

ΠΕΡΙ ΑΓΜΩΝ

Ι. Ἐχρῆν τὸν ἱητρὸν τῶν ἐκπτωσίῳν τε καὶ
 καταγμάτῳν ὡς ἰθύτατα τὰς κατατάσιαις ποιεῖ-
 σθαι· αὕτη γὰρ ἡ δικαιοσύνη φύσις. ἦν δέ τι
 ἐγκλίνη ἢ τῇ ἢ τῇ, ἐπὶ τὸ πρηνὲς ῥέπειν·
 ἐλάσσων γὰρ ἡ ἁμαρτὰς ἢ ἐπὶ τὸ ὕπτιον. οἱ μὲν
 οὖν μηδὲν προβουλεύονται οὐδὲν ἐξαμαρτάνουσιν
 ὡς ἐπὶ τὸ πολὺ· αὐτὸς γὰρ ἐπιδησόμενος¹ τὴν
 χεῖρα ἀπορέγει οὕτως ὑπὸ τῆς δικαίης φύσιος
 ἀναγκαζόμενος· οἱ δὲ ἱητροὶ σοφίζόμενοι δῆθεν
 10 ἔστιν ἄρα ἐφ' οἷς² ἁμαρτάνουσιν. σπουδὴ μὲν
 οὖν οὐ πολλὴ χεῖρα κατεηγύϊαν χειρίσαι, καὶ
 παντὸς δὲ ἱητροῦ, ὡς ἔπος εἰπεῖν· ἀναγκάζομαι δὲ
 ἐγὼ πλείῳ γράφειν περὶ αὐτοῦ³ ὅτι οἶδα ἱητροὺς
 σοφοὺς δόξαντας εἶναι ἀπὸ σχημάτων χειρὸς ἐν
 ἐπιδέσει, ἀφ' ὧν ἀμαθέας αὐτοὺς ἐχρῆν δοκεῖν
 εἶναι. ἄλλα⁴ γὰρ πολλὰ οὕτω ταύτης τῆς τέχνης
 κρίνεται· τὸ γὰρ ξεινοπρεπὲς οὕπω συνιέντες, εἰ
 χρηστόν, μᾶλλον ἐπαινέουσιν ἢ τὸ σύννηθες, ὃ
 ἤδη οἶδασιν ὅτι χρηστόν, καὶ τὸ ἀλλόκοτον ἢ τὸ
 20 εὐδηλον. ῥητέον οὖν ὁπόσας ἂν ἐθέλω τῶν ἁμαρ-
 τάδων τῶν ἱητρῶν, τὰς μὲν ἀποδιδύξαι, τὰς δὲ
 διδύξαι[· ἄρξομαι δὲ]⁵ περὶ τῆς φύσιος τῆς

¹ ὁ ἐπιδεόμενος.

² ἔστιν οἷ.

³ αὐτῆς.

ON FRACTURES

I. In dislocations and fractures, the practitioner should make extensions in as straight a line as possible, for this is most conformable with nature;¹ but if it inclines at all to either side, it should turn towards pronation (palm down) rather than supination (palm up), for the error is less. Indeed, those who have no preconceived idea make no mistake as a rule, for the patient himself holds out the arm for bandaging in the position impressed on it by conformity with nature. The theorizing practitioners are just the ones who go wrong. In fact the treatment of a fractured arm is not difficult, and is almost any practitioner's job, but I have to write a good deal about it because I know practitioners who have got credit for wisdom by putting up arms in positions which ought rather to have given them a name for ignorance. And many other parts of this art are judged thus: for they praise what seems outlandish before they know whether it is good, rather than the customary which they already know to be good; the bizarre rather than the obvious. One must mention then those errors of practitioners as to the nature of the arm on which I want to give positive

¹ Galen makes this a general statement; but the writer is apparently speaking of the forearm, which he had already mentioned in a lost introduction.

χειρός· καὶ γὰρ ἄλλων ὁστέων τῶν κατὰ τὸ
 24 σῶμα δίδαγμα ὅδε ὁ λόγος ἐστίν.

