machaon, and four daughters, Ægle, Jaso, Hygeia, and Panacea. Of these it will be remarked that our author notices only the two last, whose names are here rendered Health and All-heal. Sprengel (Hist. de la Méd. tom. i, p. 468, and ix, 208), argues from this invocation of Apollo as a healing divinity, along with Hygeia and Panacea, that this treatise must have emanated from the school of Alexandria; I can see no force, however, in this argument.

² There has been considerable difference of opinion what the two kinds of instruction are which Hippocrates adverts to here. See Zuinger, Foës, and Littré. The most probable supposition appears to be, that the former applies to general precepts, and the latter to professional lectures. Of the one we have a good specimen in the Hippocratic treatise entitled the Præcepts (*παραγγελίαι*), and of the other in the Auscultationes Naturales (*ἀκρόασις φυσικαί*) of Aristotle. That our author delivered public lectures in the cities he visited there can be no doubt, for he is so represented by his contemporary, Plato, in his Protagoras. It will be seen, however, from this piece, that he confined his instruction to his own family and that of his teachers, and to such pupils as were bound by a regular stipulation or indenture.

others. I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one if asked, nor suggest any such counsel; and in like manner I will not give to a woman a pessary to produce abortion.¹ With purity and with holiness I will pass my life and practise my Art. I will not cut persons labouring under the stone, but will leave this to be done by men who are practitioners of this work. Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and, further, from the seduction of females or males, of freemen and slaves. Whatever, in connexion with my professional practice, or not in connexion with it, I see or hear, in the life of men, which ought not to be spoken of abroad, I will not divulge, as reckoning that all such should be kept secret. While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of the art, respected by all men, in all times! But should I trespass and violate this Oath, may the reverse be my lot!

¹ We have here another notable instance how much our author was superior to his age in humanity as well as in intelligence; for his contemporary, or rather his immediate successor, Aristotle, though the son of a physician, and although there be some reason to suppose that he was a dabbler in drugs before he betook himself to philosophy, treats very gravely of the practice of procuring abortion, and does not at all object to it, if performed before the child had quickened. (*Polit.* vii, 21.) Plato also alludes to the practice. (*Theætetus.*) Juvenal, in his Sixth Satire, speaks of artificial abortion as being a very common practice among the higher class of females in his time. The mode of procuring abortion is regularly described by Avicenna (iii, xxi, 212), and by Rhases (*Contin.* vii, 2),—not, however, to be applied for any wicked purpose, but in the case of women of small stature who had proved with child. The means recommended by these authors are, severe bleeding, especially from the ankle; leaping from a height; the administration of emmenagogues; the application of pessaries medicated with hellebore, stavisacre, mezereon, and the like; but more especially forcible dilatation of the os tincæ with a roll of paper, or a tube made of polished wood, or a quill. There can be no doubt, in short, that the ancients had anticipated all our modern methods of inducing premature delivery. Avicenna, moreover, also speaks of accomplishing the same purpose by fumigations, a mode which I believe has not been thought of in recent times since this operation was revived, but which one can readily suppose well calculated to destroy the fœtus when that was the intention. I may mention, by the way, that fumigation of the uterus was freely practised by the medical authorities of the sixteenth century. An excellent drawing of an apparatus for this purpose is given in the works of Ambrose Paré, xxiii, 48.

THE LAW.

THE LAW.

THE ARGUMENT.

It is not easy to define accurately what the object of this little tract is, nor the exact sense in which the term "Law" is to be here taken. The writer, apparently, wishes to sketch the *beau ideal* of a perfect physician, and in this point of view the title of the work would rather deserve to be rendered "the Standard" than "the Law." Zuinger, in his annotations on it, remarks that, as in civil society there is an universal precept, applying to all the citizens, the arbiter of right and wrong, so in the medical commonwealth, there is a certain law which serves as a rule, or gnomon, by which true physicians are distinguished from the false. This piece, then, as I have said, is apparently meant as an ideal sketch of what a true physician ought to be, and it gives the traits by which the real are to be distinguished from the false. No one will venture to deny that the outline is drawn with great ability, and therefore the work cannot fail to be read with interest, whether it be regarded as the production of Hippocrates himself or of one of his immediate successors.

THE LAW.

1. MEDICINE is of all the Arts the most noble ; but, owing to the ignorance of those who practise it, and of those who, inconsiderately, form a judgment of them, it is at present far behind all the other arts. Their mistake appears to me to arise principally from this, that in the cities there is no punishment connected with the practice of medicine (and with it alone) except disgrace,¹ and that does not hurt those who are familiar with it. Such persons are like the figures² which are introduced in tragedies, for as they have the shape, and dress, and personal appearance of an actor, but are not actors, so also physicians are many in title but very few in reality.

2. Whoever is to acquire a competent knowledge of medicine, ought to be possessed of the following advantages: a natural disposition; instruction; a favorable position for the study; early tuition; love of labour; leisure. First of all, a natural talent is required; for, when Nature opposes, everything else is vain; but when Nature leads the way to what is most excellent, instruction in the art takes place, which the student must try to appropriate to himself by reflection, becoming an early pupil in a place well adapted for instruction. He must also bring to the task a love of labour and perseverance, so that the instruction taking root may bring forth proper and abundant fruits.³

¹ In this passage it would seem to be asserted, that in the time of the writer there was no punishment of *mala praxis* except the disgrace which it entailed. Many other passages in the Hippocratic treatises would lead to the inference that a more severe responsibility attached to the physician for unfortunate practice; as we often find the practitioner warned not to have anything to do with certain cases. Here the author of this treatise seems to regret the want of a proper medical police.

² It is not quite clear what is meant by figures (*προσώποισι*) in this place. Zuinger understands by it the mutes introduced on the stage along with the real actors who spoke their parts. Foës rather understands it as applying to masks, or inanimate figures, and this seems to me the most natural interpretation of the term.

³ The requisite advantages towards acquiring eminence in the art of medicine are here given with much precision. There is a manifest resemblance between this passage and the description given by Quintilian of the requisites which the student of rhetoric ought to possess in order to attain eminence in his art. The passage in question is so striking, that I shall not scruple to introduce it here, and shall only remark beforehand, that as Quintilian was certainly not unacquainted with the works

3. Instruction in medicine is like the culture of the productions of the earth. For our natural disposition is, as it were, the soil; the tenets of our teacher are, as it were, the seed; instruction in youth is like the planting of the seed in the ground at the proper season; the place where the instruction is communicated is like the food imparted to vegetables by the atmosphere; diligent study is like the cultivation of the fields; and it is time which imparts strength to all things and brings them to maturity.¹

4. Having brought all these requisites to the study of medicine, and having acquired a true knowledge of it, we shall thus, in travelling through the cities,² be esteemed physicians not only in name but in reality. But inexperience is a bad treasure, and a bad fund to those who possess it, whether in opinion or reality,³ being devoid of self-reliance and contentedness, and the nurse both of timidity and audacity. For timidity betrays a want of powers, and audacity a want of skill. There are, indeed, two things, knowledge and opinion, of which the one makes its possessor really to know, the other to be ignorant.

5. Those things which are sacred, are to be imparted only to sacred persons; and it is not lawful to impart them to the profane until they have been initiated in the mysteries of the science.

of Hippocrates (Inst. Orat. III, 6), he may have had the present tract in view when he wrote as follows: "Illud tamen in primis testandum est, nihil præcepta atque vires valere, nisi adjuvante natura. Quapropter ei cui deerit ingenium, non magis hæc scripta sunt, quam de agrorum cultu sterilibus agris. Sunt et alia ingenita quidem adjumenta, vox, latus patiens laboris, valetudo, constantia, decor: quæ si modica obtigerunt, possunt ratione ampliari; sed nonnunquam ita desunt, ut bona etiam ingenii studiique corrumpant: sicut et hæc ipsa sine doctore perito, studio pertinaci, scribendi, legendi, dicendi multa et continua exercitatione, per se nihil prosunt." Inst. Orat. Proem. (6.)

¹ The points of comparison in this paragraph are placed in a striking point of view, but the style of writing rather savours of a later age than that of our author.

² The author here evidently refers to the practice of the *periodeutæ*, or travelling physicians.

³ See Foës, *Œc. Hipp.* in voce *ὑπαρ.*

ON ULCERS.

ON THE

ON ULCERS.

THE ARGUMENT.

I HAVE stated in the Second Section of the Preliminary Discourse, the reasons which determined me to allow this treatise a place among the genuine works of Hippocrates, and I need only add further here, that a careful reconsideration of the subject has confirmed me in the judgment on it which I then announced. When we take into account the positive manner in which Galen, on very many occasions, dwells upon its contents with the fullest confidence that they are the opinions of our author, and reflect that all the subsequent authorities, including those of the Arabian and Roman periods, and the learned restorers of ancient surgery in the fifteenth and sixteenth centuries, agreed in recognising it as authentic, I cannot see how, consistently with the principles upon which it is now generally admitted that questions regarding the genuineness of ancient works should be settled, we could be at all warranted in rejecting it without disputing the claims of the greater number of treatises contained in the small list of the Hippocratic works which are still acknowledged as genuine. Certain it is, at all events, that the evidence in support of this treatise, is far greater than that upon which the treatises 'On Ancient Medicine,' and 'The Law,' have been sustained as being the productions of Hippocrates. We shall be better able, however, to judge whether the external evidence in this case be confirmed or neutralised by the internal, when we have taken a careful inspection of its contents.

In the beginning of it there is given an exposition of the principles upon which ulcers are to be treated. Agreeably to the great rule of medical practice, so often inculcated in the Hippocratic treatises, namely, that "diseases are to be cured by their contraries," he argues that as a sound part of the body is dry, and an ulcerated, moist, drying *or* desiccant

things are indicated in the cure of wounds, and sores, and consequently we must avoid using all liquid things, with the exception of wine, for which he claims an especial indulgence, owing, no doubt, to its being possessed of desiccant powers. A low diet is particularly enjoined when a sore shows any tendency to gangrene, and especially in ulcers of the joints and thigh, when there is danger of spasm (tetanus?), and in injuries of the head, when complicated with fracture. Rest is particularly enjoined, and all severe exercise proscribed. Two opposite modes of practice are mentioned in the treatment of recent wounds,—either to promote a healthy suppuration or to use means for preventing the formation of pus. The discharge of blood from a fresh wound is to be encouraged, and in old ulcers the callous edges are to be scarified in order to evacuate the unhealthy blood. After the discharge of the blood, the part is to be covered with a piece of sponge, and some slender leaves placed over it. As a general rule, oil, and all greasy things, are to be avoided in the treatment of ulcers. But, if used at all, they answer best in cold and hot weather. (See § 1.)

Gentle purging is recommended for most ulcers, and in wounds of the head, belly, and joints, in gangrenous and other intractable sores, and in those requiring sutures. The sore is to be frequently wiped with a sponge, and a dry piece of clean cloth is to be applied. Mild weather is favorable to the healing of wounds, and heat is preferable to cold. Ulcers which are foul, will not heal until they are cleansed. When the parts adjoining to a sore are inflamed or gangrenous, or when there is a varix in a part, the sore will not heal. (§ 2.)

Circular sores are to be treated by having their edges scarified. When erysipelas supervenes, emetics or purgatives are to be administered. When the parts around the sore are swollen, a cataplasm is to be applied to the adjoining parts, but not to the sore itself, in order to allow a free discharge of the pus. After the swelling has subsided, a bandage is to be applied, so as to bring the separated parts close to one another. Any piece of flesh which prevents the lips from coming close together, is to be removed. Sponges, with leaves above them, as formerly directed, are to be placed on the sore. (§ 3.)

In the next paragraph our author gives minute directions for

preparing cataplasms, consisting of various ingredients of a desiccative and emollient nature, such as mullein, linseed, and the like. These are either to be laid on the sore, or with a clean piece of cloth wetted in wine and oil, applied next to the sore. (§ 4.)

In the next paragraph are described several preparations, mostly of a desiccative and caustic nature, for the treatment of ulcers. The object is sometimes not very accurately defined, but it is impossible not to see, in certain cases, that they are prescribed for the purpose of producing a superficial slough or scab, in order to imitate one of Nature's modes of effecting a cure. Of the articles entering into the composition of these medicinal preparations, the flowers of copper, myrrh, pomegranate rind, and galls are some of the most important. (§ 5.)

In the sixth paragraph there are two prescriptions for the purpose of preventing inflammation, and for cleansing foul ulcers. They are strongly discutient and detergent.

In the seventh there are also some very important prescriptions, evidently meant to act upon the principle of producing a scab upon the sore : of these, one, to which I would direct attention, consists of the impure sulphate of copper, alum, and elaterium. (See the Annotations.) It is said to be very efficacious in removing warts from the genital member.

The eighth contains some prescriptions for medicines which are represented as being sarcotic, or incarnative, that is to say, calculated to promote the filling up of hollow sores. They are mostly of a detergent and desiccative nature, such as linseed, the fatty part of a fig, horehound, and the like. The principle upon which they are applied, is not stated by our author.

In the ninth paragraph is described the composition of a medicinal preparation called *caricum*, consisting of strong escharotic and septic articles, such as hellebore, the flakes of copper, arsenic, and cantharides. It is evidently meant to be used for the purpose of removing the morbid parts of indolent and malignant ulcers, and with this view, it would be difficult, even at the present day, to find ingredients more likely to be efficacious.

In the tenth paragraph, likewise, there are given various prescriptions, consisting of articles mostly of a corrosive nature, such as *misy* and *chalcitis*, which, as explained in the Annota-

tions, there is every reason to regard as having been mere varieties of the *chalcanthos*, or impure native sulphate of copper. In the text these applications are designated as being adapted to fresh wounds, but, as stated in the Annotations, there is reason to suppose that there is some mistake about this title.

In the eleventh is described an application for old ulcers and sections of tendons, consisting of melilot, myrtle, and a herb which probably was some species of the *Tormentilla* or *Potentilla*.

In the twelfth there are various prescriptions for preparations designated as emollient, and the term, although questioned by some of the earlier commentators in modern times, seems not so very inappropriate, as they all consist, in a great measure, of axunge, oil, ceruse, wax, the grease of a goose, and so forth.

The thirteenth treats of burns; for these are recommended things of a cooling and digestive nature without pungency. The roots of the *ilex* boiled in wine or water until of the consistence of a liniment, are particularly mentioned. The squill is an ingredient in the composition of several of these prescriptions.

In the fourteenth paragraph is laid down the treatment of *œdemata*, or swellings in the feet, the particular nature of which, however, is not sufficiently defined. Scarifications are much recommended in the treatment of them.

The treatment of varix by puncture is briefly noticed in the fifteenth paragraph.

The operation of venesection, and the various circumstances relating to it, are briefly noticed in the sixteenth.

The last paragraph is devoted to the description of the operation of cupping. As the contents of the last two paragraphs are foreign to the subject on hand, there is some reason for suspecting them to be an appendix to the treatise.

From this brief outline of its contents, it will be readily admitted that the work is one of considerable importance, and it appears to me that, when fairly regarded, there is nothing in it at all derogatory to the high reputation of our author. That it is in some respects defective, and contains matters foreign to the professed object of the treatise, must, perhaps, be admitted, but the same objections apply to certain other treatises which are generally recognised as being genuine.

That it contains much valuable matter will scarcely be questioned by any practical surgeon; indeed, one cannot fail to remark with astonishment, how many of the general principles upon which ulcers of all descriptions are now treated, may be traced out in the present work. In particular, it will be remarked that the mode of treating ulcers by the formation of a scab, which was much approved of by Hunter and his friend, Sir Everard Home, and also that the method of curing indolent ulcers by applications which produce sloughing of their callous edges are recommended in this treatise.

Rest, and a spare diet, it will further be remarked, are held by our author to be the best remedial means for promoting the cure of an ulcer, and he particularises gangrenous sores as being more especially benefited by this plan of treatment. This is a rule of practice about which there is great difference of opinion among our surgical authorities at the present time, some of them, in gangrene of the toes, contending for the stimulant, and others for the opposite plan of treatment. It will be seen, then, that the latter have Hippocrates on their side, and along with him a whole host of ancient authorities.¹ While upon this subject I may take the opportunity of mentioning that the stimulant plan of treatment is not at all of long standing, for, as far as I am aware, all the earlier modern authorities in surgery are advocates for the mild plan of cure. I shall only take time to refer to one of the best authorities of the sixteenth century—Tagault.²

The views of our author in directing the choice of incarnants, or sarcotic medicines are not very clear, and yet such as they are, they guided the practice of the profession for full two thousand years. For example, Galen expounds the principle fully, professing to have adopted it from Hippocrates, in the fourth book of his work, 'On Therapeutics,' and gives his most decided adherence to it. The same principles are expounded and advocated by Avicenna,³ and Haly Abbas.⁴ In like manner, Tagault contends that an incarnant medicine should consist of articles which are moderately desiccative and detergent.⁵ Very similar views are also advocated by Holler, another surgical

¹ See in particular, Avicenna, I, iv, 28.

² Inst. Chirurg. i, 7.

⁴ Pract. iv, 18.

³ I, iv, 28.

⁵ De Vulner. i.

authority of about the same age.¹ Like Tagault, he holds that the best sarcotics consist of articles which are moderately detergent and desiccative. Much the same principles are laid down by Marianus Sanctus.²

ON ULCERS.

1. WE must avoid wetting all sorts of ulcers except with wine,³ unless the ulcer be situated in a joint. For, the dry is nearer to the sound, and the wet to the unsound, since an ulcer is wet, but a sound part is dry. And it is better to leave the part without a bandage unless a cataplasm be applied. Neither do certain ulcers admit of cataplasms, and this is the case with the recent rather than the old, and with those situated in joints. A spare diet and water agree with all ulcers, and with the more recent rather than the older; and with an ulcer which either is inflamed or is about to be so; and where there is danger of gangrene; and with the ulcers and inflammations in joints; and where there is danger of convulsion; and in wounds of the belly; but most especially in fractures of the head and thigh, or any other member in which a fracture may have occurred.⁴ In the case of an ulcer, it is not expedient to stand; more especially if the ulcer be situated in the leg; but neither, also, is it proper to sit or walk.⁵ But quiet and rest are particularly expedient.⁶ Recent ulcers, both the ulcers themselves and the surrounding parts, will be least exposed to inflammation, if one

¹ De Med. Chirurg., vi, 8.

² De Ulcer., iii.

³ Dr. Hosack mentions the use of wine as a dressing to wounds among the improvements in surgical practice, which the profession might derive from a study of Hippocrates. It is, in fact, often used in this way by the French surgeons. Galen, adhering to the principle here laid down, extends in so far the application of it: he says, the most proper thing to be used is wine, or oxycrate, or the decoction of an austere herb; that is to say, things possessed of a desiccant power. (Meth. Med., iv.) Upon the whole, however, he prefers wine. (iii, 4.)

⁴ It will be remarked that our author in this work, as in the preceding one, On the Articulations, is a decided advocate for a low diet and very mild treatment in the management of recent ulcers.

⁵ Galen comments upon this rule of practice in his work, On Trembling.

⁶ Celsus renders this sentence as follows: "Optimum etiam medicamentum quies est; moveri et ambulare nisi sanis alienum." (v.)

shall bring them to a suppuration as expeditiously as possible, and if the matter is not prevented from escaping by the mouth of the sore; or, if one should restrain the suppuration, so that only a small and necessary quantity of pus may be formed, and the sore may be kept dry by a medicine which does not create irritation.¹ For the part becomes inflamed when rigor and throbbing supervene; for ulcers then get inflamed when suppuration is about to form. A sore suppurates when the blood is changed and becomes heated; so that becoming putrid, it constitutes the pus of such ulcers.² When you seem to require a cataplasm, it is not the ulcer itself to which you must apply the cataplasm, but to the surrounding parts, so that the pus may escape and the hardened parts may become soft. Ulcers formed either from the parts having been cut through by a sharp instrument, or excised, admit of medicaments for bloody wounds (ἐναιμα), and which will prevent suppuration by being desiccant to a certain degree.³ But, when the flesh has been

¹ Vidus Vidius understands the last clause of this sentence (φαρμάκῳ μὴ περισκέλει) in a different sense; he reads and explains these words as follows: "*vinculum non postulant*, jure autem ita Latinum fecimus. Nam περίσκελος Græcè subligaculum significat, nec quidquam verisimilius nobis visum est, quam Hippocratem loqui de medicamento quod non alligetur." He understands it, then, to mean an application which does not require to be kept on the place by a tight bandage. The reader will remark that, in this place, our author mentions two opposite modes of treating fresh ulcers, namely, either by promoting moderate suppuration, or by using means to check it. The text, indeed, is in an equivocal state, but I can make no more of it. In the work, *On Female Complaints*, the author lays down the principles for managing the treatment of ulcers as follows: "In order to cure ulcers they are to be kept free of inflammation, and cleansed, and filled up, and brought to cicatrization; water is to be given for drink, but not wine; little food, and by no means a full diet." (Lib. i.) These rules, in the main, it will be remarked, agree with those here laid down, only no mention is made of any means being used to promote suppuration; but every person acquainted with practice is aware that a healthy suppuration is one of the best means of preventing inflammation.

² Our author here, as elsewhere, assumes that pus is nothing else but vitiated blood. Vidus Vidius holds that this is a fact so evident as not to require any proof. It certainly must be admitted to be highly probable, and yet the chemical authorities of the day are not agreed on this point. See Simon's *Chemistry*, vol. ii, p. 86; and Berard, *Dict. de Méd.*, tom. xxvi. The French physiologists seem to deny that pus is a direct transformation of the blood.

³ The class of applications here referred to are described more fully by Celsus than by any other ancient author. The object of them all would appear to be to effect a cure by the formation of a scab upon the sore. The words of Celsus are: "Ex emplastris autem nulla majorem usum præstant, quam quæ cruentis protinus

contused and roughly cut by the weapon, it is to be so treated that it may suppurate as quickly as possible; for thus the inflammation is less, and it is necessary that the pieces of flesh which are bruised and cut should melt away by becoming putrid, being converted into pus, and that new flesh should then grow up. In every recent ulcer, except in the belly, it is expedient to cause blood to flow from it abundantly,¹ and as may seem seasonable; for thus will the wound and the adjacent parts be less attacked with inflammation. And, in like manner, from old ulcers, especially if situated in the leg, in a toe or finger, more than in any other part of the body. For when the blood flows they become drier and less in size, as being thus dried up. It is this (*the blood?*) especially which prevents such ulcers from healing, by getting into a state of putrefaction and corruption. But, it is expedient, after the flow of the blood, to bind over the ulcer a thick and soft piece of sponge, rather dry than wet, and to place above the sponge some slender leaves. Oil, and all things of an emollient and oily nature, disagree with such ulcers, unless they are getting nearly well. Neither does oil agree with wounds which have been recently inflicted, nor yet do medicines formed with oil or suet, more especially if the ulcer stands in need of more cleansing. And, in a word, it is in summer and in winter that we are to smear with oil these sores that require such medicines.²

2. Gentle purging of the bowels agrees with most ulcers, and in wounds of the head, belly, or joints, where there is danger of gangrene, in such as require sutures, in phagedænic, spreading,

vulneribus injiciuntur; *ἐναίμα* Græci vocant. Hæc enim reprimunt inflammationem, nisi magna vis eam cogit, atque illius quoque impetum minuunt; tum glutinant vulnera, quæ id patiuntur, cicatricem iisdem inducunt; constant autem ex medicamentis non pinguibus, ideoque *ἀλιπαίην* nominantur." He gives prescriptions for no fewer than twenty-eight ointments of this class. Of these, the first consists of verdigris, litharge, alum, dried pitch, dried pine-rosin, with a portion of oil and vinegar. (v, 19.)

¹ Vidus Vidius remarks on this passage, that the rule of practice here stated by Hippocrates, namely, that a discharge of blood from a recent ulcer is highly beneficial, had been injudiciously departed from by surgeons in his time, who usually made haste to stop the flow of blood as quickly as possible. The same remark may apply to the surgical practice of the present age.

² What our author here remarks on oil as an application to sores, deserves to be seriously considered. I cannot but think that at the present time it is often very injudiciously applied to fresh wounds.

and in otherwise inveterate ulcers.¹ And when you want to apply a bandage, no plasters are to be used until you have rendered the sore dry, and then indeed you may apply them.² The ulcer is to be frequently cleaned with a sponge, and then a dry and clean piece of cloth is to be frequently applied to it, and in this way the medicine which it is supposed will agree with it is to be applied, either with or without a bandage. The hot season agrees better than winter with most ulcers, except those situated in the head and belly; but the equinoctial season agrees still better with them. Ulcers which have been properly cleansed and dried as they should be, do not usually get into a fungated state. When a bone has exfoliated, or has been burned, or sawed, or removed in any other way, the cicatrices of such ulcers become deeper than usual.³ Ulcers which are not cleansed, are not disposed to unite if brought together, nor do the lips thereof approximate of their own accord. When the points adjoining to an ulcer are inflamed, the ulcer is not disposed to heal until the inflammation subside, nor when the surrounding parts are blackened by mortification, nor when a varix occasions an overflow of blood in the part, is the ulcer disposed to heal, unless you bring the surrounding parts into a healthy condition.⁴

3. Circular ulcers, if somewhat hollow, you must scarify all along their edges, or to the extent of half the circle, according to the natural stature of the man.⁵ When erysipelas supervenes upon any sore, you must purge the body in the way most suitable to the ulcer, either upwards or downwards.⁶ When swelling

¹ Galen approves highly of this practice, the merits of which he discusses fully. (Meth. Med., iv, 6.)

² The text here is in a very unsatisfactory state. What I have given appears to be the most natural sense of the passage.

³ Compare Aph. vi, 45. It will readily be understood that there must be a depression at any place where the bone has been severely injured so as to exfoliate.

⁴ See Galen, Meth. Med., iv, 5. The ordinary causes which prevent an ulcer from healing are here stated very distinctly.

⁵ See Galen, Meth. Med., iv, 5. The medical *litterateurs*, Cassius Medicus and Alexander Aphodisiensis, in their Problems, discuss the question why circular sores are particularly difficult to heal. Every experienced surgeon must be aware of the fact, however it may be accounted for.

⁶ Galen, iv, 5. Galen remarks on this passage, that whoever reads the present work carefully will find that he always takes the indication from the affection, that is to say, that his practice is always rational, instead of being empirical. He reverts to this passage again in § 6.

arises around an ulcer, and if the ulcer remain free from inflammation, there will be a deposit of matter in process of time. And whatever ulcer gets swelled along with inflammation and does not subside as the other parts subside which became inflamed and swelled at the same time, there is a danger that such an ulcer may not unite. When from a fall, or in any other way, a part has been torn or bruised, and the parts surrounding the ulcer have become swelled, and, having suppurated, matter flows from the swelling by the ulcer, if in such cases a cataplasm be required, it should not be applied to the sore itself, but to the surrounding parts, so that the pus may have free exit, and the indurated parts may be softened. But when the parts are softened as the inflammation ceases, then the parts which are separated are to be brought towards one another, binding on sponges and applying them, beginning from the sound parts and advancing to the ulcer by degrees.¹ But plenty of leaves are to be bound above the sponge. When the parts are prevented from coming together by a piece of flesh full of humours, it is to be removed. When the ulcer is deep-seated in the flesh, it is swelled² up, both from the bandaging and the compression. Such an ulcer should be cut up upon a director (specillum) if possible, at the proper time, so as to admit a free discharge of the matter, and then the proper treatment is to be applied as may be needed. For the most part, in every hollow ulcer which can be seen into direct without any swelling being present, if there be putrefaction in it, or if the flesh be flabby and putrid, such an ulcer, and the parts which surround it, will be seen to be black and somewhat livid. And of corroding ulcers, those which are phagedænic, spread and corrode most powerfully, and, in this case, the parts surrounding the sore will have a black and sub-livid appearance.

4. Cataplasms for swellings and inflammation in the surrounding parts.³ Boiled mullein,⁴ the raw leaves of the

¹ This principle of bandaging is laid down in the work, On the Surgery.

² Vidus Vidius, instead of "it is swelled up" (*ὑποκυρσοῦται*), reads "forms into a varix" (*ὑποκυρσοῦται*).

³ See Galen, Meth. Med., iv, 5. Galen remarks, that all the articles about to be mentioned are possessed of desiccative powers, as may be learned on reference to his work, On Simples.

⁴ The *φλόμος* of Hippocrates is generally admitted to have been some species of *Verbascum*; but Dierbach is undecided as to whether it was *V. thapsus*, *sinuatum*, or *plicatum*. See Arzn. des Hippocrat., p. 70.

trefoil,¹ and the boiled leaves of the epipetrum,² and the poley,³ and if the ulcer stand in need of cleansing, all these things also cleanse; and likewise the leaves of the fig-tree, and of the olive, and the horehound, all these are to be boiled; and more especially the chaste-tree,⁴ and the fig, and the olive, and the leaves of the pomegranate are to be boiled in like manner. These are to be used raw: the leaves of the mallow pounded with wine, and the leaves of rue, and those of the green origany.⁵ With all these, linseed is to be boiled up and mixed by pounding it as a very fine powder. When there is danger of erysipelas seizing the ulcers, the leaves of woad⁶ are to be pounded and applied raw in a cataplasm along with linseed, or the linseed is to be moistened with the juice of strychnos⁷ or of woad, and applied as a cataplasm. When the ulcer is clean, but both it and the surrounding parts are inflamed, lentil is to be boiled in wine and finely triturated, and, being mixed with a little oil, it is to be applied as a cataplasm; and the leaves of the hip-tree are to be boiled in water and pounded in a fine powder and made into a cataplasm; and apply below a thin, clean piece of cloth wetted in wine and oil; and when you wish to produce contraction, prepare the leaves of the hip-tree like the lentil, and the cress; wine and finely-powdered linseed are to be mixed together. And this is proper: linseed, and raw chaste-tree, and Melian alum,⁸ all these things being macerated in vinegar.

5. Having pounded the white unripe grape in a mortar of

¹ It is impossible to decide with any certainty what species of *Trifolium* is referred to.

² The *epipetrum* here mentioned is referred by Vidus Vidius to some species of *Sempervivum*. Sprengel, in his *Hist. Rei Herb.*, suggests that it may be *Sedum ochroleucum*. Dierbach inclines to the *Ocymum monachorum*. (Op. laud., p. 178.)

³ The *Teucrium polium*, L. See PAULUS ÆGINETA, Vol. III, p. 305, Syd. Soc edition.

⁴ The *Agnus castus*, L. Ibid., p. 20.

⁵ Probably the *Origanum heracleoticum* and *creticum*. See Dierbach, &c., p. 174; and PAULUS ÆGINETA, Vol. III, p. 284.

⁶ Certainly a species of *Isatis* is here meant, probably the *tinctoria*. See Dierbach, &c., p. 123.

⁷ Dierbach inclines to refer it to the *Cucubalus bacciferus*, but there is great uncertainty on this head. See further PAULUS ÆGINETA, Vol. III, p. 359. I would incline to the *Solanum nigrum*, which long held a place in our *Mat. Med.*

⁸ The alum of Melos (now *Milo*), an island of the Ægean Sea, was always much sought after. See Dioscorid., M. M., v, 122.

red bronze, and passed it through the strainer, expose it to the sun during the day, but remove it during the night, that it may not suffer from the dew; rub it constantly during the day, so that it may dry equally, and may contract as much virtue as possible from the bronze: let it be exposed to the sun for as great a length of time as till it acquire the thickness of honey; then put it into a bronze pot with the fresh honey and sweet wine, in which turpentine rosin has been previously boiled, boil the rosin in the wine until it become hard like boiled honey; then take out the rosin and pour off the wine: there should be the greatest proportion of the juice of unripe grape, next of the wine, and third of the honey and myrrh, either the liquid (*stacte*) or otherwise. The finest kind is to be levigated and moistened by having a small quantity of the same wine poured on it; and then the myrrh is to be boiled by itself, stirring it in the wine; and when it appears to have attained the proper degree of thickness, it is to be poured into the juice of the unripe grape; and the finest natron¹ is to be toasted, and gently added to the medicine, along with a smaller quantity of the flowers of copper (*flos æris*)² than of the natron. When you have mixed these things, boil for not less than three days, on a gentle fire made with fuel of the fig-tree or with coals, lest it catch fire. The applications should all be free from moisture, and the sores should not be wetted when this medicine is applied in the form of liniment. This medicine is to be used for old ulcers, and also for recent wounds of the glans penis, and ulcers on the head and ears. Another medicine for the same ulcers:—The dried gall of an ox, the finest honey, white wine, in which the shavings of the lotus³ have been boiled, frankincense, of myrrh an equal part, of saffron an equal part, the flowers of copper, in like manner of liquids, the greatest proportion of wine, next of honey, and least of the gall. Another:—Wine, a little cedar honey,⁴ of dried things, the flowers of copper, myrrh, dried pomegranate

¹ The native carbonate of soda. See PAULUS ÆGINETA, Vol. III, p. 232.

² See PAULUS ÆGINETA, Vol. III, pp. 404-6.

³ From the terms in which it is frequently mentioned by our author, there can be no doubt that it is the lote-tree, that is to say, the *Zizyphus lotus*, or *Celtis australis*. See Dierbach, &c., p. 92; and PAULUS ÆGINETA, Vol. III, p. 236; and the Appendix to the Edinburgh Greek Lexicon under this term.

⁴ A sweet exudation forming on the juniper-tree in hot countries. See Theophrast., Fragment.; Galen, de Alim. Facult., iii; and PAULUS ÆGINETA, Vol. I, p. 178.

rind. Another:—Of the roasted flower of copper half a drachm, of myrrh two half-drachms, of saffron three drachms, of honey a small quantity, to be boiled with wine. Another:—Of frankincense a drachm, of gall a drachm, of saffron three drachms; let each of these be dried and finely levigated, then, having mixed, triturate in a very strong sun, pouring in the juice of an unripe grape, until it become of a gelatinous consistence, for three days; then let them be allowed to macerate in an austere, dark-coloured, fragrant wine, which is gradually poured upon them. Another:—Boil the roots of the holm-oak¹ in sweet white wine; and when it appears to be properly done, having poured off two parts of the wine, and of the lees of wine as free of water as possible one part; then boil, stirring it, so that it may not be burnt, at a gentle fire, until it appear to have attained the proper consistence. Another:—The other things are to be the same; but, instead of the wine, use the strongest white vinegar, and dip into it wool as greasy as can be procured, and then, moistening it with the lees of oil, boil, and pour in the juice of the wild fig-tree, and add Melian alum, and natron, and the flowers of copper, both toasted. This cleanses the ulcers better than the former, but the other is no less desiccant. Another:—Dip the wool in a very little water; and then, having added a third part of wine, boil until it attain the proper consistence. By these, recent ulcers are most speedily prevented from getting into a state of suppuration.²

6. Another:—Sprinkle on it dried wakerobin,³ and add the green bark of the fig-tree, pounding it in the juice: do this with or without wine, and along with honey. Another:—Boiling the shavings of lotus with vinegar (the vinegar should be white); then mix the lees of oil and raw tar-water,⁴ and use it as a

¹ The *Quercus ilex*. See PAULUS ÆGINETA, Vol. III, p. 311; and Dierbach, &c., p. 27.

² The sense of this passage is ambiguous; the most probable meaning is, that these things check the formation of pus. Considering that the articles are all of an astringent nature, this might seem the more probable interpretation; but some of the interpreters understand it in the opposite sense.

³ Probably the *Arum maculatum*. See PAULUS ÆGINETA, Vol. III, p. 53; and Dierbach, &c., p. 106.

⁴ It is the same as the liquid pitch of Dioscorides (i, 79), and is mentioned by Paulus Ægineta, Vol. III, p. 74. The description of this preparation is rather ambiguous.

liniment or wash, and bandage above. These things in powder prevent recent wounds from suppurating, or they may be used for cleansing the sore along with vinegar, or for sponging with wine.

7. Another:—Sprinkle (*on the sore?*) lead finely triturated with the recrement of copper; and sprinkle on it, also, the shavings of lotus, and the scales of copper, and alum, and chalcitis,¹ with copper, both alone, and with the shavings of lotus. And otherwise, when it is wanted to use these in a dry state, do it with the Illyrian spodos² triturated with the shavings, and with the shavings alone. And the flowers of silver alone, in the finest powder; and birthwort,³ when scraped and finely pounded, may be sprinkled on the part. Another, for bloody sores:⁴—Myrrh, frankincense, galls, verdigris,⁵ the roasted flower of copper, Egyptian alum roasted, vine flowers, grease of wool, plumbago;⁶ each of these things is to be diluted, in equal proportions, with wine like the former. And there is another preparation of the same:—The strongest vinegar of a white colour, honey, Egyptian alum, the finest natron; having toasted these things gently, pour in a little gall; this cleanses fungous ulcers, renders them hollow, and is not pungent. Another:—The herb with the small leaves, which gets the name of *Parthenium parviflorum*,⁷ and is used for removing thymia⁸ (*warts?*) from the

¹ A variety of the native sulphate of copper. See PAULUS ÆGINETA, Vol. III, pp. 399-402. I am fully satisfied, after the most mature deliberation and fullest investigation of the subject, that the *misy*, *sori*, and *chalcitis* were merely varieties of the *Chalcanthos*, and that it was an impure sulphate of copper.

² Probably an impure oxyde of zinc. See PAULUS ÆGINETA, Vol. III, p. 353.

³ Either the *Aristolochia longa* or *rotunda*. Ibid., p. 50.

⁴ By bloody sores is always to be understood fresh wounds. I cannot but think, however, that the text is in a doubtful state.

⁵ The ancient myrrh, frankincense, galls, and verdigris, were all the same as the modern articles which still retain these names.

⁶ On the *Molybdæna*, see PAULUS ÆGINETA, Vol. III, p. 254.

⁷ Neither Vidus Vidius nor any other of the authorities on the Flora of Hippocrates ventures to pronounce decidedly what plant this was. See also Galen, Exeges.; Foës (h. l.); Dierbach, *Arzn. des Hipp.*, p. 185. The most probable conjecture appears to be, that it is the *Pyrethrum parthenium*, W., or feverfew.

⁸ See Vidus Vidius, h. l. He holds it to be a sort of indurated tumour, or wart; and of this, I think, there can be little doubt, as it is well known that warts form on the genital member. See further, Celsus, v, 28; and PAULUS ÆGINETA, Book VI, 58.

glans penis, alum, chalcitis, a little crude Melian alum (?);¹ sprinkle a little dried elaterium,² and a little dried pomegranate rind in like manner.

8. The herb which has got the name of lagopyrus,³ fills up hollow and clean ulcers; (when dried it resembles wheat; it has a small leaf like that of the olive, and more long;) and the leaf of horehound, with oil. Another:—The internal fatty part, resembling honey, of a fig much dried, of water two parts, of linseed not much toasted and finely levigated, one part. Another:—Of the dried fig, of the flower of copper levigated a little, and the juice of the fig. The preparation from dried fig:—The black chamæleon,⁴ the dried gall of an ox, the other things the same. Of the powders:—Of the slender cress in a raw state, of horehound, of each equal parts; of the dried fig, two parts; of linseed, two parts; the juice of the fig. When you use any of these medicines, apply above it compresses wetted in vinegar, apply a sponge about the compresses and make a little more pressure. If the surrounding parts be in an inflamed state, apply to them any medicine which may appear suitable.

9. If you wish to use a liquid application, the medicine called *caricum*⁵ may be rubbed in, and the bandages may be applied as formerly described upon the same principle. The medicine is prepared of the following ingredients:—Of black hellebore,

¹ There is some difficulty respecting the *alum* and *chalcitis* in this passage, as may be seen on consulting Vidus Vidius and Foës.

² Although this term be sometimes used rather vaguely in the Hippocratic treatises, there seems no reason to doubt that, in this place, it applies to the fecula of the *Momordica elaterium*. See PAULUS ÆGINETA, Vol. III, p. 102.

³ Nothing can be made of Galen's notice of this plant in his Exegesis, the text being obviously corrupt. From the resemblance of the names it may be supposed the same as the *λαγώπους* of Dioscorides, probably, then, the *Trifolium arvense*. The authorities subsequent to Hippocrates, in treating of medicines possessed of sarcotic or incarnant properties, take no notice of this article, nor of any of the others recommended by our author in this paragraph. This is singular, when we consider how servilely they generally bow to the authority of Hippocrates. Galen treats of the nature of incarnant medicines with his wonted acumen and perspicuity of style (Meth. Med. iii, 2). On the same subject, see further, PAULUS ÆGINETA, Vol. II, p. 105.