II. Τὴν μὲν οὖν χεῖρα, περὶ οὗ¹ ὁ λόγος, ἔδωκέ τις καταδῆσαι πρηνέα² ποιήσας· ὁ δὲ ἡνάγκαζεν οὕτως ἔχειν ὥσπερ οἱ τοξεύοντες, ἐπὴν τὸν ὦμον ἐμβάλλωσι, καὶ οὕτως ἔχουσιν ἐπέδει, νομίζων ἐν τῷ εἶναι τοῦτο αὐτῇ τὸ κατὰ φύσιν· καὶ μαρτύριον ἐπήγετο τά τε ὁστέα ἅπαντα τὰ ἐν τῷ πῆχει, ὅτι ἰθυωρίην κατάλληλα εἶχε,³ τὴν τε ὁμοχροίην, ὅτι αὐτὴ καθ' ἐνυτήν τὴν ἰθυωρίην ἔχει οὕτω καὶ ἐκ τοῦ ἔξωθεν μέρους καὶ ἐκ τοῦ
 10 ἔσωθεν· οὕτω δὲ ἔφη καὶ τὰς σάρκας καὶ τὰ νεῦρα πεφυκέναι, καὶ τὴν τοξικὴν ἐπήγετο μαρτύριον. ταῦτα λέγων καὶ ταῦτα ποιέων σοφὸς ἐδόκει εἶναι· τῶν δὲ ἄλλων τεχνέων ἐπελελήθει καὶ ὅποσα ἰσχύι ἐργάζονται καὶ ὅποσα τεχνήμασιν, οὐκ εἰδὼς ὅτι ἄλλο ἐν ἄλλῳ τὸ κατὰ φύσιν σχῆμά ἐστιν, καὶ ἐν τῷ αὐτῷ ἔργῳ ἕτερα τῆς δεξιῆς χειρὸς σχήματα κατὰ φύσιν ἐστί, καὶ ἕτερα τῆς ἀριστερῆς, ἣν οὕτω τύχη. ἄλλο μὲν γὰρ σχῆμα ἐν ἀκοντισμῷ κατὰ φύσιν, ἄλλο δὲ ἐν
 20 σφενδονήσει, ἄλλο δὲ ἐν λιθοβολίῃσι, ἄλλο ἐν πυγμῇ, ἄλλο ἐν τῷ ἐλινύειν. ὅποσας δ' ἂν τις τέχνας εὔροι ἐν ἧσιν οὐ τὸ αὐτὸ σχῆμα τῶν χειρῶν κατὰ φύσιν ἐστίν καὶ⁴ ἐν ἐκάστη τῶν τέχνων, ἄλλα⁴ πρὸς τὸ ἄρμενον ὃ ἔχη ἕκαστος, καὶ πρὸς

¹ οὗ because it is an idiom or phrase not referring specially to ἡ χεῖρ.

² ἐπιδῆσαι καταπρηνέα.

³ ἔχει κατάλληλα.

⁴ ἀλλὰ (omitting καί).

¹ Commentators, from Galen downwards, point out the absurdity of teaching "errors." Ermerins got rid of it in

and negative instruction,¹ for this discourse is an instruction on other bones of the body also.

II. To come to our subject, a patient presented his arm to be dressed in the attitude of pronation, but the practitioner made him hold it as the archers do when they bring forward the shoulder,² and he put it up in this posture, persuading himself that this was its natural position. He adduced as evidence the parallelism of the forearm bones, and the surface also, how that it has its outer and inner parts in a direct line, declaring this to be the natural disposition of the flesh and tendons, and he brought in the art of the archer as evidence. This gave an appearance of wisdom to his discourse and practice, but he had forgotten the other arts and all those things which are executed by strength or artifice, not knowing that the natural position varies in one and another, and that in doing the same work it may be that the right arm has one natural position and the left another. For there is one natural position in throwing the javelin, another in using the sling, another in casting a stone, another in boxing, another in repose. How many arts might one find in which the natural position of the arms is not the same, but they assume postures in accordance with the apparatus

his usual bold manner by reading $\tau\alpha$ for $\tau\acute{\alpha}\varsigma$. Diels considered it a glaring *hysteron proteron* which can be simply remedied by reversal, and this is practically done in the translation. It seems a play upon words at which the writer is more successful elsewhere. See chap. XXX end.

² Galen says the archer held his left arm back downwards or nearly so; but this is contrary to ancient representations. What the writer chiefly objects to is putting up a broken forearm with the elbow extended.

- τὸ ἔργον ὃ ἂν ἐπιτελέσασθαι θέλῃ, σχηματίζονται αἱ χεῖρες· τοξικὴν δὲ ἀσκέοντι εἰκὸς τοῦτο τὸ σχῆμα κράτιστον εἶναι τῆς ἐτέρης χειρός· τοῦ γὰρ βραχίονος τὸ γιγγλυμοειδές, ἐν τῇ τοῦ πήχεος βαθμίδι ἐν τούτῳ τῷ σχήματι ἐρεῖδον ἰθυωρίην
- 30 ποιεῖ τοῖσιν ὁστέοισιν τοῦ πήχεος καὶ τοῦ βραχίονος, ὥς ἂν ἐν εἴῃ τὸ πᾶν· καὶ ἡ ἀνάκλασις τοῦ ἄρθρου κέκλασται¹ ἐν τούτῳ τῷ σχήματι. εἰκὸς μὲν οὖν οὕτως ἀκαμπτότατόν τε καὶ τετανώτατον εἶναι τὸ χωρίον, καὶ μὴ ἡσσᾶσθαι, μηδὲ συνδιδόναι, ἐλκομένης τῆς νευρῆς ὑπὸ τῆς δεξιῆς χειρός· καὶ οὕτως ἐπὶ πλεῖστον μὲν τὴν νευρὴν ἐλκύσει, ἀφήσει δὲ ἀπὸ στερεωτάτου καὶ ἀθροωτάτου· ἀπὸ τῶν τοιούτων γὰρ ἀφεσίῳν τῶν τοξευμάτων, ταχεῖαι καὶ αἱ ἰσχυρές καὶ τὰ μήκεα γίνονται.
- 40 ἐπιδέσει δὲ καὶ τοξικῇ οὐδὲν κοινόν. τοῦτο μὲν γάρ, εἰ ἐπιδήσας ἔχειν τὴν χεῖρα οὕτως ἔμελλε,² πόνους ἂν ἄλλους πολλοὺς προσετίθει μείζονας τοῦ τρώματος· τοῦτο δ', εἰ συγκίμψαι ἐκέλευεν, οὔτε τὰ ὀστέα οὔτε τὰ νεῦρα οὔτε αἱ σάρκες ἔτι ἐν τῷ αὐτῷ ἐγίνοντο, ἀλλὰ ἄλλη μετεκοσμεῖτο κρατέοντα τὴν ἐπίδεσιν· καὶ τί ὄφελός ἐστι τοξικοῦ σχήματος; καὶ ταῦτα ἴσως οὐκ ἂν ἐξημάρτανε σοφίζόμενος, εἰ εἶα τὸν τετρωμένον
- 49 αὐτὸν τὴν χεῖρα παρασχέσθαι.

III. "Αλλος δ' αὖ τις τῶν ἰητρῶν ὑπτίην τὴν χεῖρα δούς, οὕτω κατατείνειν ἐκέλευε,³ καὶ οὕτως ἔχουσιν ἐπέδει, τοῦτο νομίζων τὸ κατὰ φύσιν εἶναι, τῷ τε χροῖ σημανόμενος καὶ τὰ ὀστέα νομίζων κατὰ φύσιν εἶναι οὕτως, ὅτι φαίνεται τὸ ἐξέχον ὁστέον τὸ παρὰ τὸν καρπὸν ἢ ὁ σμικρὸς

¹ τέταται KW. (τετασθαι B').

each man uses and the work he wants to accomplish! As to the practiser of archery, he naturally finds the above posture strongest for one arm: for the hinge-like end of the humerus in this position being pressed into the cavity of the ulna makes a straight line of the bones of the upper arm and forearm, as if the whole were one, and the flexure of the joint is extended (abolished) in this attitude. Naturally then the part is thus most inflexible and tense, so as neither to be overcome or give way when the cord is drawn by the right hand. And thus he will make the longest pull, and shoot with the greatest force and frequency, for shafts launched in this way fly strongly, swiftly and far. But there is nothing in common between putting up fractures and archery. For, first, if the operator, after putting up an arm, kept it in this position, he would inflict much additional pain, greater than that of the injury, and again, if he bade him bend the elbow, neither bones, tendons, nor flesh would keep in the same position, but would rearrange themselves in spite of the dressings. Where, then, is the advantage of the archer position? And perhaps our theorizer would not have committed this error had he let the patient himself present the arm.