⁴ It was the *Carthamus corymbosus*, L. See Dierbach, &c., p. 135.

⁵ The derivation of this term cannot be ascertained, the notice of it in the Exegesis of Galen being very corrupt. It has evidently nothing to do with nuts, as its name might imply.

of sandarach, of the flakes of copper, of lead washed, with much sulphur, arsenic, and cantharides. This may be compounded so as may be judged most proper, and it is to be diluted with oil of juniper. When enough has been rubbed in, lay aside the medicine, and apply boiled wakerobin in a soft state, either rubbing it in dry, or moistening it with honey. But if you use the caricum in a dry state, you must abstain from these things, and sprinkle the medicine on the sore. The powder from hellebore and sandarach alone answers. Another liquid medicine:—The herb, the leaf of which resembles the arum (wakerobin) in nature, but is white, downy, of the size of the ivy-leaf:¹ this herb is applied with wine, or the substance which forms upon the branch of the ilex, when pounded with wine, is to be applied. Another:—The juice of the unripe grape, the strongest vinegar, the flower of copper, natron, the juice of the wild fig-tree. Alum, the most finely levigated, is to be put into the juice of the wild grape, and it is to be put into a red bronze mortar and stirred in the sun, and removed when it appears to have attained its proper consistence.

10. These are other powders:²—Black hellebore, as finely levigated as possible, is to be sprinkled on the sore while any humidity remains about it, and while it continues to spread. The bandaging is the same as when plasters are used. Another, in like manner:—The driest lumps of salt are to be put into a copper, or earthen pot, of equal size, as much as possible, and not large, and the finest honey, of double the size of the salt, as far as can be guessed, is to be poured upon the lumps of salt, then the vessel is to be put upon coals and allowed to sit there until the whole is consumed. Then, having sponged the ulcer and cleaned it, bandage it as before, and compress it a little more. Next day, wherever the medicine has not been taken in, sprinkle it on, press it down, and bandage. But when you wish to remove the medicine, pour in

¹ Vidus Vidius suggests that it is the *tussilago*, but it cannot be determined with much certainty.

² These powders, in the original, are described as being applications for fresh or bloody wounds (*ἔναιμα*). But, as Vidus Vidius states, there is evidently an error of the text, and he proposes to amend it by substituting *νεμόμενα* in its place. The emendation is plausible; but when a passage in an ancient author is manifestly corrupt, it seldom happens that any ingenuity can amend it satisfactorily. It seems wiser, then, to reject the epithet altogether.

hot vinegar until it separate, and again do the same things, sponging it away, if necessary. Another corrosive powder:—Of the most finely-levigated misy,¹ sprinkle upon the moist and gangrenous parts, and a little of the flower of copper, not altogether levigated. Another powder equally corrosive:—Having sponged the ulcer, burn the most greasy wool upon a shell placed on the fire until the whole be consumed; having reduced this to a fine powder, and sprinkled it on the sore, apply the bandage in the same manner. Another powder for the same ulcers:—The black chamæleon, when prepared with the juice of the fig. It is to be prepared roasted, and alkanet² mixed with it. Or, pimpernel,³ and Egyptian alum⁴ roasted, and sprinkle on them the Orchomenian powder.⁵ For spreading ulcers:—Alum, both the Egyptian roasted, and the Melian; but the part is to be first cleaned with roasted natron and sponged; and the species of alum called chalcitis⁶ roasted. It is to be roasted until it catch fire.

¹ A substance nearly allied to the chalcitis, probably an impure sulphate of copper containing a large admixture of iron. See PAULUS ÆGINETA, Vol. III, pp. 234, 402. These substances would appear to have been well known by the surgical authorities of the sixteenth and seventeenth centuries, and are recommended by them for the very purpose here indicated by our author. See in particular, Tagault (de Vulner., ii). He mentions both the misy and chalcitis as being very powerful escharotics. What he says, in another work, regarding the nature of the misy, sori, and chalcitis, is so much in accordance with my own views as published in the Commentary on PAULUS ÆGINETA (l. c.), that (since it may be said that *adhuc sub judice lis est*) I am induced to give his words in this place: "Misy autem et sori chalcitidi genere cognata sunt, ex una, ut ita cum Galeno dicam, radice perducta. Itaque tria hæc (quæ sub vitreoli genere comprehenduntur) majoris tantum et minoris ratione differunt." (De Ulceribus, iii.)

² It may either be the *Anchusa tinctoria*, or *Echium creticum*. See Dierbach, &c., p. 69.

³ Without doubt the *Anagallis arvensis*, L. See PAULUS ÆGINETA, Vol. III, p. 43; and Dierbach, &c., p. 150.

⁴ Galen informs us that the Egyptian alum was the same as the *τριχίτης* of the Greeks; there can be no doubt, then, that it was the *hair salt* of Werner, and contained a large admixture of the sulphate of magnesia and iron. See PAULUS ÆGINETA, Vol. III, p. 361.

⁵ The Orchomenian powder cannot be determined with any certainty. Vidus Vidius and Foës suggest that it was the same as the *adarce*, for which see PAULUS ÆGINETA, Vol. III, p. 22.

⁶ The text is probably corrupt. Galen, in his Exegesis, supposes it to refer simply to the *Chalcitis*, for which see above. Others hold that both the chalcitis and the alum were ingredients in the composition. See Foës, h. l.

11. For old ulcers which occur on the fore part of the legs; they become bloody and black:—Having pounded the flower of the melilot and mixed it with honey, use as a plaster. For nerves (*tendons*?) which have been cut asunder:—Having pounded, sifted, and mixed with oil the roots of the wild myrtle, bind on the part; and the herb cinquefoil¹ (it is white and downy, and more raised above the ground than the black cinquefoil), having pounded this herb in oil bind it on the part, and then remove it on the third day.

12. *Emollients*² (?):—These medicines are to be used in winter rather than in summer. Emollient medicines which make the cicatrices fair:—Pound the inner mucous part of the squill and pitch, with fresh swine's seam, and a little oil, and a little rosin, and ceruse. And the grease of a goose, fresh swine's seam, and squill, and a little oil. The whitest wax, fresh clean grease, or squill and white oil, and a little rosin. Wax, swine's seam (old and fresh), and oil, and verdigris, and squill and rosin. Let there be two parts of the old grease to the fresh, and of the other things, *q. s.* Having melted the grease that is fresh, pour it into another pot; having levigated plumbago finely and sifted it, and mixed them together, boil and stir at first; boil until when poured upon the ground it concretes; then taking it off the fire, pour it all into another vessel, with the exception of the stony sediment, and add rosin and stir, and mix a little oil of juniper, and what has been taken off. In all the emollient medicines to which you add the rosin, when you removed the medicine from the fire, pour in and mix the rosin while it is still warm. Another:—Old swine's seam, wax, and oil, the dried shavings of the lotus, frankincense, plumbago,—namely, of the frankincense one

¹ It cannot be positively determined; but Foës and Dierbach regard it as being some species either of the *Tormentilla* or *Potentilla*. The former, I need scarcely say, was lately restored to the *Mat. Med.* The *Potentilla anserina* would answer pretty well to our author's description.

² Foës suspects that this term is corrupt, and yet when one examines attentively the composition of the preparations contained in this paragraph, they will be found to consist very much of oily ingredients, so that, after all, the term does not appear so very objectionable. Galen, moreover, seems to sanction the word, only reading *μαλθώδεα* instead of *μαλθακώδεα*, as used in the text here. The reading, however, is uncertain in some parts of this paragraph, as may be seen on consulting Vidius Vidius, and Foës.

part, and of the other one part, and of the shavings of the lotus one part; but let there be two parts of the old grease, one of wax, and of fresh swine's seam one part. Another:—Or old swine's seam along with the fresh grease of a goat; when cleaned, let it retain as little as possible of its membrane: having triturated or pounded it smooth, pour in oil, and sprinkle the lead with the spodium and half the shavings of the lotus.¹ Another:—Swine's seam, spodium, blue chalcitis,² oil.

13. *For Burns*:—You must boil the tender roots of the ilex, and if their bark be very thick and green, it must be cut into small parts, and having poured in white wine, boil upon a gentle fire, until it appear to you to be of the proper consistence, so as to be used for a liniment. And it may be prepared in water after the same manner. Another, not corrosive:—Old swine's seam is to be rubbed in by itself, and it is to be melted along with squill, the root of which is to be divided and applied with a bandage.³ Next day it is to be fomented; and having melted old swine's seam and wax, and mixed with them oil, frankincense, and the shavings of lotus and vermilion, this is to be used as a liniment. Having boiled the leaves of the wakerobin in wine and oil, apply a bandage. Another:—When you have smeared the parts with old swine's seam, let the roots of asphodel be pounded in wine and triturated, and rubbed in. Another:—Having melted old swine's seam, and mixed with rosin and bitumen, and having spread it on a piece of cloth and warmed it at the fire, apply a bandage. When an ulcer has formed on the back from stripes or otherwise, let squill, twice boiled, be pounded and spread upon a linen cloth and bound on the place. Afterwards the grease of a goat, and

¹ The text of this prescription appears to be very corrupt. See Vidus Vidius and Foës.

² By *blue chalcitis* may either be meant the *cyanus*, that is to say, "the blue copper" of Jameson, or the *chalcanthos*, that is to say, "blue vitriol." Compare the note of Foës with PAULUS ÆGINETA, Vol. III, pp. 201, 402, Syd. Soc. edit.

³ Without doubt it was the *scilla maritima*. See Dierbach, and PAULUS ÆGINETA, Vol. III, p. 343. It will be remarked that our author would appear to have been fond of using it as a detergent application to burns. Dioscorides recommends it for fissures on the feet (ii, 202). Our author's applications are either emollient, consisting of vegetable and animal oils, or detergent and astringent, formed from the ilex and squills. For a digest of the ancient modes of treating burns, see PAULUS ÆGINETA, Book IV, 11, Syd. Soc. edit.

fresh swine's seam, spodium, oil, and frankincense are to be rubbed in.

14. Swellings which arise on the feet, either spontaneously or otherwise, when neither the swellings nor the inflammation subside under the use of cataplasms, and although sponges or wool, or anything else be bound upon the sound part;¹ but the swelling and inflammation return of themselves again, an influx of blood into the veins is the cause, when not occasioned by a bruise. And the same story applies if this happen in any other part of the body. But blood is to be abstracted, especially from the veins, which are the seat of the influx, if they be conspicuous; but if not, deeper and more numerous scarifications are to be made in the swellings; and whatever part you scarify, this is to be done with the sharpest and most slender instruments of iron. When you have removed the blood, you must not press hard upon the part with the specillum, lest you produce contusion. Bathe with vinegar, and do not allow a clot of blood to remain between the lips of the wounds, and having spread greasy wool with a medicine for bloody wounds, and having carded the wool and made it soft, bind it on, having wetted it with wine and oil. And let the scarified part be so placed that the determination of the blood may be upwards and not downwards; and do not wet the part at all, and let the patient be put upon a restricted diet and drink water. If upon loosing the bandages you find the scarifications inflamed, apply a cataplasm of the fruit of the chaste-tree and linseed. But if the scarifications become ulcerated and break into one-another, we must be regulated by circumstances, and otherwise apply whatever else appears to be proper.

15. When a varix is on the fore part of the leg, and is very superficial, or below the flesh, and the leg is black, and seems to stand in need of having the blood evacuated from it, such swellings are not, by any means, to be cut open; for, generally, large ulcers are the consequence of the incisions, owing to the influx from the varix. But the varix itself is to be punctured in many places, as circumstances may indicate.²

¹ The swellings *or* oedemata here described, are not very well defined, at least they appear so to us, probably from our unacquaintance with the diseases of Greece. See further, the Commentary on PAULUS ÆGINETA, Book IV, 27, Syd. Soc. edit.

² Allusion is made to this mode of treating varix, in the treatise *De Medico*. On

16. When you have opened a vein and abstracted blood, and although the fillet be loosed the bleeding does not stop, the member, whether the arm or leg, is to be put into the reverse position to that from which the blood flows ; so that the blood may flow backwards, and it is to be allowed to remain in this position for a greater or less space of time.¹ Then bind up the part while matters are so, no clots of blood being allowed to remain in the opening. Then having applied a double compress, and wetted it with wine, apply above it clean wool which has been smeared with oil. For, although the flow of blood be violent, it will be stopped in this way. If a thrombus be formed in the opening, it will inflame and suppurate. Venesection is to be practised when the person has dined more or less freely and drunk, and when somewhat heated, and rather in hot weather than in cold.

17. When in cupping, the blood continues to flow after the cupping-instrument has been removed, and if the flow of blood, or serum be copious, the instrument is to be applied again before the part is healed up, so as to abstract what is left behind. Otherwise coagula of blood will be retained in the incisions, and inflammatory ulcers will arise from them. In all such cases the parts are to be bathed with vinegar, after which they are not to be wetted ; neither must the person lie upon the scarifications, but they are to be anointed with some of the medicines for bloody wounds. When the cupping-instrument is to be applied below the knee, or at the knee, it should be done, if possible, while the man stands erect.²

the more formidable operation practised by the ancients for the cure of varix, see the Commentary on PAULUS ÆGINETA, Book VI, 82, Syd. Soc. edit.

¹ The last two paragraphs, on venesection and cupping, have little or no connexion with the subject of this treatise. Very likely they are an appendix added to the work. Both these operations are more fully treated of in the work *De Medico*.

² The object in directing the cupping-instrument to be applied while the patient stands erect would seem to be, as Foës remarks, that the skin will thus be in its natural state, and the blood will flow the more freely. Yet, although the direction seems to be a very proper one, it is not attended to by modern practitioners of the art of cupping.

ON FISTULÆ.

OF HISTORY

ON FISTULÆ.

THE ARGUMENT.

THIS little tract is evidently a continuation of the work 'On Ulcers,' and is equally replete with interesting and important matters. As stated in the Preliminary Discourse, the ancient authority in support of its genuineness is very strong.

In the first paragraph, the author gives an account of the formation of *fistulæ in ano*, which he attributes to tubercles, or to injuries inflicted on the parts adjoining to the anus, in riding, rowing, or from any such act of violence.

His first advice is, that the surgeon should lose no time in making an incision, even before the matter is fully formed. If the fistula already exist, the surgeon is to examine it with a stalk of fresh garlic. Then the herb seseli is to be given as a diuretic, and the bowels cleared out by means of purgatives. (§ 2.)

In the third paragraph is described the first method of treating fistula in ano, namely, by introducing into it a tent formed from a strip of linen (or cotton) cloth, smeared with the caustic juice of one of the sparges (euphorbia); after which a round ball, resembling a modern pessary, is directed to be introduced per anum, the object of which, as stated by Foës, may have been to expand the sore, so as to allow the caustic to be well diffused over it; or, perhaps, it was merely meant to keep the tent secured in the fistula. On the sixth day the tent is to be removed, and, the ball being filled with alum, it is to be again introduced, and allowed to remain for a time. The object of this second introduction of the ball, is not to me sufficiently clear; perhaps it was to keep the sides of the fistula expanded while in the process of healing. Myrrh is to be applied, probably with the intention of cleansing the sore.

In the fourth paragraph, the apolinose, *or* operation by the ligature, is described in a very minute and circumstantial

manner. No one who reads the description can mistake the principle of the operation, whatever difficulty he may find in understanding certain expressions contained in it. The object evidently is to cut open the fistula by gradually tightening a thread which has been passed through both its orifices, and at the same time to raise up a healthy action in the part. When the fistula is fairly laid open, pieces of sponge, smeared with some gentle escharotic, such as the flos æris, are to be applied with the view of consuming the callous flesh, and keeping the fistula expanded until it heal equally.

In the fifth is described the treatment when the disease consists of several sinuses which are not all fairly laid open by the preceding process; in which case our author directs the sinus to be syringed with a stimulant and escharotic injection, so as to remove all the callous parts.

In the sixth, a most accurate description is given of an acute attack of phlegmon in the neighbourhood of the anus, with the treatment thereof by hip-baths, cataplasms, suppositories, and various other stimulant and soothing applications.

In the seventh, strangury is correctly described upon the principles of the humoral pathology.

In the eighth paragraph, another common and very serious aggravation of these complaints is minutely described, and the treatment is carefully laid down. In certain cases, astringent and escharotic applications of a powerful nature are to be made.

In the ninth is described the mode of procedure when great difficulty is experienced in accomplishing the reduction of the gut. The treatment in this case consists in rest and the application of suitable astringents.

In the tenth is explained the treatment of procidentia ani when attended with a discharge of blood. It consists either of astringent cataplasms, containing wakerobin, wild vine, &c., or narcotics, such as the seed of hemlock.

In the eleventh is described the treatment when inflammation comes on. The applications consist of cataplasms, formed principally of astringent and sedative articles, such as ivy, mandrake, and the like.

When the pain is unattended with inflammation, the applications recommended are of a stimulant nature, such as natron, alum, roasted salts, the green leaves of capers, and the like;

but they are to be varied according to the nature of the complaint. See the last paragraph.

From what has now been stated with regard to the contents of this treatise, it will be readily allowed, that the author of it had formed a very correct idea of the nature of the disease ; and that the plans of treatment he lays down are all very rational, and bespeak an accurate acquaintance with the subject.

Gruner and Ackerman argue against the genuineness of this treatise, from the circumstance of its containing a manifest allusion to the humoral pathology in the seventh paragraph. But if this were sufficient reason for regarding it as spurious, we ought, on the same grounds, to reject the Aphorisms, in which, as we have seen, there are frequent and decided allusions to the hypothesis of the humours. And it is to be borne in mind, that Galen invariably represents Hippocrates as the founder of the humoral doctrine.¹ Moreover, it is to be remarked, that the doctrine is introduced here in quite a practical form, without any of the systematic parade which the later authorities display in dealing with it. Ackerman further pronounces against its authenticity, on the ground that it is written in a confused style. Now this may be doubted ; but if it were true, the inference which Ackerman draws from it would not be warrantable, as the same objection might be started against the authenticity of the works 'On Fractures,' 'On the Articulations,' and 'The Epidemics,' none of these treatises being at all remarkable for methodical arrangement.

¹ Comment. I, in Lib. de Nat. Human., tom. v, p. 11, ed. Basil ; De Elem. Sec. Hippocr., i ; De Nat. Facult., i.

ON FISTULÆ.

1. FISTULÆ are produced by contusions and tubercles, and they are also occasioned by rowing, or riding on horseback, when blood accumulates in the nates near the anus. For, having become putrid, it spreads to the soft parts (the breech being of a humid nature, and the flesh in which it spreads being soft), until the tubercle break and corrupt below at the anus. When this happens, a fistula is formed, having an ichorous discharge, and faeces pass by it, with flatus and much abomination. It is produced, then, by contusions when any of the parts about the anus are bruised by a blow, or a fall, or a wound, or by riding, or rowing, or any such cause. For blood is collected, and it, becoming corrupted, suppurates; and from the suppuration the same accidents happen, as have been described in the case of tubercles.

2. In the first place, then, when you see any such tubercle formed, you must cut it open while still unripe, before it suppurate and burst into the rectum. But if a fistula be already formed when you undertake the case, take a stalk of fresh garlic,¹ and having laid the man on his back, and separated his thighs on both sides, push down the stalk as far as it will go, and thereby measure the depth of the fistula. Then, having bruised the root of seseli² to a very fine powder, and poured in some water, let it macerate for four days, and, mixing the water with honey, let the patient drink it, fasting, to the amount of three cyathi, and at the same time purge away the ascarides. Those who are left without treatment die.

3. In the next place, having moistened the strip of cotton cloth,³ with the juice of the great tithymallus,⁴ and sprinkling

¹ Instead of the stalk of fresh garlic, PAULUS ÆGINETA recommends a hog's bristle, or a sound to be used in exploring the fistula (B. VI, 78).

² Most probably the *Seseli tortuosam*. See Dierbach, &c. p. 187, and PAULUS ÆGINETA, Vol. III, p. 330. All the ancient authorities hold it to be a powerful diuretic, and probably it is here recommended for this purpose.

³ Ὀθόνιον βύσσινον may either signify "cotton cloth," or "linen cloth." For although the βύσσος of Theophrastus (H. P. iv, 9) be unquestionably the δένδρον ἐριοφόρον, or cotton tree (*Gossypium arboreum*), it is now well ascertained that the mummy cloth to which Herodotus applies the name (βύσσος), (vii, 181), is linen. I need scarcely remark that either cotton or linen cloth will serve the purpose of forming a tent to be used as directed by our author.

⁴ Some species of the *Euphorbia*, probably the *characias*. See Dierbach, &c. p. 141; and PAULUS ÆGINETA, Vol. III, p. 374.

on it the flos æris, roasted and triturated, and having made it into a tent equal in length to the fistula, and having passed a thread through the ends of the tent and again through the stalk, and having placed the patient in a reclining position, and having examined the ulcerated parts of the rectum with a speculum, pass the stalk by it, and when it reaches the rectum, take hold of it and draw it out until the tent be pushed through, and be brought on a level above and below. When it (*the tent?*) has been pushed inwards, introduce a ball of horn¹ into the rectum (the rectum having been previously smeared with Cimolian chalk), and leave it there, and when the patient wants to go to stool, let it be taken out and again replaced, and let this practice be continued for five days. On the sixth day let it be removed, and drawing the tent out of the flesh, and afterwards pounding alum and filling the ball (*pessary?*) and introducing it into the rectum, leave it until the alum melts. Anoint the rectum with myrrh until the parts appear to be united.²

4. Another method of cure:—Taking a very slender thread of raw lint,³ and uniting it into five folds of the length of a span, and wrapping them round with a horse hair; then having made a director (specillum) of tin, with an eye at its extremity, and having passed through it the end of raw lint wrapped round as above described, introduce the director into the fistula, and, at the same time, introduce the index finger of the left hand *per anum*; and when the director touches the finger, bring it out with the finger, bending the extremity of the director and the end of the threads in it, and the director is to be withdrawn, but the ends of the threads are to be knotted twice or thrice, and the rest of the raw threads is to be twisted round

¹ Meaning perhaps a small pessary in the modern sense of that term.

² The method of treating fistulæ by tents, impregnated with some caustic, such as the juice of the spurge is here very circumstantially described, and although some parts of the description be somewhat obscure, the general import of it cannot be mistaken. Other corrosive substances are recommended by Paulus Ægineta, B. iv, 49; and Celsus, vi, 78.

³ The thread of raw lint (*ὠμόλινον*) was evidently a sort of flaxen thread, but in what manner it was prepared, and what was its exact texture, I cannot pretend to explain satisfactorily. As far as regards the principle of the operation, this, however, is not of much consequence; for a cotton, a flaxen, or a silk thread, would evidently serve the purpose.

and fastened into a knot. Then the patient is to be told that he may go and attend to his matters.¹ The rest of the treatment:—Whenever any part of the thread gets loose owing to the fistula becoming putrid, it is to be tightened and twisted every day; and should the raw thread rot before the fistula is eaten through, you must attach another piece of raw thread to the hair, pass it through, and tie it, for it was for this purpose that the hair was rolled round the raw lint, as it is not liable to rot. When the fistula has sloughed through, a soft sponge is to be cut into very slender pieces and applied, and then the flowers of copper, roasted, are to be frequently applied with a director; and the sponge smeared with honey is to be introduced with the index finger of the left hand, and pushed forwards; and another bit of sponge being added, it is to be bound on in the same manner as in the operation for hemorrhoids. Next day, having loosed the bandages, the fistula is to be washed with hot water, and cleaned, as far as possible, with the finger of the left hand by means of the sponge, and again the *flos æris* is to be applied. This is to be done for seven days, for generally the coat of the fistula takes that time to slough through. The same mode of bandaging is to be persevered in afterwards, until the cure be completed. For in this way, the fistula being forcibly expanded by the sponge will not fill up and heal unequally, but it will all become whole together. During the treatment, the part should be bathed with plenty of warm water, and the patient kept on a spare diet.²

¹ This seems to be our author's meaning, which is thus expressed by Celsus, "*interdum autem licet negotia agere, ambulare, lavari, cibum capere perinde ac sanissimo.*"

² The operation called *apolinose*, that is to say, by the ligature, is very celebrated. It is described by Paulus Ægineta, in the words of our author, at Book vi, 78; and by Celsus in very distinct terms (vii, 4). It is now greatly fallen into disuse in this country; but as the operation with the scalpel sometimes, in the hands of the most experienced surgeons, is followed by fatal hemorrhage, I do not see why the ligature should be discarded in all cases. See the history of the operation in Sprengel's History of Medicine, tom. vii, French edition; and at PAULUS ÆGINETA, Book VI, 78, Syd. Soc. edit. The operation with the ligature is described by Malgaigne in his Operative Surgery, but he represents it as being tedious and painful. From our author's description, it would appear that his method consisted in introducing a small bundle of threads into the fistula for the purpose of raising an increased action of the vessels in the part. In principle, then, his plan would seem to have resembled that which is recommended by Langenbeck in such cases. It is

5. When the fistula does not get eaten through, having first examined it with a sound, cut down as far as it passes, and sprinkle with the flos æris, and let it remain for five days. Then pour warm water upon it, and above lay flour mixed with water, and bind on it the leaves of beet. When the flos æris comes away, and the fistulous sore becomes clean, cure it as before described. But if the fistula be in a part which does not admit of this treatment, and if it be deep, syringe it with the flowers of copper, and myrrh, and natron, diluted with urine, and introduce a piece of lead into the orifice of the fistula so that it may not close. Syringe the fistula by means of a quill attached to a bladder, so that the injection may distend the fistula. But it does not heal unless it be cut open.

6. If the anus gets inflamed, and there is pain, fever, a frequent desire of going to stool without passing anything, and the anus appears to protrude, owing to the inflammation, and if at times strangury come on, this disease is formed, when phlegm, collected from the whole body, is determined to the rectum.¹ Warm things are beneficial in this case; for these, when applied, can attenuate and dissolve the phlegm, and dilute the acrid and salt particles, so that the heat subsides, and the irritation in the rectum is removed. Wherefore it is to be treated thus:—The patient is to be put into a hip-bath of hot water, and sixty grains of the grana gnidia² are to be pounded and infused in a hemina of wine, with half a hemina of oil, and injected. This

thus described by Chelius: "In still longer continued fistulous passages, especially when their walls have become callous, we endeavour to excite a proper degree of inflammation of the walls of the passage, usually by the introduction of a seton, or of a bundle composed of many threads, which is tied together externally upon the fistulous passage, and daily drawn tighter. According to Langenbeck, the introduction of a ligature is, in many cases, preferable to incision, which oftentimes is impracticable, without injuring large vessels, and so on. By the ligature inflammation is produced, good consistent pus and granulations are produced, &c. As these symptoms come on, the ligature is to be gradually drawn tighter." (English edition by South, vol. i, p. 93.) The operation with a single thread was strongly recommended lately by Luke of the London Hospital. See *Lancet*, vol. i, 1845, new series. It is also advocated by Mr. Bransby Cooper, *Med. Gaz.*, 1093.

¹ In this paragraph our author evidently describes a case of phlegmon, which usually precedes *fistula in ano*. See Pott, and Cooper's *Surgical Dictionary*, under this head, where very similar descriptions are given.

² The fruit of the *Daphne gnidium*. See PAULUS ÆGINETA, Vol. III, 179. The grains are recommended in this case to form a stimulant injection.

brings away phlegm and fæces. When the patient does not take the hip-bath, boil eggs in dark-coloured fragrant wine, and apply to the anus, and spread something warm below, either a bladder filled with warm water, or linseed toasted and ground, and its meal stirred up and mixed equally with dark, fragrant wine, and oil, and thus applied very warm as a cataplasm; or, having mixed barley and Egyptian alum pulverized, form into an oblong ball (*suppository*?) and warming it gently at the fire, make it into a cataplasm, foment, form it into shape with the fingers, and then making it quite tepid, introduce it into the anus. The external parts are to be anointed with cerate, and a cataplasm of boiled garlic, with dark wine diluted, is to be applied. But if you remove these things, let him take the hip-bath of hot water, and having mixed together the juice of strychnos, the grease of a goose, swine's seam, chrysocola,¹ rosin, and white wax, and then having melted in the same and mixed together, anoint with these things, and while the inflammation lasts, use the cataplasm of boiled garlic. And if by these means he be freed from the pain, it is enough; but if not, give him the white meconium (*Euphorbia peplus*?), or, if not it, any other phlegmagogue medicine. While the inflammation lasts, the diet should be light.

7. The strangury comes on in this way:—The bladder being heated from the rectum, phlegm is attracted by the heat, and by the phlegm (*inflammation*?) the strangury is occasioned. If, then, as is frequently the case, it cease with the disease, well; but, if not, give any of the medicines for strangury.²

8. If procidentia ani take place, having fomented the part with a soft sponge, and anointed it with a snail,³ bind the man's hands together, and suspend him for a short time, and the gut will return. But if it still prolapse, and will not remain up, fasten a girdle round his loins and attach a shawl behind, and having pushed up the anus, apply to it a soft sponge, moistened with hot water in which the shavings of lotus have been boiled; pour of this decoction upon the anus by squeezing the sponge, then, bringing the shawl below between

¹ Probably an impure carbonate of copper. See PAULUS ÆGINETA, Vol. III, 416.

² On the complication of phlegmon of the rectum with strangury, see further, Aph. v, 58, vii, 13; Int. Affect. xli, 6.

³ No doubt the *Helix pomatia*.

the legs, fasten it at the navel. But if he wish to evacuate the bowels, let him do so upon a very narrow night-stool. Or, if the patient be a child, let him be placed on the feet of a woman, with his back reclined to her knees,¹ and when the bowels are evacuated, let the legs be extended. In this way the anus will be the least disposed to fall out. When a watery and ichorous discharge flows from the rectum, wash it out with burnt lees of wine,² and water from myrtle, and having dried maiden-hair,³ pound and sift it, and apply as a cataplasm. But if there be a discharge of blood, having washed with the same, and pounded chalcitis, and the shavings of cypress,⁴ or of juniper, or of stone-pine,⁵ or of turpentine, the latter in equal proportions with the chalcitis, apply as a cataplasm. Anoint the external parts with thick cerate.

9. When the gut protrudes and will not remain in its place, scrape the finest and most compact silphium (*assafœtida*?) into small pieces and apply as a cataplasm, and apply a sternutatory medicine to the nose and provoke sneezing; and having moistened pomegranate rind with hot water, and having powdered alum in white wine, pour it on the gut, then apply rags, bind the thighs together for three days, and let the patient fast, only he may drink sweet wine. If even thus matters do not proceed properly, having mixed vermilion with honey, anoint.

10. If procidentia ani be attended with a discharge of blood, pare off the rind of the root of wakerobin, then pound and mix flour with it, and apply it warm as a cataplasm. Another:—Having scraped off the rind of the most tender roots of the wild vine, which some call *psilothrion*, boil in a dark austere wine undiluted; then having pounded, apply as a tepid cataplasm; but mix also flour and stir it up with white wine and

¹ This singular substitute for a nursery night-table I have never seen mentioned by any other author, as far as I can recollect. The object of the contrivance here mentioned evidently is to prevent the child from straining hard, so as to bring down the gut.

² This, no doubt, was an impure caustic potass. See PAULUS ÆGINETA, Vol. III, 185, and II, 265.

³ The *Adiantum capillus Veneris*. See PAULUS ÆGINETA, B. III, 22; and Dierbach, &c. 86.

⁴ The *Cupressus sempervirens*, Vet. iii, 204, Dierbach, &c. 218.

⁵ Namely, the *Pinus pinea*, L. See PAULUS ÆGINETA, Vol. III, 302; and Dierbach, &c. p. 215.

oil in a tepid state. Another:—Having pounded the seed of hemlock, pour on it a fragrant white wine, and then apply in a tepid state as a cataplasm.

11. But if it be inflamed, having boiled in water the root of the ivy, finely powdered, and mixing the finest flour, and stirring it up with white wine, apply as a cataplasm, and mix up some fat with these things. Another:—Take the root of the mandrake, especially the green (fresh) root, but otherwise the dried, and having cleaned the green root and cut it down, boil in diluted wine, and apply as a cataplasm; but the dry may be pounded and applied as a cataplasm in like manner. Another:—Having bruised the inner part of a ripe cucumber to a soft state, apply as a cataplasm.¹

12. If there be pain without inflammation, having roasted red natron and pounded it to a fine powder, and added alum and roasted salts,² finely triturated, mix together in equal proportions; then having mixed it up with the best pitch and spread upon a rag, apply, and bind. Another:—Having pounded the green leaves of capers, put into a bag and bind on the part; and when it appears to burn, take it away and apply it afterwards; or, if you have not the leaves of capers, pound the rind of its roots, and having mixed it up with dark-coloured wine, bind on the part in the same manner. This is a good application also for pains of the spleen. Of these poultices, those which are cooling, stop the discharge; those which are emollient and heating, discuss; and those which are attractive, dry up and attenuate. This disease is formed when bile and phlegm become seated in the parts. When the anus is inflamed, it should be anointed with the ointment, the ingredients of which are rosin, oil, wax, plumbago, and suet, these being all melted and applied quite hot as a cataplasm.

¹ One cannot help being struck with the admirable judgment with which the ingredients in these cataplasms are selected. What articles so likely to soothe irritation and allay pain, as hemlock, mandragora, cucumber, and the like?

² The process of roasting salts is minutely described by Dioscorides (v, 125).

ON HEMORRHOIDS.

THE AUTHOR'S PREFACE.

There are few more common diseases of the human body than hemorrhoids, and yet few are so generally understood. The object of this treatise is to explain the nature and treatment of this disease in a plain and accessible manner.

In the first part of the work the nature and history of the disease are explained, and the various symptoms and signs are described. In the second part the treatment is discussed, and the most effective remedies are pointed out.

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The author has drawn upon the most reliable authorities, and has given the reader the benefit of the most recent discoveries in the treatment of hemorrhoids. The work is a valuable addition to the literature on this subject, and is highly recommended to all who are interested in the treatment of hemorrhoids.

In the third part of the work the author discusses the various complications which may arise from hemorrhoids, and the most effective remedies for each. The work is a complete and authoritative treatise on the subject, and is highly recommended to all who are interested in the treatment of hemorrhoids.

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THE
HISTORY OF THE
CITY OF BOSTON
FROM 1630 TO 1880
BY
JOHN B. HENNING

IN TWO VOLUMES.
VOLUME I.
FROM 1630 TO 1780.
BOSTON:
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ON HEMORRHOIDS.

THE ARGUMENT.

THAT this little work is a continuation of the preceding one 'On Fistulæ,' is admitted by all the authorities, ancient and modern.

In the first paragraph is described the formation of hemorrhoids from bile or phlegm, which are determined to the rectum and inflame the blood in the veins, so that they become gorged, and the gut swells, and when the parts are injured by the passage of hard fæces, the vessels squirt out blood.

In the second, the author boldly declares that such operations as those of cutting, sewing, binding, and applying septics to the anus, although formidable in name, are by no means so much so in reality, as might be suspected. He then describes in very lucid terms the method of applying the actual cautery to the hemorrhoids. He directs the patient to be properly secured, and the piles having been made to protrude, are to be burnt by means of red-hot irons. The after-treatment is then distinctly laid down, first by cataplasms and by means of a soft sponge, secured with a shawl.

In the third, the operation of excising the hemorrhoids is described along with the subsequent management by means of astringent applications and a piece of sponge.

In the fourth, the condyloma is described, and the mode of operating upon it when it protrudes is most minutely described. He directs that the tumour should be torn away with the finger, and the decoction of galls applied to the place.

In the fifth is described the proper mode of procedure when the tumour is far up the rectum. The great principle of treatment which he lays down is to remove it by the roots, in which case, he says, there is no risk of bleeding, whereas, if it

be separated elsewhere, there will be a dangerous discharge of blood.

In the sixth is described the process of burning the hemorrhoid, first by means of an iron conducted within a canula, or if neither excision nor the actual cautery be practicable, with caustics, by means of which, he says, the pile will separate like a piece of burnt hide. The ingredients in his applications are sulphate of copper, alum, and the like.

In the last paragraph is given the treatment of what was described by the ancients as hemorrhoids of the female parts of generation. It consists in fomenting them with certain things of a soothing and stimulant nature.

What gives this treatise the most interest is the description contained in it of the method of curing hemorrhoids by the actual and potential cauteries. Neither of these methods are much known in this country, but both are often practised in France. The caustic most frequently used is the Vienna paste, which, I believe, is a preparation from the potassa fusa. It is applied by means of a forceps, *porte-caustique*. I have often applied successfully the simple caustic potass. The French surgeons also operate with the actual cautery. See the English edition of Malgaigne's Operative Surgery, p. 445.

ON HEMORRHOIDS.

1. THE disease of the hemorrhoids is formed in this way: if bile or phlegm be determined to the veins in the rectum, it heats the blood in the veins: and these veins becoming heated attract blood from the nearest veins, and being gorged the inside of the gut swells outwardly, and the heads of the veins are raised up, and being at the same time bruised by the fæces passing out, and injured by the blood collected in them, they squirt out blood, most frequently along with the fæces, but sometimes without fæces. It is to be cured thus:

2. In the first place it should be known in what sort of a place they are formed. For cutting, excising, sewing, binding, applying putrefacient means to the anus,—all these appear to be very formidable things, and yet, after all, they are not

attended with mischief. I recommend seven or eight small pieces of iron to be prepared, a fathom in size, in thickness like a thick specillum, and bent at the extremity, and a broad piece should be on the extremity, like a small obolus.¹ Having on the preceding day first purged the man with medicine, on the day of the operation apply the cautery. Having laid him on his back, and placed a pillow below the breech, force out the anus as much as possible with the fingers, and make the irons red-hot, and burn the pile until it be dried up, and so as that no part may be left behind. And burn so as to leave none of the hemorrhoids unburnt, for you should burn them all up.² You will recognise the hemorrhoids without difficulty, for they project on the inside of the gut like dark-coloured grapes, and when the anus is forced out they spirt blood. When the cautery is applied the patient's head and hands should be held so that he may not stir, but he himself should cry out, for this will make the rectum project the more. When you have performed the burning, boil lentils and tares, finely triturated in water, and apply as a cataplasm for five or six days. But on the seventh, cut a soft sponge into a very slender slice, its width should be about six inches square. Then a thin smooth piece of cloth, of the same size as the sponge, is to be smeared with honey and applied; and with the index finger of the left hand the middle of the sponge is to be pushed as far up as possible; and afterwards wool is to be placed upon the sponge so that it may remain in the anus. And having girded the patient about the loins and fastened a shawl to the girdle, bring up this band from behind between the legs and

¹ I would direct the attention of my surgical readers to the form of the ancient cautery or burning iron; it resembled a small coin, that is to say, it was a disc. I have often thought that modern practitioners in surgery erred in making their cauteries globular, instead of making them flat discs like the ancient. Several of the burning irons delineated by Scultet are of this shape. See, in particular, Tab. xxxviii, f. 4. *Le cautère nummulaire* of the French surgeons is formed exactly upon the model of the ancient cautery here noticed by Hippocrates. See Malgaigne, Méd. Opérat., p. 22. He describes it as being "un disque de douze lignes de diamètre sur quatre d'épaisseur."