III. Again, another practitioner handing over the arm back downwards had it extended thus and then put it up in this position, supposing it to be the natural one from surface indications: presuming also that the bones are in their natural position because the prominent bone at the wrist on the little finger

² ἐκέλευεν.

⁸ ἐκέλευσε.

δάκτυλος, κατ' ἰθυωρίην εἶναι τοῦ ὀστέου, ἀφ' ὀτέου¹ τὸν πῆχυν οἱ ἄνθρωποι μετρέουσιν ταῦτα τὰ μαρτύρια ἐπήγετο ὅτι κατὰ φύσιν οὕτως ἔχει, 10 καὶ ἐδόκει εὖ λέγειν.

Ἄλλὰ τοῦτο μὲν, εἰ ὑπτίη ἡ χεὶρ κατατείνοιτο, ἰσχυρῶς πονοίη ἄν· γνοίη δ' ἄν τις τὴν ἑωυτοῦ χεῖρα κατατείνας ὡς ἐπώδυνον τὸ σχῆμα. ἐπεὶ καὶ ἀνὴρ ἥσσω κρέσσονα διαλαβὼν οὕτως εὖ² τῆσιν ἑωυτοῦ χερσίν, ὡς κλᾶται ὁ ἀγκὼν ὑπτιος, ἄγοι ἄν ὅπη ἐθέλοι· οὔτε γὰρ εἰ ξίφος ἐν ταύτῃ τῇ χειρὶ ἔχοι, ἔχοι ἄν ὅ τι χρῆσαιτο τῷ ξίφει· οὕτω βίαιον τοῦτο τὸ σχῆμά ἐστιν. τοῦτο δέ, εἰ ἐπι- δῆσας τις ἐν τούτῳ τῷ σχήματι ἐώη, μέζων μὲν 20 πόνος, εἰ περιῖτοι, μέγας δὲ καὶ εἰ κατακέοιτο. τοῦτο δέ, εἰ συγκάμψει τὴν χεῖρα, ἀνάγκη πᾶσα³ τοὺς τε μύας καὶ τὰ ὀστέα ἄλλο σχῆμα ἔχειν. ἡγνόει δὲ καὶ τάδε τὰ ἐν τῷ σχήματι χωρὶς τῆς ἄλλης λύμης· τὸ γὰρ ὀστέον τὸ παρὰ τὸν καρπὸν ἐξέχον, τὸ κατὰ τὸν σμικρὸν δάκτυλον, τοῦτο μὲν τοῦ πῆχεός ἐστιν· τὸ δὲ ἐν τῇ συγκάμψει ἐὼν ἀπό τευ⁴ τὸν πῆχυν οἱ ἄνθρωποι μετρέουσι, τοῦτο δὲ τοῦ βραχίονος ἡ κεφαλὴ ἐστιν. ὁ δὲ ὤετο τωὐτὸ ὀστέον εἶναι τοῦτό τε κἀκεῖνο, πολλοὶ δὲ καὶ 30 ἄλλοι· ἔστι δὲ ἐκείνῳ τῷ ὀστέῳ τωὐτὸ ὁ ἀγκὼν καλούμενος, ᾧ ποτὶ⁵ στηριζόμεθα. οὕτως οὖν ὑπτίην ἔχοντι τὴν χεῖρα, τοῦτο μὲν τὸ ὀστέον δι- εστραμμένον φαίνεται, τοῦτο δὲ τὰ νεῦρα τὰ ἀπὸ τοῦ καρποῦ τείνοντα ἐκ τοῦ ἔσω μέρους καὶ ἀπὸ τῶν δακτύλων, ταῦτα ὑπτίην ἔχοντι τὴν χεῖρα δι- εστραμμένα γίνεται· τείνεται⁶ γὰρ ταῦτα τὰ νεῦρα

¹ ἀπ' ὅτεν.² ἐν.³ Kw. omits.

side appears to be in line with the bone from which men measure the forearm (cubit). He adduced this as evidence for the naturalness of the position, and seemed to speak well.