² This is contrary to the advice given at Aph. vi, 12, and is the only passage in this small tract which would lead me to question its genuineness. Celsus (ii, 7) and Paulus Ægineta (B. VI, 79) follow the rule laid down in the Aphor. (l. c.) Aetius, on the other hand, is an advocate for the practice here recommended. (Tetr. iv, 2, 5.)

attach it to the girdle at the navel. Then let the medicine which I formerly said is calculated to render the skin thick and strong, be bound on. These things should be kept on for not less than twenty days. The patient should once a day take a draught from flour or millet, or bran, and drink water. When the patient goes to stool the part should be washed with hot water. Every third day he should take the bath.¹

3. Another method of cure :—Having got the anus to protrude as much as possible, foment with hot water, and then cut off the extremities of the hemorrhoids. But this medicine should be prepared beforehand, as an application to the wound :—Having put urine into a bronze vessel, sprinkle upon the urine the flower of bronze calcined and finely trituated; then, when it is moistened, shake the vessel and dry in the sun. When it becomes dry, let it be scraped down and levigated, and apply with the finger to the part, and having oiled compresses, apply them, and bind a sponge above.²

4. Another method :—There grows upon the bleeding condyloma,³ a protuberance like the fruit of the mulberry, and if the condyloma be far without, an envelope of flesh is adherent to it. Having placed the man over two round stones⁴ upon his knees, examine, for you will find the parts near the anus between the buttocks inflated, and blood proceeding from within. If, then, the condyloma below the cover be of a soft nature, bring it away with the finger, for there is no more difficulty in this than, in skinning a sheep, to pass the finger between the hide and the flesh. And this should be accomplished without the patient's knowledge, while he is kept in conversation. When the condyloma is taken off, streaks of blood necessarily flow from the whole of the torn part. It must be speedily washed with a decoction of galls, in a dry

¹ The treatment of hemorrhoids by the cautery is not described by Celsus, Paulus, or Albucasis, and is condemned by Andreas a Cruce.

² I need scarcely remark that the operation of excising hemorrhoids has been revived of late years, but that it is not devoid of danger. Sir Astley Cooper relates cases in which it was followed by fatal hemorrhage. The application recommended by our author is probably intended, in a great measure, for restraining the bleeding.

³ This is a term still in use. See Liston's Pract. Surg. The treatment of condyloma ani is minutely given by Celsus, vi, 18, and vii, 30.

⁴ Or mortars, meaning those used in houses for pounding corn. See Hesychius, and Foës in his annotations on this place.

wine, and the bleeding vein will disappear along with the condyloma, and its cover will be replaced. The older it is, the more easy the cure.

5. But if the condyloma be higher up, you must examine it with the speculum, and you should take care not to be deceived by the speculum; for when expanded, it renders the condyloma level with the surrounding parts, but when contracted, it shows the tumour right again. It is to be removed by smearing it with black hellebore on the finger. Then, on the third day, wash it out with a dry wine. You need not be surprised that there is no discharge of blood when you remove the condyloma, for neither, if you cut off the hands or legs at the articulations will there be any flow of blood; but if you cut them off above or below the joints, you will find there hollow veins which pour out blood, and you will have difficulty in stopping the bleeding. In the same manner, the bleeding vein in the anus, if you cut it above or below the point of separation of the condyloma, will pour forth blood; but if you take away the condyloma at its junction (*with the natural parts?*) there will be no flow of blood.¹ If matters then be thus put to rights, it will be well; but otherwise burn it, taking care not to touch the place with the iron, but bringing it close so as to dry it up, and apply the flos æris in the urine.

6. Another method of curing hemorrhoids:—You must prepare a cautery like the *arundo phragmites*,² and an iron that exactly fits is to be adapted to it; then the tube being introduced into the anus, the iron, red hot, is to be passed down it, and frequently drawn out, so that the part may bear the more heat, and no sore may result from the heating, and the dried veins may heal up. But if you are neither disposed to burn

¹ The directions given by Celsus are to the same effect: "At tubercula, quæ κονδύλωματα appellantur, ubi induruerunt, hæc ratione curantur. Alvus ante omnia ducetur; tum vulsella tuberculum apprehensum juxta radices exciditur." (vii, 30, 2.)

² I have no doubt that this is the reed described by Dioscorides, i, 114. The meaning of our author, I suppose, is, that the canula used in burning internal hemorrhoids should resemble the stalk of the *Arundo phragmites*. I think it remarkable that the ingenious mode of procedure here described should not be noticed by any of the subsequent authorities on operative surgery. The use of the canula, however, in the application of the cautery for the purpose of stopping bleeding arteries, is not unknown at the present day. See South's edition of Chelius, &c., vol. i, p. 315; and Malgaigne's Operative Surgery, p. 16, English edition. The cautery with the canula is well delineated by Scultet, Arm. Chirurg., t. xvi.

nor excise, having first fomented with plenty of hot water and turned out the anus, levigate myrrh, and having burnt galls and Egyptian alum, in the proportion of one and a half to the other things, and as much of melanteria;¹ these things are all to be used in a dry state. The hemorrhoid will separate under the use of these medicines, like a piece of burnt hide. You are to proceed thus until the whole are removed, and a half part of burnt chalcitis does the same thing. But if you wish to effect the cure by suppositories, take the shell of the cuttle fish, a third part of plumbago, bitumen, alum, a little of the flos æris, galls, a little verdigris; having poured a small quantity of boiled honey on these, and formed an oblong suppository, apply until you remove them.²

7. An hemorrhoid in a woman may be thus cured. Having fomented with plenty of hot water, boil in the water certain of the fragrant medicines, add pounded tamarisk, roasted litharge and galls, and pour on them white wine, and oil, and the grease of a goose, pounding all together. Give to use after fomenting. In fomenting, the anus is to be made to protrude as much as possible.³

¹ Probably "the ferruginous arseniate of copper." See PAULUS ÆGINETA, Vol. III, p. 244, Syd. Soc. edit. It is proper to mention, that there is a mistake there in stating that this substance is not mentioned by Hippocrates.

² This method of removing internal piles by means of caustics and septic, is described by Celsus, Aëtius, and Paulus. Of the ingredients which they contain, the most powerful is arsenic. I have more than once removed hemorrhoids by means of the potassa fusa, and condylomata by preparations of arsenic.

³ On this subject, see the authorities quoted in the Commentary on PAULUS ÆGINETA, Book VI, 71, Syd. Soc. edit.

ON THE SACRED DISEASE.

ON THE SACRED DISEASE.

THE ARGUMENT.

I HAVE stated, under the proper head in the Preliminary Discourse, my reasons for deciding to allow this treatise a place among the genuine works of Hippocrates. Though it must be admitted that, both in style and matter, it bears but little resemblance to the other authentic productions of our author, it would be contrary to the critical rules which I formerly laid down, were I to reject a treatise which has so respectable an amount of ancient authority on its side. I shall proceed, then, to give a brief outline of its contents, and afterwards subjoin a few remarks on certain interesting subjects connected with it.

The author enters at once upon the controverted question, whether or not epilepsy be a sacred disease; that is to say, whether or not it be an infliction from the gods. Here, as in the treatise 'On Airs, Waters, Places,' he decidedly maintains that there is no such thing as a sacred disease, for that all diseases arise from natural causes, and no one can be consistently ascribed to the gods more than another. He argues that the only reason for its having been regarded as divine is, that its nature is incomprehensible; but upon this principle, he justly remarks, many other diseases, the nature of which is above the level of human understanding, such as the paroxysms of intermittent fevers, might be set down as divine. He does not hesitate to declare it as his opinion that epilepsy had been referred to a supernatural cause by persons who pretended to cure it by spells and purifications, and who sought to screen their own want of ability to effect anything in the way of remedy under the pretext that it was an infliction from the gods. He points out very acutely the cunning of these impostors in not actually prescribing anything for the cure of it, as in this case their want of skill must have been made apparent

to everybody ; and in merely enjoining certain restrictions with regard to food and the modes of life, so that if any improvement should take place the credit would be theirs ; whereas, if the patient got worse, the blame could be laid on the gods. Our author's train of reasoning on this head is most logical and conclusive. He argues, that if these persons had the power of removing disease, they must also have the power of inducing it, and consequently they would be superior to the gods themselves. He further contends, that if magical arts could effect what they are represented as being capable of, that is to say, could darken the sun and pull down the moon, it would follow that these celestial objects are not of a divine nature, seeing they are mastered by human power. He then enters into a most convincing line of argument against those who pretended to cure epileptics by purifications ; contending that if these persons were in reality possessed by a god, their bodies would be purified, instead of polluted, by the presence of a divine being.

He further argues against the supposition that the disease is divine from the known fact that it is hereditary, for which he attempts to account upon physiological principles. He also contends that it particularly attacks persons of a peculiar temperament, namely, the pituitous, which he justly contends would not be the case if the disease were derived from a supernatural source.

He goes on to state, that the disease is connected with the brain ; and of the blood-vessels which connect it with the trunk he gives a description which cannot but appear to us very remarkable. It bears some resemblance to the description of the vascular system contained in the treatise 'On Human Nature,' but is not quite so far removed from modern ideas on the subject. There are, also, certain points of resemblance between it and the description of them given in the Second Book of Epidemics. One of his leading doctrines regarding the veins, is that they are the spiracles of the body, and inhale the pneuma (or spirits) by the lungs, and carry it to the surface of the body, where it passes out of the system by the exhalents. The pneuma (or breath) he holds to be the vehicle of sensibility to all parts of the body, and hence, if its course be intercepted, the part beyond becomes insensible.

He goes on to enlarge upon the connexion of the disease with the brain, a doctrine which he illustrates by a pretty full exposition of the humoral pathology as illustrated by various defluxions upon different parts of the body. It is important to remark that he represents eruptions of ulcers on the head and other parts of the body in infancy, as being calculated to ward off the attack of serious diseases in after life. Local diseases are accounted for as being occasioned by defluxions on particular parts, and the epileptic paroxysm is described as being a struggle between the humours and pneuma in the vessels. This hypothesis he explains very elaborately. Epileptic convulsions are represented as being generally fatal to children, because their veins are small, and cannot admit the defluxion. He gives a curious account of a natural cure which the disease sometimes undergoes, by fixing upon some member of the body, such as the mouth, the eye, the neck, or the hand. In adults this does not take place, as their vessels are large, and the blood is not choked by the influx of the phlegm. When the disease seizes old persons it is apt to induce fatal attacks of apoplexy, owing to the scantiness of the blood in their veins, which is coagulated by the cold defluxion.

The formation of the disease in children is ascribed to a melting down of the brain, owing to exposure to heat, and to an excretion from the same. In some cases it is occasioned by the south wind succeeding to cold north winds, and it is also sometimes produced by sudden fear. In old persons the disease is most commonly engendered in winter, and in that season the transitions from the one state to the other are apt to be attended with the most fatal consequences; and this may happen at any season of the year, and in spring more frequently than in summer, as in the former season the changes are more sudden than in the latter. After the twentieth year, epilepsy is not apt to take place, as the brain by that time is consistent, so that it does not readily melt down, and the blood in the veins is copious. But if the disease had become habitual from childhood, in such a case attacks are apt to occur during changes of the weather, more especially during the prevalence of the south winds, whereby the brain is rendered more humid. That the disease is produced by humidity of the brain, he shows

from what is observed in the inferior animals who are subject to it; for if the brain of a goat so affected be dissected, it will be found to be watery, and to have a bad smell. This, he acutely argues, is an ocular proof that in them it is not a god, but a disease, which infests their body; and he infers, from analogy, that the case is the same with man.

Children he represents as being most liable to attacks during the prevalence of south winds, the effects of which upon all bodies exposed to it, he describes in very striking terms; and hence forms a strong argument in support of his opinion, that the south wind has a great effect upon the brain, and thereby superinduces this disease. He thereupon gives a very interesting exposition of the humoral pathology in explanation of the origin of epilepsy and catarrhs. He afterwards repeats his former declaration, that epilepsy is no more a divine disease than any other is, but has its seat in the brain, which he holds to be the organ of the senses and of the intellect,—that, in a word, it is the part by which we know, feel, think, and judge what is right and what is wrong, what is foul and what is fair,—that it is the seat of the passions, and the organ which is deranged in cases of insanity. These maniacal affections he holds to be connected with phlegm and bile, and the varieties of them he describes very circumstantially. The more violent of them are referred to the bile, and the opposite class to the phlegm. He argues that the *pneuma* (breath or spirits) passes direct to the brain, and thence is distributed to all parts of the body. He contends that the diaphragm has nothing to do with feeling and sensibility, as its name would imply, any more than the auricles of the heart have to do with the sense of hearing. He further argues against the physiological hypothesis, that the heart is the part in which thought and the mental emotions are seated. The work concludes with another repetition of his declaration, that the disease is no more divine than any other, and he contends that by studying the intemperaments, and administering such things as are calculated to correct each of them, the physician may hope to accomplish the cure of epilepsy, as well as of other diseases, provided he will abandon the use of spells, purifications, and other illiberal tricks of the same nature.

From this brief outline of its contents, the reader cannot

fail to perceive that the work is highly interesting, and of a very original nature. The argument here directed against the vulgar belief that epilepsy is derived from a supernatural cause, is perfectly conclusive. If, as here laid down, epilepsy obey the same laws as diseases universally admitted to be sprung from natural causes,—if, like certain of them, it be hereditary, and attack peculiar temperaments, and if it be seated in a particular organ of the body, it is contrary to all sound logic to set it down as divine, and the others as natural.

There are two subjects touched upon in this treatise, which are so abstruse, and at the same time so important, that I cannot omit the present occasion of attempting to throw some light upon them,—I allude to the philosophical doctrine regarding the *pneuma*, and the hypothesis whereby the nature of epilepsy is explained.

From the exposition of the ancient physical doctrines given in the Third Section of the Preliminary Discourse, it will be readily understood that the higher classes of the philosophers agreed in holding that all activity, intelligence, and force, are derived from mind,—that, in a word, *it* is the active power in all and each of the bodies which compose the universe. Hence a sententious poet of a somewhat earlier date than our author, ventured to proclaim that—

“’Tis Mind that sees, and Mind that hears; all other things are deaf and blind.”¹

But although the philosophers taught that mind is the only active principle in the universe, they maintained that it performs all its operations through the instrumentality of a refined material substance, which partakes of the nature of light or fire. Thus, in the animal frame they recognised the existence of a *pneuma*, that is to say, a breath or spirit, which they held to be a sort of ethereal matter, that serves as the vehicle of the intellectual and sentient principle, by the instrumentality of which, the latter was supposed to operate upon the organs of the body. The *pneuma*, in short, is not mind, but its first instrument in all living creatures.² But, as we have stated in

¹ Νοῦς ὁρᾷ καὶ νοῦς ἀκόνει· τ’ ἄλλα κωφὰ καὶ τυφλά. (Clemens Alex., tom. i, p. 442, ed. Pott.; Maximus Tyrius, i.) I may mention that it is doubtful whether the last clause of the line be genuine. It does not occur in Maximus Tyrius.

² On this subject the reader may find it interesting to consult the notes of Mosheim

the Preliminary Discourse, the author of one of the Hippocratic treatises, would seem to have confounded mind with heat, and the same idea runs through the present work, where it certainly appears that Hippocrates (or whoever was the author of the work) expresses himself as if he held the opinion that breath and the soul are the same thing.¹ This, I say, would seem to be the doctrine which our author holds, but, as we stated before, his ideas on abstruse points of philosophy are not always so well defined as could have been wished; in short, he had not learned, like his immediate successor, Aristotle, to distinguish accurately between the immaterial principle and its primary instrument. Nor is this to be wondered at, when we reflect that a similar confusion of ideas prevails with many writers of the present day who maintain that some electrical or magnetical substance is the principle of life in all animals, and do not perceive the necessity of admitting an immaterial principle, as the conductor of its operations. Altogether, it is impossible not to remark a most striking coincidence between the tenets of the ancient philosophers regarding a pneuma, and those of certain modern mesmerists respecting a magnetical principle existing in the microcosm.

With regard to the cause of epilepsy, it will be remarked that our author assigns its seat to the brain, and holds that the *materies morbi* is a cold phlegm or *pituita*, secreted in that organ,

on Cudworth's Intellectual System, pp. 1076, 1099, 1172; edit. 1723. The opinions of Aristotle may be learned from the third chapter of the Second Book, De Generatione. A tenet, which has been always reckoned peculiar to him, is that the spirit is analogous to the substance of which the stars are composed, by which he probably meant ether, that is to say, light or heat. This would appear to have been a doctrine very generally maintained in ancient times; it forms part of the popular philosophy of the Augustan age, as expounded by Virgil in the Sixth Æneid, l. 724. The poet here describes the pneuma as being "aura simplicis ignem;" and in the Georgics he calls it "æthereos haustus." (iv, 220.) The best modern exposition of the ancient doctrines regarding the pneuma, is that by Abraham Kaau, in his work, Perspiratio Dicta Hippocrati, which is replete with acute and profound views on many points connected with philosophy and physiology. The reader will also find much delightful information on the higher philosophy of the ancients in Berkeley's Siris, a most profound and original work. The doctrine of the pneuma thus broached by Hippocrates gave rise, several centuries afterwards, to a very important sect called the Pneumatic. On it, see in particular the French edition of Sprengell's Hist. of Med., tom. ii, p. 69; and the Preliminary Disquisition to Boerhaave's edition of Aretæus.

¹ Moses would seem to identify breath and the vital principle. See Genesis, ii, 7.

which passing down into the blood-vessels, and encountering the *pneuma*, or principle of life, produces those dreadful convulsions to which epileptics are subject. I may be permitted to state, that this doctrine of our author's, respecting a cold pituitous humour or phlegm secreted in the brain, is decidedly adopted by Aristotle, who probably received this, as he did most of his physiological opinions, from Hippocrates.¹ Lucretius, the Epicurean poet, also, although he rejects the mental philosophy of the Platonists and Peripatetics, espouses an hypothesis quite similar to our author's, in order to account for the phenomena of epilepsy. The description is so striking, that I subjoin a literal translation of it, by Mason Good :

“ Oft too some wretch, before our startled sight,
Struck as with lightning, by some keen disease,
Drops sudden :—by the dread attack o'erpowered
He foams, he groans, he trembles, and he faints ;
Now rigid, now convulsed, his labouring lungs
Heave quick, and quivers each exhausted limb.
Spread through the frame, so deep the dire disease
Perturbs his spirit ; as the briny main
Foams through each wave beneath the tempest's ire.
He groans since every member smarts with pain,
And from his inmost breast, with wontless toil,
Confused and harsh, articulation springs.
He raves since soul and spirit² are alike
Disturbed throughout, and severed each from each
As urged above distracted by the bane.
But when, at length, the morbid cause declines,
And the fermenting humours from the heart
Flow back—with staggering foot the man first treads,
Led gradual on to intellect and strength.”

(De Rerum Natura, iii, l. 486-504.)

I may just mention further, that this doctrine of a *pneuma*, or animal spirits, was adopted by all the Arabian authorities, of which I shall only take time to refer to Avicenna, iii, l, 4. It has also been held under a variety of shapes, by some of the first names in ancient and modern philosophy, as is correctly stated in the following interesting extract : “ Hippocrates, Galen, and Vieussens, thought that the spirits are formed of an aerial

¹ De Partibus Animal., ii, 7.

² The poet applies the term *animus* to the mind or soul ; and *anima* to the *pneuma* or spirit. Celsus renders the *pneuma* of Hippocrates by *spiritus*. See Præfatio.

principle. Van Helmont, Willis, and Stenon assimilated them to light. Newton said that they consist of part of that very elastic element upon which the reflexion and rarefaction of the solar rays depend. Descartes regarded them as an igneous principle; Boerhaave thought that they approach to the nature of water. Saussure and De Haen confound them with electric matter." (Dumas, *Physiol.*, iv, 73.) At present, however, as hinted above, the form which the hypothesis has assumed is that of animal magnetism, which, it is well known, has many intelligent supporters, of whom I shall only mention one, my intelligent countryman, Mr. Colquhoun, the author of *Isis Revelata*.