But, to begin with, if the arm were kept extended in supination it would be very painful; anyone who held his arm extended in this position would find how painful it is. In fact, a weaker person grasping a stronger one firmly so as to get his elbow extended in supination might lead him whither he chose, for if he had a sword in this hand he would be unable to use it, so constrained is this attitude. Further, if one put up a patient's arm in this position and left him so, the pain, though greater when he walked about, would also be great when he was recumbent. Again, if he shall bend the arm, it is absolutely necessary for both the muscles and bones to have another position. Besides the harm done, the practitioner was ignorant of the following facts as to the position. The projecting bone at the wrist on the side of the little finger belongs indeed to the ulna, but that at the bend of the elbow from which men measure the cubit is the head of the humerus, whereas he thought the one and the other belonged to the same bone, and so do many besides. It is the so-called elbow on which we lean that belongs to this bone.¹ In a patient with the forearm thus supinated, first, the bone is obviously distorted, and secondly, the cords stretching from the wrist on its inner side and from the fingers also undergo distortion in this supine position, for

¹ *i.e.* the olecranon process is part of the ulna.

^a ἀπ' ὅτεν.

^b ὅν ποτί.

^c τέλει.

πρὸς τὸ τοῦ βραχίονος ὀστέον, ὅθεν ὁ πῆχυς
μετρεῖται. αὗται τοσαῦται καὶ τοιαῦται αἱ
ἀμαρτάδες καὶ ἀγνοίαι τῆς φύσιος τῆς χειρός. εἰ
40 δέ, ὡς ἐγὼ κελεύω, χεῖρα κατεηγυῖαν κατατείνει
τις, ἐπιστρέψει μὲν τὸ ὀστέον ἐς ἰθύ, τὸ κατὰ τὸν
σμικρὸν δάκτυλον, τὸ ἐς τὸν ἀγκῶνα τεῖνον,
ἰθυωρίην δὲ ἔξει τὰ νεῦρα τὰ ἀπὸ τοῦ καρποῦ
πρὸς τοῦ βραχίονος τὰ ἄκρα τεῖνοντα· ἀναλαμ-
βανομένη δὲ ἡ χεὶρ ἐν παραπλησίῳ σχήματι
ἔσται, ἐν ᾧ περ καὶ ἐπιδεομένη, ἄπονός μὲν
ὁδοιποροῦντι, ἄπονός δὲ κατακειμένῳ καὶ ἀκά-
ματος. καθίνυσθαι δὲ χρὴ τὸν ἄνθρωπον οὕτως,
ὅπως ἢ τὸ ἐξέχον τοῦ ὀστέου πρὸς τὴν λαμπροτά-
50 τὴν τῶν παρεουσέων αὐγέων, ὡς μὴ λάθῃ τὸν
χειρίζοντα ἐν τῇ κατατάσει, εἰ ἱκανῶς ἐξίθυνται.
τοῦ γε μὴν ἐμπείρου οὐδ' ἂν τὴν χεῖρα λάθοι ἐπα-
γομένην τὸ ἐξέχον· ἅτὰρ καὶ ἀλγεῖ μάλιστα κατὰ
51 τὸ ἐξέχον ψανόμενον.

IV. Τῶν δὲ ὀστέων τοῦ πῆχεος, ὧν μὴ ἀμφότερα
κατέηγε,¹ ῥάων ἢ ἱήσις, ἦν τὸ ἄνω ὀστέον τετρω-
μένον ἢ καὶ περ παχύτερον ἐόν· ἅμα μὲν ὅτι τὸ
ὑγιὲς ὑποτεταμένον γίνεται ἀντὶ θεμελίου, ἅμα δὲ
ὅτι εὐκρυπτότερον γίνεται, πλὴν εἰ² τὸ ἐγγὺς τοῦ
καρποῦ· παχείη γὰρ ἡ τῆς σαρκὸς ἐπίφυσις ἢ ἐπὶ
τὸ ἄνω. τὸ δὲ κάτω ὀστέον ἄσαρκον καὶ οὐκ
εὐσύγκρυπτον, καὶ κατατάσιος ἰσχυροτέρης δεῖται.
ἦν δὲ μὴ τοῦτο συντριβῇ, ἀλλὰ τὸ ἕτερον,
10 φαυλοτέρη³ ἢ κατάτασις ἀρκεῖ. ἦν δὲ ἀμφότερα
κατεήγη, ἰσχυροτάτης κατατάσιος δεῖται· παιδίου
μὲν γὰρ ἤδη εἶδον καταταθέντα μᾶλλον ἢ ὡς

¹ κατέηγεν, . . . εἰ . . . τέτρωται.² ᾗ.³ ἐλαφροτέρη.

these cords extend to the bone of the upper arm from which the cubit is measured. Such and so great are these errors and ignorances concerning the nature of the arm. But if one does extension of a fractured arm as I direct, he will both turn the bone stretching from the region of the little finger to the elbow so as to be straight¹ and will have the cords stretching from the wrist to the (lower) end of the humerus in a direct line; further, the arm when slung will keep about the same position as it was in when put up, and it will give the patient no pain when he walks, no pain when he lies down and no sense of weariness. The patient should be so seated that the projecting part of the bone is turned towards the brightest light available, that the operator may not overlook the proper degree of extension and straightening. Of course the hand of an experienced practitioner would not fail to recognise the prominence (at the fracture) by touch; also there is a special tenderness at the prominence when palpated.

IV. When the bones of the forearm are not both fractured the cure is easier if the upper bone (radius) is injured, though it is the thicker, both because the sound bone lying underneath acts as a support and because it is better covered, except at the part near the wrist, for the fleshy growth on the upper bone is thick; but the lower bone (ulna) is fleshless, not well covered, and requires stronger extension. If it is not this bone but the other that is broken, rather slight extension suffices: if both are broken very strong extension is requisite. In the case of a child I have seen the bones ex-

¹ *i.e.* the styloid process in line with the olecranon.

- ἔδει, οἱ δὲ πλείστοι ἦσσαν τείνονται ἢ ὥς δεῖ.
 χρὴ δ' ἐπὶ τείνωσι, τὰ θέναρα προσβάλλοντα
 διορθοῦν· ἔπειτα χρίσαντα κηρωτῇ μὴ πάνυ
 πολλῇ, ὥς μὴ περιπλέῃ τὰ ἐπιδέσματα, οὕτως
 ἐπιδεῖν ὅπως μὴ κατωτέρω ἄκρην τὴν χεῖρα ἔξει
 τοῦ ἀγκῶνος, ἀλλὰ σμικρῶ τινὶ ἀνωτέρω, ὥς μὴ
 τὸ αἷμα εἰς ἄκρον ἐπιρρέῃ, ἀλλὰ ἀπολαμβάνηται·
 20 ἔπειτα ἐπιδεῖν τῷ ὀθονίῳ, τὴν ἀρχὴν βαλλόμενος
 κατὰ τὸ κάτηγμα· ἐρείδων μὲν οὖν,¹ μὴ πιέζων δὲ
 κάρτα. ἐπὶ δὲ περιβάλλῃ κατὰ τὸν δις ἢ τρίς,
 ἐπὶ τὸ ἄνω νεμέσθω ἐπιδέων, ἵνα αἱ ἐπιρροαὶ τοῦ
 αἵματος ἀπολαμβάνωνται, καὶ τελευτησάτω
 κεῖθι. χρὴ δὲ μὴ μακρὰ εἶναι τὰ πρῶτα ὀθόνια.
 τῶν δὲ δευτέρων ὀθονίων τὴν μὲν ἀρχὴν βάλλεσθαι
 ἐπὶ τὸ κάτηγμα· περιβαλὼν τε² ἅπαξ εἰς τὸν
 ἔπειτα νεμέσθω εἰς τὸ κάτω καὶ ἐπὶ ἦσσαν πιέζων,
 καὶ ἐπὶ μέζον διαβιβάσκων, ὥς ἂν αὐτὸ³ ἱκανὸν
 30 γένηται τὸ ὀθόνιον ἀναπαλινδρομῆσαι κεῖθι ἵνα
 περὶ τὸ ἕτερον ἐτελεύτησεν. ἐνταῦθα μὲν οὖν τὰ
 ὀθόνια ἐπ' ἀριστερὰ ἢ ἐπὶ δεξιὰ ἐπιδεδέσθω, ἢ
 ἐπὶ ὁπότερα ἂν συμφέρῃ πρὸς τὸ σχῆμα τοῦ
 κατεαγότος,⁴ καὶ ἐφ' ὁπότερα ἂν περιρρέπειν
 συμφέρῃ. μετὰ δὲ ταῦτα, σπλήνας κατατείνειν
 χρὴ κεχρισμένους κηρωτῇ ὀλίγῃ· καὶ γὰρ προση-
 νέστερον καὶ εὐθετώτερον. ἔπειτα οὕτως ἐπιδεῖν
 τοῖσιν ὀθονίοισιν ὥς⁵ ἐναλλάξ, ὅτε μὲν ἐπὶ δεξιὰ,
 ὅτε δὲ ἐπ' ἀριστερά· καὶ τὰ μὲν πλείω κάτωθεν
 40 ἀρχόμενος εἰς τὸ ἄνω ἄγειν, ἔστι δ' ὅτε καὶ ἄνωθεν
 εἰς τὸ κάτω. τὰ δὲ ὑπόξηρα ἀκείσθαι τοῖσι
 σπλήνεσι κυκλεῦντα· τῷ δὲ πλήθει τῶν περι-