The other part of our author's hypothesis, I mean the connexion of the disease with a pituitous secretion from the brain, however much some may be disposed thoughtlessly to deride it, received a most remarkable confirmation from the observations of the celebrated anatomists, the Wenzels. The following account of their opinions I extract from Dr. Copland's Dictionary of Practical Medicine: "The WENZELS in their numerous dissections, directed attention to the state of the *pituitary and pineal glands*. These able pathologists found the *pituitary gland and infundibulum* variously altered in colour, consistence, size, and structure, in nearly all the cases of epilepsy they examined. . . Alterations in the sphenoid bone and pituitary gland have been found also by Geeding, Newman, Sims, and myself." (See under Epilepsy, § 48.¹)

Before concluding, I have a few additional remarks to make on the question whether or not the present treatise be the production of Hippocrates himself. I am aware that many learned critics, such as Gruner and Ackerman, looking to the difference of style and matter between it, and the genuine works of Hippocrates, such as the Prognostics and Aphorisms, have not hesitated to decide that it must be the production of an entirely different mind. But why should it appear incredible that the great master of Grecian medicine should have devoted his leisure hours to the study of the transcendental philosophy then in so high repute, and that he should have

¹ See further, Syder's edition of Sir Astley Cooper's Lectures, p. 20.

displayed the versatility of his genius in the manner he handles the new subject of his research? I have stated in the short biography I have given of him at the commencement of this work, that he was familiarly acquainted with Democritus of Abdera, and it is well known that he visited Athens at the time when Socrates had diverted the minds of his countrymen from verbal disputations to the cultivation of a sound and masculine philosophy. When we reflect how narrow the field of intellectual research then was, compared with what it has now become, it need not appear at all remarkable that the enlarged mind of our author should have ventured to grapple with all those great questions in physical and mental philosophy, which the sages of his time were attempting to solve. Galen, in fact, on many occasions, pronounces Hippocrates to have been a great philosopher, as well as a great physician; and that there is no incompatibility in the two characters is apparent from examples of very recent date. My lamented friend, Dr. Abercrombie, not only wrote elaborate works on Pathology and the Practice of Medicine, but also published treatises on Moral and Intellectual Philosophy. Haller was not only a great physician and physiologist, but also a highly popular poet. Why then should it appear incredible that Hippocrates should have displayed as wide a grasp of mind as a Haller or an Abercrombie? I know that the opinion is now pretty generally propagated, that a medical man ought to be exclusively occupied with professional pursuits, and have no leisure to devote to the cultivation of elegant literature; and it is not unusual to hear of a physician's being run down by the craftsmen of our art, as a person who, it is inferred, must be deficient in a practical acquaintance with medicine, because it is admitted that he has made respectable acquirements in the liberal sciences, and in philosophy. Such members of the medical profession (or, I should rather say, craft), though they can find no time to devote to Homer or Aristotle, to Milton or Kant, find plenty of leisure to frequent all the haunts of fashionable resort, and as Galen somewhere says of his professional contemporaries, when the rich and the noble do not want them in the sick chamber, they are always ready to attend them in the ball- or the banquet-room. But is such a waste of intellectual existence indispensably necessary, in order to attain success in the practice

of our profession? And might not a man become a useful and respectable member of it, by discharging the duties of his profession actively when called upon, and then retiring to the study of the liberal arts and sciences? I shall conclude this Argument and my present task, by quoting the memorable words in which Cicero apologises for his having spent a certain portion of his time in the cultivation of elegant literature, and of philosophy, leaving the reader to apply the same in the case of Hippocrates, and, I may be permitted to add, in that of the humble Editor of the present volume, who trusts he shall not be set down as an idle and unprofitable practitioner of the Art, because he has found leisure amidst the turmoil and distraction of a professional life, to communicate to his countrymen the important opinions contained in the genuine remains of The Coan Sage:—"Ego vero fateor me his studiis esse deditum; ceteros pudeat, siqui ita se literis abdiderunt, ut nihil possint ex his neque ad communem ferre fructum, neque in adspectum, lucemque proferre. Quare quis tandem me reprehendat, aut quis mihi jure succenseat si, quantùm ceteris ad suas res obeundas, quantum ad festos dies ludorum celebrandos, quantum ad alias voluptates, et ad ipsam requiem animi et corporis conceditur temporum; quantum alii tribuunt tempestivis conviviis; quantum denique aleæ, quantum pilæ, tantum mihi egomet ad hæc studia recolenda sumsero?"¹

¹ Pro Archia Poëta.

ON THE SACRED DISEASE.

It is thus with regard to the disease called Sacred: it appears to me to be nowise more divine nor more sacred than other diseases, but has a natural cause from which it originates like other affections. Men regard its nature and cause as divine from ignorance and wonder, because it is not at all like to other diseases. And this notion of its divinity is kept up by their inability to comprehend it, and the simplicity of the mode by which it is cured, for men are freed from it by purifications and incantations. But if it is reckoned divine because it is wonderful, instead of one there are many diseases which would be sacred; for, as I will show, there are others no less wonderful and prodigious, which nobody imagines to be sacred. The quotidian, tertian, and quartan fevers, seem to me no less sacred and divine in their origin than this disease, although they are not reckoned so wonderful. And I see men become mad and demented from no manifest cause, and at the same time doing many things out of place; and I have known many persons in sleep groaning and crying out, some in a state of suffocation, some jumping up and fleeing out of doors, and deprived of their reason until they awaken, and afterwards becoming well and rational as before, although they be pale and weak; and this will happen not once but frequently.¹ And there are many and various things of the like kind, which it would be tedious to state particularly. And they who first referred this disease to the gods, appear to me to have been just such persons as the conjurors, purificators, mountebanks, and charlatans now are, who give themselves out for being excessively religious, and as knowing more than other people. Such persons, then, using the divinity as a pretext and screen of their own inability to afford any assistance, have given out that the disease is sacred, adding suitable reasons for this opinion, they have instituted a mode of treatment which is safe for themselves, namely, by applying purifications and incantations, and enforcing abstinence from baths and many articles of food which are unwholesome

¹ Our author in this place evidently alludes to nightmare and somnambulism.

to men in diseases. Of sea substances, the sur-mullet,¹ the blacktail,² the mullet,³ and the eel: for these are the fishes most to be guarded against. And of flesh, those of the goat, the stag, the sow, and the dog: for these are the kinds of flesh which are aptest to disorder the bowels. Of fowls, the cock, the turtle,⁴ and the bustard,⁵ and such others as are reckoned to be particularly strong. And of potherbs, mint, garlic, and onions: for what is acrid does not agree with a weak person. And they forbid to have a black robe, because black is expressive of death; and to sleep on a goat's skin, or to wear it, and to put one foot upon another, or one hand upon another: for all these things are held to be hinderances to the cure. All these they enjoin with reference to its divinity, as if possessed of more knowledge, and announcing beforehand other pretents, so that if the person should recover, theirs would be the honour and credit; and if he should die, they would have a certain defence, as if the gods, and not they, were to blame, seeing they had administered nothing either to eat or drink as medicine, nor had overheated him with baths, so as to prove the cause of what had happened. But I am of opinion that (if this were true) none of the Libyans, who live in the interior, would be free from this disease, since they all sleep on goats' skins, and live upon goat's flesh; neither have they couch, robe, nor shoe, that is not made of goat's skin, for they have no other herds but goats and oxen. But if these things, when administered in food, aggravate the disease, and if it be cured by abstinence from them, then is God not the cause at all; nor will purifications be of any avail, but it is the food which is beneficial and prejudicial, and the influence of the divinity vanishes. Thus, then, they who attempt to cure these diseases in this way, appear to me neither to reckon them sacred nor divine. For when they are removed by such purifications, and this method of cure, what is to prevent them from being brought upon men and induced by other devices

¹ Namely, the *Mullus barbatus*. See under *τρίγλη*, in the Appendix to Dunbar's Greek Lexicon.

² Namely, the *Sparus melanurus*. See under *μελάγουρος*, in the above cited work.

³ Namely, the *Mugil cephalus*. See under *κεστρεύς*, as above.

⁴ Namely, the *Columba turtur*. See under *τρυγών*, as above.

⁵ Namely, the *Otis tarda*. See under *ώτίς*, as above.

similar to these?¹ So that the cause is no longer divine, but human. For whoever is able, by purifications and conjurations, to drive away such an affection, will be able, by other practices, to excite it; and, according to this view, its divine nature is entirely done away with. By such sayings and doings, they profess to be possessed of superior knowledge, and deceive mankind by enjoining lustrations and purifications upon them, while their discourse turns upon the divinity and the godhead.² And yet it would appear to me that their discourse savours not of piety, as they suppose, but rather of impiety, and as if there were no gods, and that what they hold to be holy and divine, were impious and unholy. This I will now explain. For, if they profess to know how to bring down the moon, and darken the sun, and induce storms and fine weather, and rains and droughts, and make the sea and land unproductive, and so forth, whether they arrogate this power as being derived from mysteries or any other knowledge or consideration, they appear to me to practise impiety, and either to fancy that there are no gods, or, if there are, that they have no ability to ward off any of the greatest evils. How, then, are they not enemies to the gods? For, if a man by magical arts and sacrifices will bring down the moon,³ and darken the sun, and induce storms,

¹ I cannot but think that the proper reading is, ἐπιγίγνεσθαι, and not ἀπογίγνεσθαι. Agreeably to this reading, the meaning is more clear.

² The term in the original (δαιμόνιον) is of dubious meaning. In the works of earlier Greek authors, it and δαίμων are generally put in a good sense; but in Christian times they are almost always taken in a bad sense, and applied to evil spirits. Hence demoniacs were held to be persons possessed with evil spirits or devils. In this light, I need scarcely remark, they are universally represented in the New Testament. That the persons there described as being possessed with impure spirits were the same as the demoniacs of the Greeks, and that they were epileptics and maniacs, cannot admit of the very slightest doubt. It will be seen below that our author understands the popular belief to be, that the bodies of such persons were possessed by demons, who, he argues, must be good beings and not bad. The earlier Christians, however, held that all the gods of the heathens were demons in a bad sense, that is to say, devils.

³ This was supposed to be a very common exploit of the ancient witches. Hence Virgil says,

“Carmina vel cælo possunt deducere lunam.”

And Tibullus, in like manner:

“Hanc ego de cælo ducentem sidera vidi.” (El. i, 2.)

And in similar terms Horace says,

“et polo
Deripere lunam vocibus possum meis.” (Epod. xvii.)

or fine weather, I should not believe that there was anything divine, but human, in these things, provided the power of the divine were overpowered by human knowledge and subjected to it. But perhaps it will be said, these things are not so, but, men being in want of the means of life, invent many and various things, and devise many contrivances for all other things, and for this disease, in every phase of the disease, assigning the cause to a god. Nor do they remember the same things once, but frequently.¹ For, if they imitate a goat, or grind their teeth, or if their right side be convulsed, they say that the mother of the gods is the cause. But if they speak in a sharper and more intense tone, they resemble this state to a horse, and say that Posidon (*Neptune*) is the cause. Or if any excrement be passed, which is often the case, owing to the violence of the disease, the appellation of Enodius (*Hecate*?) is adhibited; or, if it be passed in smaller and denser masses, like bird's, it is said to be from Apollo Nomius. But if foam be emitted by the mouth, and the patient kick with his feet, Ares (*Mars*) gets the blame. But terrors which happen during the night, and fevers, and delirium, and jumpings out of bed, and frightful apparitions, and fleeing away,—all these they hold to be the plots of Hecate, and the invasions of the Heroes, and use purifications and incantations, and, as appears to me, make the divinity to be most wicked and most impious. For they purify those labouring under this disease, with the same sorts of blood and the other means that are used in the case of those who are stained with crimes, and of malefactors, or who have been enchanted by men, or who have done any wicked act; who ought to do the very reverse, namely, sacrifice and pray, and, bringing gifts to the temples, supplicate the gods. But now they do none of these things, but purify; and some of the purifications they conceal in the earth, and some they throw into the sea, and some they carry to the mountains where no one can touch or tread upon them. But these they ought to take to the temples and present to the god, if a god be the cause of the disease. Neither truly do I count it a worthy opinion to hold that the body of man is polluted by god, the most impure by the most holy; for were it defiled, or did it suffer from any other thing, it would be like to be purified and sanctified rather than polluted

¹ The text appears to be corrupt; at least the meaning is very equivocal.

by god. For it is the divinity which purifies and sanctifies the greatest of offences and the most wicked, and which proves our protection from them. And we mark out the boundaries of the temples and the groves of the gods, so that no one may pass them unless he be pure, and when we enter them we are sprinkled with holy water, not as being polluted, but as laying aside any other pollution which we formerly had. And thus it appears to me to hold, with regard to purifications. But this disease seems to me to be nowise more divine than others; but it has its nature such as other diseases have, and a cause whence it originates, and its nature and cause are divine only just as much as all others are, and it is curable no less than the others, unless when, from length of time, it is confirmed, and has become stronger than the remedies applied. Its origin is hereditary, like that of other diseases.¹ For if a phlegmatic person be born of a phlegmatic, and a bilious of a bilious, and a phthisical of a phthisical, and one having spleen disease, of another having disease of the spleen, what is to hinder it from happening that where the father and mother were subject to this disease, certain of their offspring should be so affected also? As the semen comes from all parts of the body, healthy particles will come from healthy parts, and unhealthy from unhealthy parts.² And another great proof that it is in nothing more divine than other diseases is, that it occurs in those who are of a phlegmatic constitution, but does not attack the bilious. Yet, if it were more divine than the others, this disease ought to befall all alike, and make no distinction between the bilious and phlegmatic. But in them, the brain is the cause of this affection, as it is of other very great diseases, and in what manner and from what cause it is formed, I will now plainly declare. The brain of man, as in all other animals, is double, and a thin membrane (*meninx*) divides it through the middle, and therefore the pain is not always in the same part of the head; for sometimes it is situated in either side, and sometimes the whole is affected; and veins run towards it from all

¹ That epilepsy is often hereditary, is admitted by our best authorities in modern times, as Zacutus Lusitanus (*Prax. ad Mir.*, i, 36), Stahl (*de Hæred. Dispos. ad Var. Affect.*), Boerhaave (*Aphor.* 1075), M. Esquirol, and Dr. Copland (*Dictionary of Practical Medicine*, under *Epilepsy*, p. 789).

² See, in like manner, On Airs, Waters, &c., § 15.

parts of the body, many of which are small, but two are thick,—the one from the liver, and the other from the spleen. And it is thus with regard to the one from the liver: a portion of it runs downwards through the parts on the right side, near the kidney and the psoas muscle, to the inner part of the thigh, and extends to the foot. It is called vena cava. The other runs upwards by the right veins and the lungs, and divides into branches for the heart and the right arm. The remaining part of it rises upwards across the clavicle to the right side of the neck, and is superficial so as to be seen; near the ear it is concealed, and there it divides; its thickest, largest, and most hollow part ends in the brain; another small vein goes to the right ear, another to the right eye, and another to the nostril. Such are the distributions of the hepatic vein. And a vein from the spleen is distributed on the left side, upwards and downwards, like that from the liver, but more slender and feeble. By these veins we draw in much spirit (*gas?*) for they are the spiracles of our bodies inhaling air to themselves and distributing it to the rest of the body, and to the smaller veins, and they cool and afterwards exhale it. For the breath (*pneuma*) cannot be stationary, but it passes upwards and downwards, for if stopped and intercepted, the part where it is stopped becomes powerless. In proof of this, when, in sitting or lying, the small veins are compressed, so that the breath (*pneuma*) from the larger vein does not pass into them, the part is immediately seized with numbness; and it is so likewise with regard to the other veins. This disease, then, affects phlegmatic persons, but not bilious. It begins to be formed while the foetus is still *in utero*. For the brain, like the other organs, is depurated and grows before birth. If, then, in this purgation it be properly and moderately depurated, and neither more nor less than what is proper be secreted from it, the head is thus in the most healthy condition. If the secretion (melting) from the whole brain be greater than natural, the person, when he grows up, will have his head diseased, and full of noises, and will neither be able to endure the sun nor cold. Or, if the melting take place from any one part, either from the eye or ear, or if a vein has become slender, that part will be deranged in proportion to the melting. Or, if the depuration do not take place, but it (*the secretion?*) accumulates in the brain, it

necessarily becomes phlegmatic. And such children as have an eruption of ulcers on the head, on the ears, and along the rest of the body, with copious discharges of saliva and mucus,—these, in after life, enjoy best health; for in this way the phlegm which ought to have been purged off in the womb, is discharged and cleared away, and persons so purged, for the most part, are not subject to attacks of this disease. But such as have had their skin free from eruptions, and have had no discharge of saliva or mucus, nor have undergone the proper purgation in the womb, these persons run the risk of being seized with this disease. But if the defluxion be determined to the heart, the person is seized with palpitation and asthma, the chest becomes diseased, and some also have curvature of the spine. For when a defluxion of cold phlegm takes place on the lungs and heart, the blood is chilled, and the veins, being violently chilled, palpitate in the lungs and heart, and the heart palpitates, so that from this necessity asthma and orthopnœa supervene. For it does not receive the spirits (*pneuma*) until the defluxion of phlegm be mastered, and being heated is distributed to the veins, then it ceases from its palpitation and difficulty of breathing, and this takes place as soon as it obtains an abundant supply; and this will be more slowly, provided the defluxion be more abundant, or if it be less, more quickly. And if the defluxions be more condensed, the epileptic attacks will be more frequent, but otherwise if it be rarer. Such are the symptoms when the defluxion is upon the lungs and heart; but if it be upon the bowels, the person is attacked with diarrhœa. And if, being shut out from all these outlets, its defluxion be determined to the veins I have formerly mentioned, the patient loses his speech, and chokes, and foam issues by the mouth, the teeth are fixed, the hands are contracted, the eyes distorted, he becomes insensible, and in some cases the bowels are evacuated. And these symptoms occur sometimes on the left side, sometimes on the right, and sometimes in both. The cause of every one of these symptoms I will now explain. The man becomes speechless when the phlegm, suddenly descending into the veins, shuts out the air, and does not admit it either to the brain or to the vena cava, or to the ventricles, but interrupts the inspiration. For when a person draws in air by the mouth and nostrils, the breath (*pneuma*) goes first to the brain, then

the greater part of it to the internal cavity, and part to the lungs, and part to the veins, and from them it is distributed to the other parts of the body along the veins; and whatever passes to the stomach cools, and does nothing more; and so also with regard to the lungs. But the air which enters the veins is of use (to the body) by entering the brain and its ventricles, and thus it imparts sensibility and motion to all the members, so that when the veins are excluded from the air by the phlegm and do not receive it, the man loses his speech and intellect, and the hands become powerless, and are contracted, the blood stopping and not being diffused, as it was wont; and the eyes are distorted owing to the veins being excluded from the air; and they palpitate; and froth from the lungs issues by the mouth. For when the breath (*pneuma*) does not find entrance to him, he foams and sputters like a dying person. And the bowels are evacuated in consequence of the violent suffocation; and the suffocation is produced when the liver and stomach ascend to the diaphragm, and the mouth of the stomach is shut up: this takes place when the breath (*pneuma*) does not enter by the mouth, as it is wont. The patient kicks with his feet when the air is shut up in the lungs and cannot find an outlet, owing to the phlegm; and rushing by the blood upwards and downwards, it occasions convulsions and pain, and therefore he kicks with his feet. All these symptoms he endures when the cold phlegm passes into the warm blood, for it congeals and stops the blood.¹ And if the defluxion be copious and thick, it immediately proves fatal to him, for by its cold it prevails over the blood and congeals it; or, if it be less, it in the first place obtains the mastery, and stops the respiration; and then in the course of time, when it is diffused along the veins and mixed with much warm blood, it is thus overpowered, the veins receive the air, and the patient recovers his senses. And of little children which are seized with this disease, the greater part die, provided the defluxion be copious and humid, for the veins being slender cannot admit the phlegm, owing to its thickness and abundance; but the blood is cooled and congealed, and the child immediately dies. But if the phlegm be in small quantity, and make a defluxion into both the veins, or to those on either side, the

¹ See Lucretius, De Rerum Nat., iii, l. 486; and the translation of the same as given in the Argument.

children survive, but exhibit notable marks of the disorder; for either the mouth is drawn aside, or an eye, the neck, or a hand, wherever a vein being filled with phlegm loses its tone, and is attenuated, and the part of the body connected with this vein is necessarily rendered weaker and defective. But for the most part it affords relief for a longer interval; for the child is no longer seized with these attacks, if once it has contracted this impress of the disease, in consequence of which the other veins are necessarily affected, and to a certain degree attenuated, so as just to admit the air, but no longer to permit the influx of phlegm. However, the parts are proportionally enfeebled whenever the veins are in an unhealthy state. When in striplings¹ the defluxion is small and to the right side, they recover without leaving any marks of the disease, but there is danger of its becoming habitual, and even increasing if not treated by suitable remedies. Thus, or very nearly so, is the case when it attacks children. But when it attacks persons of a more advanced age, it neither proves fatal, nor produces distortions. For their veins are hollow (*large*?), and filled with hot blood; and therefore the phlegm can neither prevail nor cool the blood, so as to coagulate it, but it is quickly overpowered and mixed with the blood, and thus the veins receive the air, and sensibility remains; and, owing to their strength, the aforesaid symptoms are less likely to seize them. But when this disease attacks very old people, it therefore proves fatal, or induces paraplegia, because the veins are empty, and the blood scanty, thin, and watery.² When, therefore, the defluxion is copious, and the season winter, it proves fatal; for it chokes up the exhalents and coagulates the blood if the defluxion be to both sides; but if to either, it merely induces paraplegia. For the blood being thin, cold, and scanty, cannot prevail over the phlegm, but being itself overpowered, it is coagulated, so that those parts in which the blood is corrupted, lose their strength. The defluxion takes place rather on the right side than on the left, because the veins there are more capacious and numerous than on the left side, for on the one side they spring from the liver, and on the other from the spleen. The defluxion and

¹ Meaning persons about puberty, and until 25 years of age. See Aph. v, 7.

² The connexion between epilepsy and apoplexy is indisputable, and has been often adverted to in modern times. See Copland's Dictionary, under *Epilepsy*, §§ 16, 40.

melting down take place most especially in the case of children in whom the head is heated either by the sun or by fire, or if the brain suddenly contract a rigor, and then the phlegm is excreted. For it is melted down by the heat and diffusion of the brain, but it is excreted by the congealing and contracting of it, and thus a defluxion takes place. And in some this is the cause of the disease, and in others, when the south wind quickly succeeds to northern breezes, it suddenly unbinds and relaxes the brain, which is contracted and weak, so that there is an inundation of phlegm, and thus the defluxion takes place. The defluxion also takes place in consequence of fear, from any hidden cause, if we are frightened at any person's calling aloud, or while crying, when one cannot quickly recover one's breath, such as often happens to children. When any of these things occurs, the body immediately shivers, the person becoming speechless cannot draw his breath, but the breath (*pneuma*) stops, the brain is contracted, the blood stands still, and thus the excretion and defluxion of the phlegm take place. In children, these are the causes of the attack at first. But to old persons winter is most inimical. For when the head and brain have been heated at a great fire, and then the person is brought into cold and has a rigor, or when from cold he comes into warmth, and sits at the fire, he is apt to suffer in the same way, and thus he is seized in the manner described above. And there is much danger of the same thing occurring, if in spring his head be exposed to the sun, but less so in summer, as the changes are not sudden. When a person has passed the twentieth year of his life, this disease is not apt to seize him, unless it has become habitual from childhood, or at least this is rarely or never the case. For the veins are filled with blood, and the brain consistent and firm, so that it does not run down into the veins, or if it do, it does not overpower the blood, which is copious and hot. But when it has gained strength from one's childhood, and become habitual, such a person usually suffers attacks, and is seized with them in changes of the winds, especially in south winds, and it is difficult of removal. For the brain becomes more humid than natural, and is inundated with phlegm, so that the defluxions become more frequent, and the phlegm can no longer be excreted, nor the brain be dried up, but it becomes wet and humid. This you may ascertain

in particular, from beasts of the flock which are seized with this disease, and more especially goats, for they are most frequently attacked with it. If you will cut open the head, you will find the brain humid, full of sweat, and having a bad smell.¹ And in this way truly you may see that it is not god that injures the body, but disease. And so it is with man. For when the disease has prevailed for a length of time, it is no longer curable, as the brain is corroded by the phlegm, and melted, and what is melted down becomes water, and surrounds the brain externally, and overflows it; wherefore they are more frequently and readily seized with the disease. And therefore the disease is protracted, because the influx is thin, owing to its quantity, and is immediately overpowered by the blood and heated all through. But such persons as are habituated to the disease, know beforehand when they are about to be seized, and flee from men; if their own house be at hand, they run home, but if not, to a deserted place, where as few persons as possible will see them falling, and they immediately cover themselves up. This they do from shame of the affection, and not from fear of the divinity, as many suppose. And little children at first fall down wherever they may happen to be, from inexperience. But when they have been often seized, and feel its approach beforehand, they flee to their mothers, or to any other person they are acquainted with, from terror and dread of the affection, for being still infants they do not know yet what it is to be ashamed. And for these reasons, I say, they are attacked during changes of the winds, and especially south winds, then also with north winds, and afterwards also with the others. These are the strongest winds, and the most opposed to one another, both as to direction and power. For, the north wind condenses the air, and separates from it whatever is muddy and nebulous, and renders it clearer and brighter. and so in like manner also, all the winds which arise from the sea and other waters; for they extract the humidity and nebulosity from all objects, and from men themselves, and therefore

¹ It is well known that this is also the case with sheep, and that they are subject to the disease called the *sturdy*, which is indisputably a sort of epilepsy. Many shepherds have told me that they have perforated the skull so, as to evacuate the water in the brain. The operation, however, is not often successful. The *materies morbi*, I believe, is a hydatid.

it (the north wind) is the most wholesome of the winds. But the effects of the south are the very reverse.¹ For in the first place it begins by melting and diffusing the condensed air, and therefore it does not blow strong at first, but is gentle at the commencement, because it is not able at once to overcome the dense and compacted air, which yet in a while it dissolves. It produces the same effects upon the land, the sea, the rivers, the fountains, the wells, and on every production which contains humidity, and this there is in all things, some more, some less. For all these feel the effects of this wind, and from clear they become cloudy; from cold, hot; from dry, moist; and whatever earthen vessels are placed upon the ground, filled with wine or any other fluid, are affected with the south wind, and undergo a change. And the sun, the moon, and the stars it renders blunter in appearance than they naturally are. When, then, it possesses such powers over things so great and strong, and the body is made to feel and undergo changes in the changes of the winds, it necessarily follows that the brain should be dissolved and overpowered with moisture, and that the veins should become more relaxed by the south winds, and that by the north the healthiest portion of the brain should become contracted, while the most morbid and humid is secreted, and overflows externally, and that catarrhs should thus take place in the changes of these winds. Thus is this disease formed and prevails from those things which enter into and go out of the body, and it is not more difficult to understand or to cure than the others, neither is it more divine than other diseases. And men ought to know that from nothing else but thence (*from the brain?*) come joys, delights, laughter and sports, and sorrows, griefs, despondency, and lamentations. And by this, in an especial manner, we acquire wisdom and knowledge, and see and hear, and know what are foul and what are fair, what are bad and what are good, what are sweet, and what unsavoury; some we discriminate by habit, and some we perceive by their utility. By this we distinguish objects of relish and disrelish, according

¹ The classical scholar will here recollect the character of the auster given by Horace :

“frustra per autumnum nocentem
Corporibus mutuemus austrum.”

This wind, I suppose there can be no doubt, was the *sirocco*.

to the seasons ; and the same things do not always please us. And by the same organ we become mad and delirious, and fears and terrors assail us, some by night, and some by day, and dreams and untimely wanderings, and cares that are not suitable, and ignorance of present circumstances, desuetude, and unskilfulness. All these things we endure from the brain, when it is not healthy, but is more hot, more cold, more moist, or more dry than natural, or when it suffers any other preternatural and unusual affection. And we become mad from humidity (*of the brain*). For when it is more moist than natural, it is necessarily put into motion, and the affection being moved,¹ neither the sight nor hearing can be at rest, and the tongue speaks in accordance with the sight and hearing. As long as the brain is at rest, the man enjoys his reason, but the depravement of the brain arises from phlegm and bile, either of which you may recognise in this manner : Those who are mad from phlegm are quiet, and do not cry out nor make a noise ; but those from bile are vociferous, malignant, and will not be quiet, but are always doing something improper.² If the madness be constant, these are the causes thereof. But if terrors and fears assail, they are connected with derangement of the brain, and derangement is owing to its being heated. And it is heated by bile when it is determined to the brain along the blood-vessels running from the trunk ; and fear is present until it return again to the veins and trunk, when it ceases. He is grieved and troubled when the brain is unseasonably cooled and contracted beyond its wont. This it suffers from phlegm, and from the same affection the patient becomes oblivious. He calls out and screams at night when the brain is suddenly heated. The bilious endure this. But the phlegmatic are not heated, except when much blood goes to the brain, and creates an ebullition. Much blood passes along the aforesaid veins. But when the man happens to see a frightful dream, and is in fear as if awake, then his face is in a greater glow, and the

¹ If the text be not in fault, we must here understand by "affection" the affected part, or organ ; that is to say, the abstract is put for the concrete. This is constantly done by our author's contemporary, Pindar, but one would scarcely expect so bold a trope in a prose writer.

² The connexion between epilepsy and mania is undoubted. See Copland's Dictionary, under *Epilepsy*.

eyes are red when the patient is in fear. And the understanding meditates doing some mischief, and thus it is affected in sleep. But if, when awakened, he returns to himself, and the blood is again distributed along the aforesaid veins, it ceases. In these ways I am of opinion that the brain exercises the greatest power in the man. This is the interpreter to us of those things which emanate from the air, when it (*the brain*) happens to be in a sound state. But the air supplies sense to it. And the eyes, the ears, the tongue and the feet, administer such things as the brain cogitates. For inasmuch as it is supplied with air, does it impart sense to the body. It is the brain which is the messenger to the understanding. For when the man draws the breath (*pneuma*) into himself, it passes first to the brain, and thus the air is distributed to the rest of the body, leaving in the brain its acme, and whatever has sense and understanding. For if it passed first to the body and last to the brain, then having left in the flesh and veins the judgment,¹ when it reached the brain it would be hot, and not at all pure, but mixed with the humidity from the fleshy parts and the blood, so as to be no longer pure. Wherefore, I say, that it is the brain which interprets the understanding. But the diaphragm has obtained its name (*φρένες*) from accident and usage, and not from reality or nature, for I know no power which it possesses, either as to sense or understanding, except that when the man is affected with unexpected joy or sorrow, it throbs and produces palpitations, owing to its thinness, and as having no belly to receive anything good or bad that may present themselves to it, but it is thrown into commotion by both these, from its natural weakness. It then perceives beforehand none of those things which occur in the body, but has received its name vaguely and without any proper reason, like the parts about the heart, which are called auricles, but which contribute nothing towards hearing. Some say that we think with the heart, and that this is the part which is grieved, and experiences care.² But it is not so; only it contracts like the

¹ *Διάγνωσις*. The term is very obscure; indeed I cannot but think the text must be corrupt. If it stand, it must be understood to mean the peculiar or discriminating power or property of the *pneuma*.

² This opinion was decidedly maintained by Chrysippus, but he flourished more than 200 years after our author. Who, among the more ancient philosophers in

diaphragm, and still more so for the same causes. For veins from all parts of the body run to it, and it has valves, so as to perceive if any pain or pleasurable emotion befall the man. For when grieved the body necessarily shudders, and is contracted, and from excessive joy it is affected in like manner. Wherefore the heart and the diaphragm are particularly sensitive, they have nothing to do, however, with the operations of the understanding, but of all these the brain is the cause. Since then the brain as being the primary seat of sense and of the spirits, perceives whatever occurs in the body, if any change more powerful than usual take place in the air, owing to the seasons, the brain becomes changed by the state of the air. For, on this account, the brain first perceives, because, I say, all the most acute, most powerful, and most deadly diseases, and those which are most difficult to be understood by the inexperienced, fall upon the brain. And the disease called the Sacred arises from causes as the others, namely, those things which enter and quit the body, such as cold, the sun, and the winds, which are ever changing and are never at rest. And these things are divine, so that there is no necessity for making a distinction, and holding this disease to be more divine than the others, but all are divine, and all human. And each has its own peculiar nature and power, and none is of an ambiguous nature, or irremediable. And the most of them are curable by the same means as those by which they were produced. For any other thing is food to one, and injurious to another. Thus, then, the physician should understand and distinguish the season of each, so that at one time he may attend to the nourishment and increase, and at another to abstraction and diminution. And in this disease as in all others, he must strive not to feed the disease, but endeavour to wear it out by administering whatever is most opposed to each disease, and not that which favours and is allied to it. For by that which is allied to it, it gains vigour and increase, but it wears out and disappears

particular he alludes to, it is difficult to determine with precision. Plato, in imitation of Homer, Euripides, Tyrtaeus, and others of the Greek poets, held that the heart is the organ *or* seat of the passions; but the brain, of the understanding. See On the Republic, *pluries*. This philosophical question is discussed at great length by Galen, in the Second and Third Books of his work, On the Tenets of Hippocrates and Plato.

under the use of that which is opposed to it. But whoever is acquainted with such a change in men, and can render a man humid and dry, hot and cold by regimen, could also cure this disease, if he recognises the proper season for administering his remedies, without minding purifications, spells, and all other illiberal practices of a like kind.

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THE END.

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PLATE IV.

FIG. 1. The Scamnum Hippocratis, *or* Bench of Hippocrates, as represented by Andreas a Cruce (*Officina Chirurgica. Venetiis*, 1596).

2. The same, as represented by M. Littré.

A. A board, 6 cubits long, 2 broad, and 12 inches thick; not 13, as incorrectly stated by M. Littré.

B. The feet of the Axles, which are short.

CC. Axle-trees.

DD. Grooves three inches deep, three broad, separated from one another by four inches.

E. A small post, *or* pillar, fastened in the middle of the machine in a quadrangular hole.

F. Pillars a foot long.

G. A cross-beam laid on the pillars FF, which can be placed at different heights by means of holes in the pillars.

PLATE V.

FIG. 1. Representation of the mode of reducing dislocation of the thigh outwards, as given by M. Littré. (*Œuv. d'Hipp.*, tom. iv, p. 305.)

A mistake in the figure given by M. Littré is here corrected. It applies to Articulations, § 74.

A. A lever applied to the nates of the luxated side, and acting from without inwards, in order to bring the head of the bone into its cavity.

B. Another lever, held by an assistant, put into one of the grooves of the machine, and intended to act against lever A.

EXPLANATION OF THE PLATES TO VOL. II.

- c. Groove in which the end of the lever *a* takes its point of support.
- d. The luxated member.
- ee. Extension and counter-extension.
- 2. Representation of the ancient mode of performing succussion, as given by Vidus Vidius in the Venetian edition of Galen's works. (Cl. vi, p. 271.)

It applies to Articulations, § 43.

PLATE VI.

FIG. 1. The Circular Band, named *Rotunda sincera æqualis*. From the Venetian edition of Galen. (vi, p. 205.)

2 and 3. The form of bandage named *Ascia sincera in-æqualis*. (*Ibid.* p. 206.)

4 and 5. The form of bandage named *Sima sincera in-æqualis*. (*Ibid.*)

These bandages relate to the work, On the Surgery.

PLATE VII.

FIG. 1. The bandage named *Monoculus*.

2. The bandage named *Rhombus*.

3. The bandage named *Semirhombus*.

These figures apply to the work, On the Surgery.

PLATE VIII.

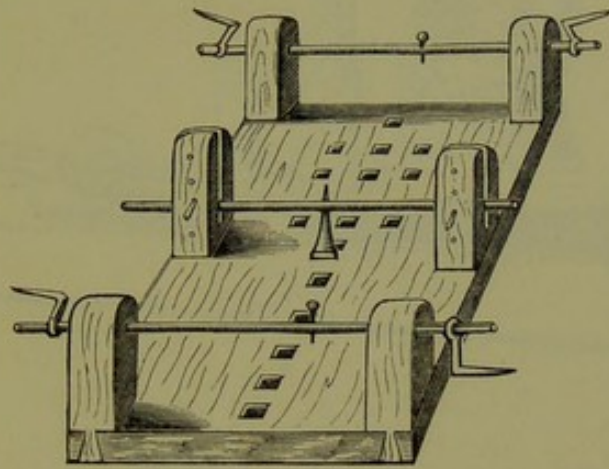
FIG. 1. Elastic rods used as splints in fracture of the leg. Figure as given by Littré. (*Œuv. d'Hippocrat.*, iii, p. 519.)

2. The same, as given by Vidus Vidius in the Venetian edition of Galen.

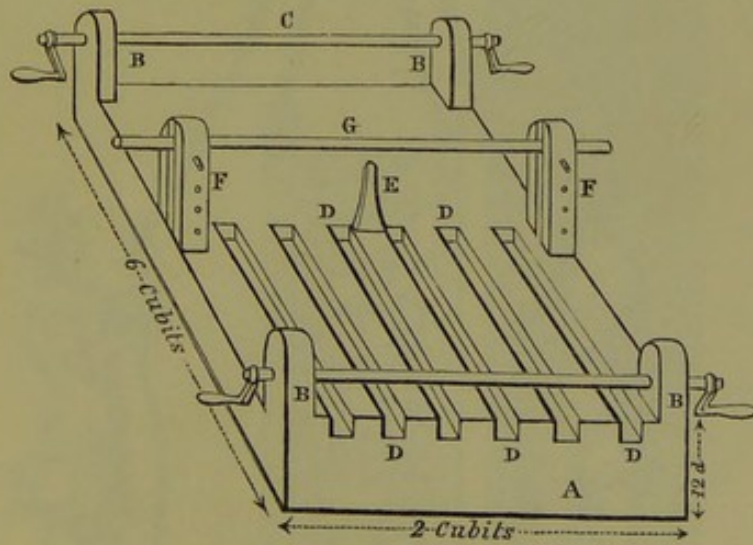
These two figures apply to the description given in § 30 of Fractures.

3 and 4. Apparatus for the cure of Club-foot, as given by Arcæus. (See p. 560 of this work.) The Boot, probably, was used in lieu of the Chian sandals of Hippocrates, p. 634.

PLATE IV.

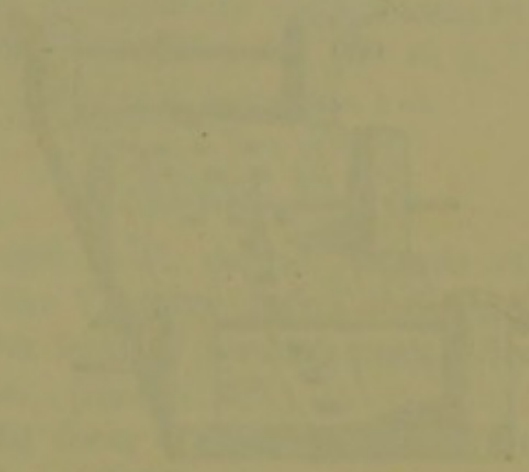


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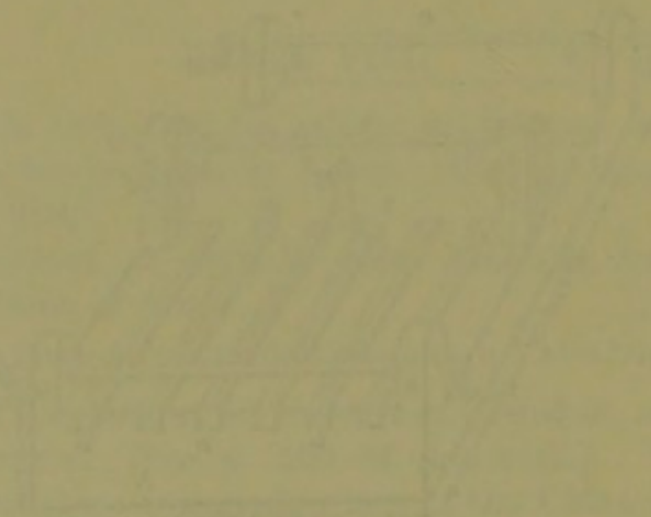


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PLATE IV.

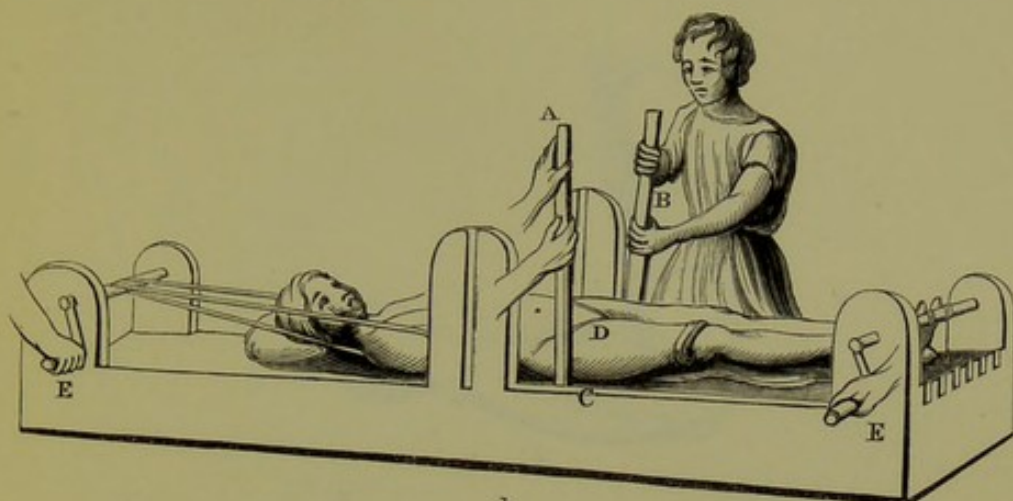


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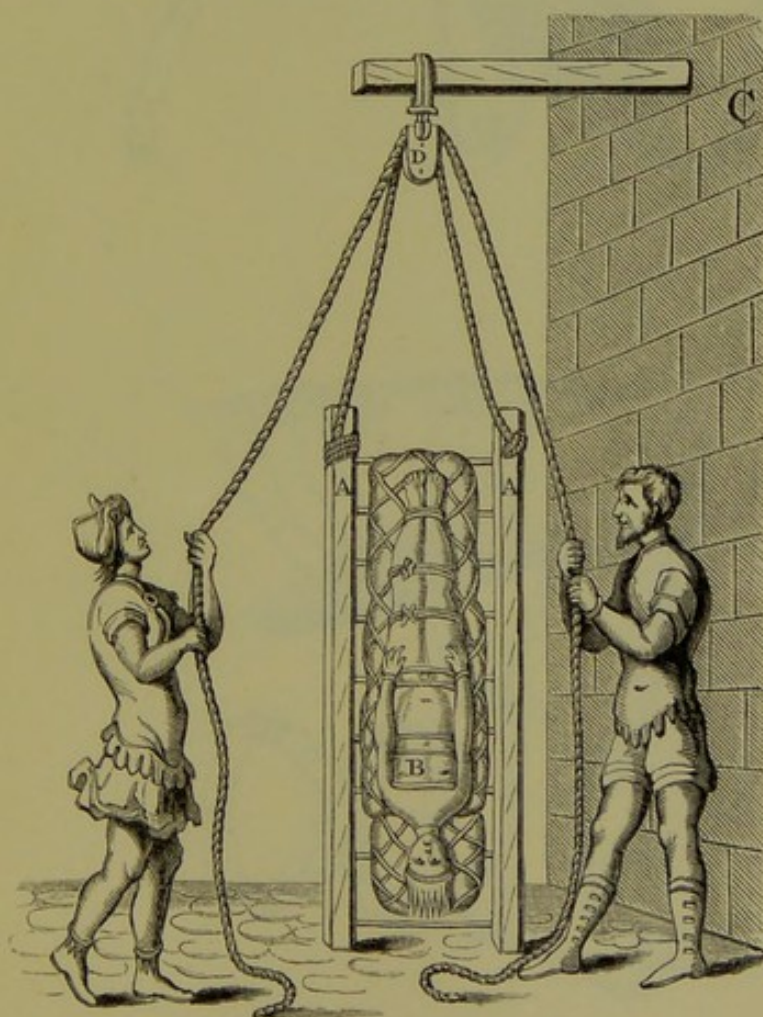


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PLATE V.



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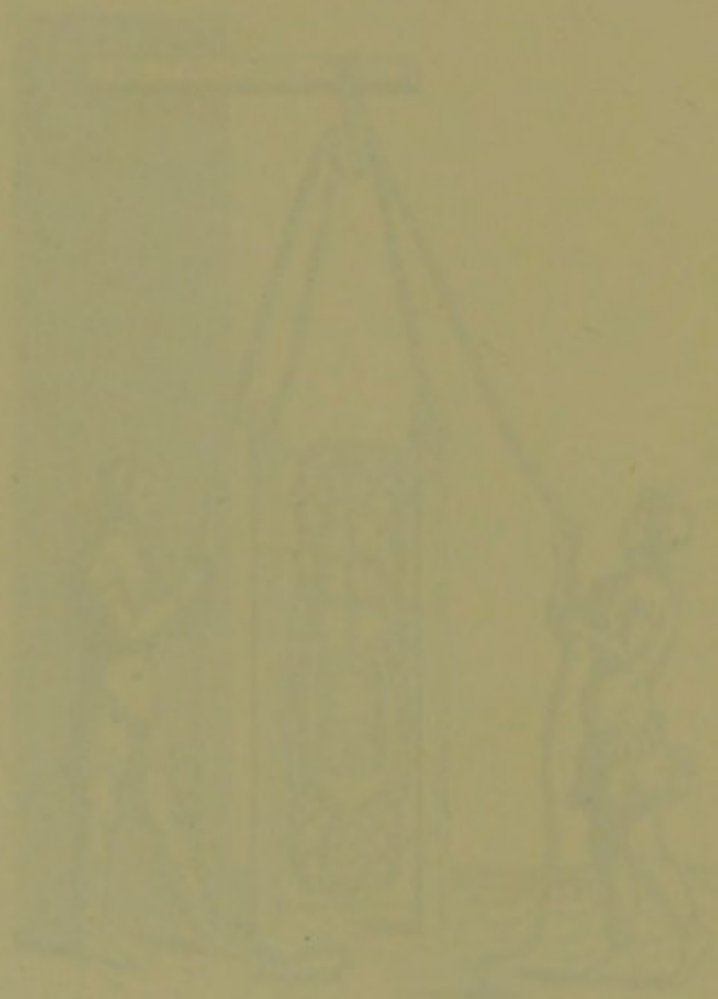
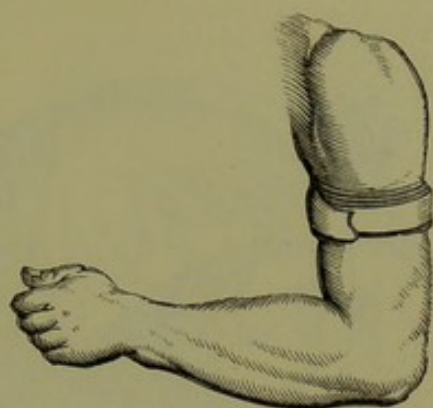
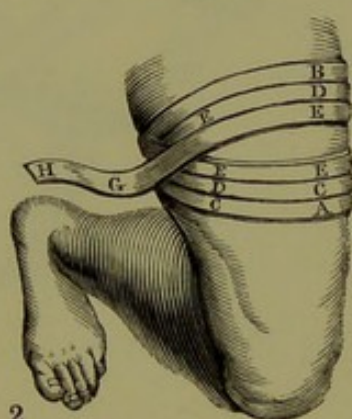


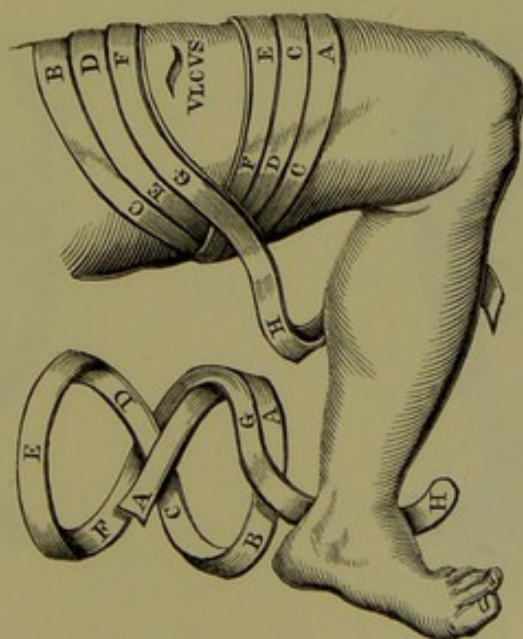
PLATE VI.



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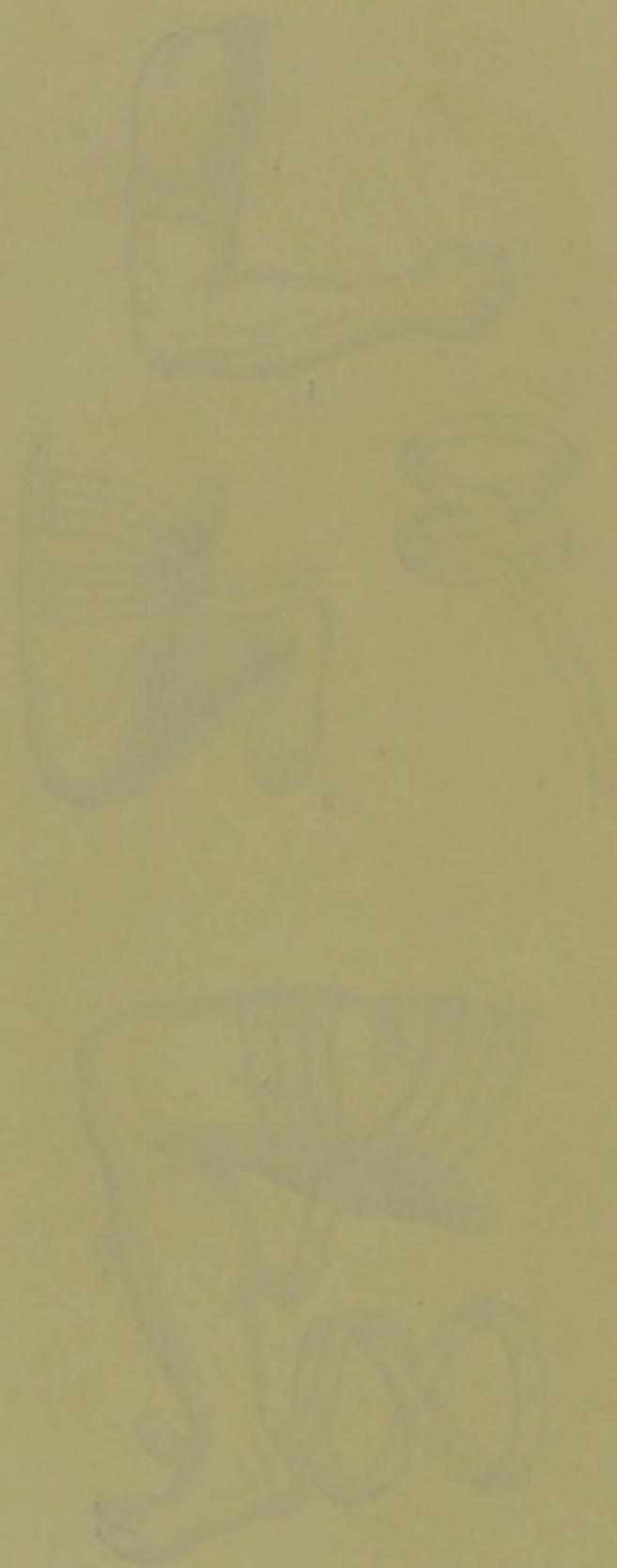


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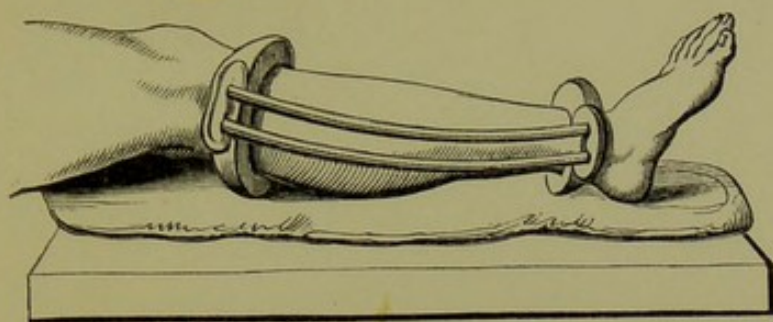
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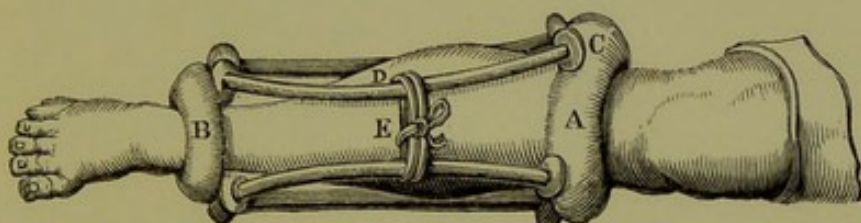
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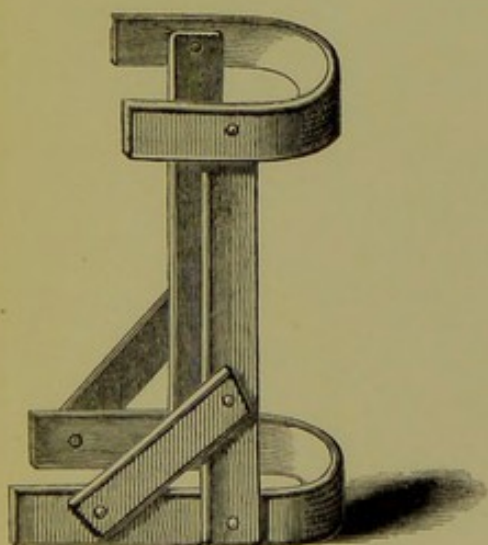
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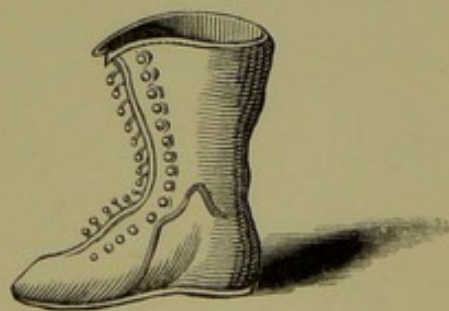
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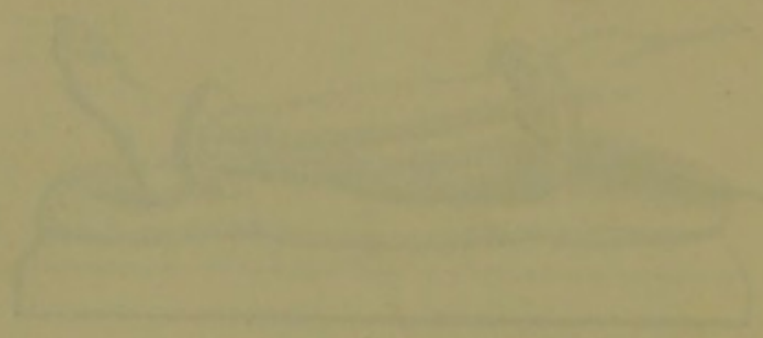


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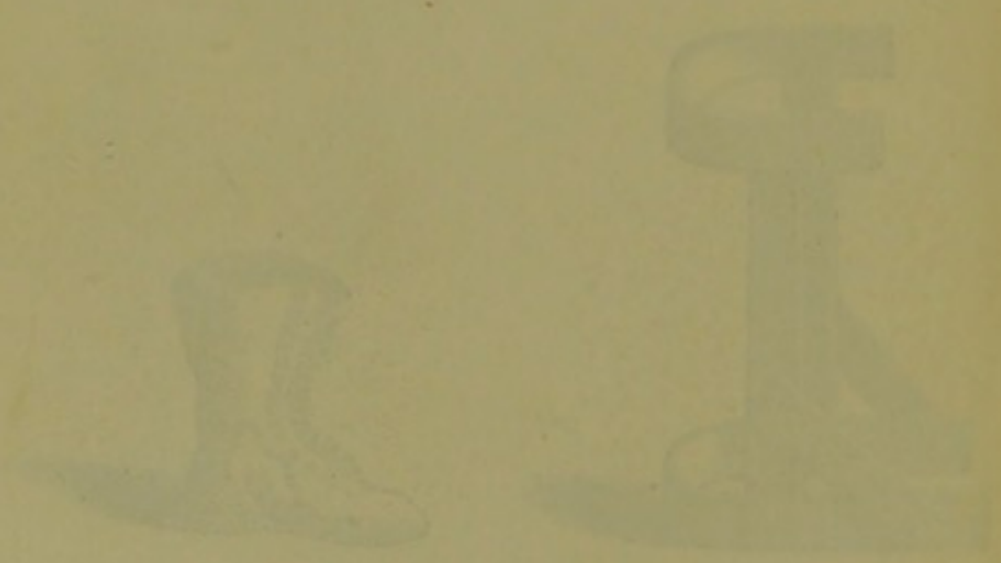


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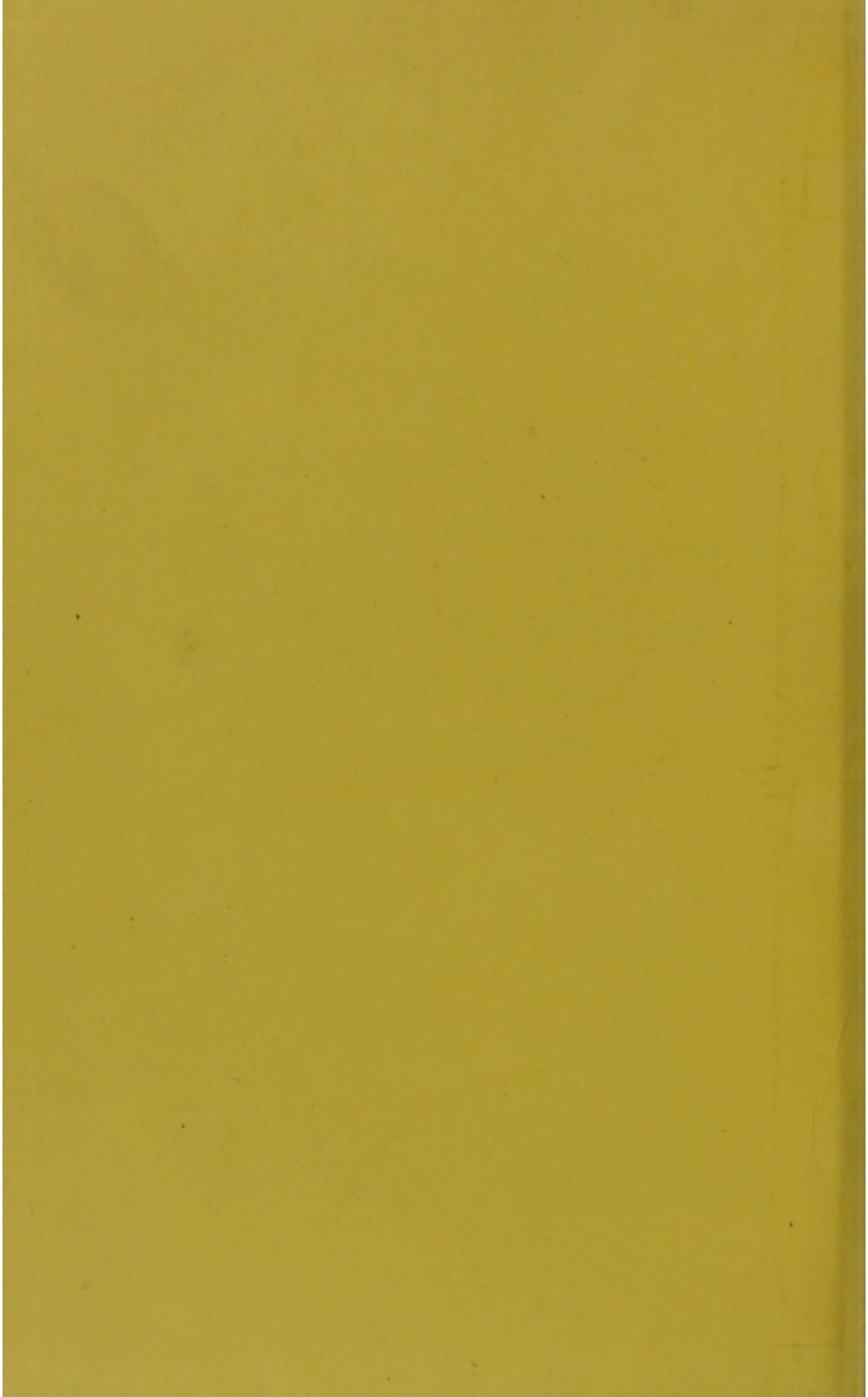


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