¹ Omit οὖν.

δέ.

³ αὐτῷ.

ON FRACTURES, IV.

tended more than was necessary, but most patients get less than the proper amount. During extension one should use the palms of the hands to press the parts into position, then after anointing with cerate (in no great quantity lest the dressings should slip), proceed to put it up in such a way that the patient shall have his hand not lower than the elbow but a little higher; so that the blood may not flow to the extremity but be kept back. Then apply the linen bandage, putting the head of it at the fracture so as to give support, but without much pressure. After two or three turns are made at the same spot, let the bandage be carried upwards that afflux of blood may be kept back, and let it end off there. The first bandages should not be lengthy. Put the head of the second bandage on the fracture, making one turn there; then let it be carried downwards, with decreasing pressure and at wider intervals, till enough of the bandage is left for it to run back again to the place where the other ended. Let the bandages in this part of the dressing be applied either to left or right, whichever suits the form of the fracture and the direction towards which the limb ought to turn. After this, compresses should be laid along after being anointed with a little cerate; for the application is more supple and more easily made. Then put on bandages crosswise to right and left alternately, beginning in most cases from below upwards but sometimes from above downwards. Treat conical parts by surrounding them with compresses, bringing them to a level not all

^d κατήγματος.

^e Omit ὥς.

βολέων μὴ πᾶν ἄθροον συνδιορθοῦντα, ἀλλὰ κατὰ μέρος. περιβάλλειν δὲ χρὴ χαλαρὰ καὶ περὶ τὸν καρπὸν τῆς χειρὸς ἄλλοτε καὶ ἄλλοτε. πλήθος δὲ τῶν ὀθονίων ἱκανὸν τὸ πρῶτον αἱ δύο
 47 μοῖραι.

V. Σημεῖα δὲ τοῦ καλῶς ἱητρευμένου ταῦτα, καὶ ὀρθῶς ἐπιδεομένου, εἰ ἐρωτῶς αὐτὸν εἰ πεπιέκται, καὶ εἰ φαίη μὲν πεπιέχθαι, ἡσυχῶς δέ, καὶ μάλιστα εἰ κατὰ τὸ κάτηγμα φαίη· τοιαῦτα τοίνυν φάναι χρὴ πεπρηγμένα διὰ τέλεος τὸν ὀρθῶς ἐπιδεόμενον. σημεῖα δὲ ταῦτα τῆς μετριοτήτος, τὴν μὲν ἡμέρην, ἣν ἂν ἐπιδεθῇ, καὶ τὴν νύκτα δοκείτω αὐτὸς ἐωυτῷ μὴ ἐπὶ ἥσσον πεπιέχθαι, ἀλλ' ἐπὶ μᾶλλον· τῇ δὲ ὑστεραίῃ
 10 οἰδημάτιον ἐλθεῖν ἐς χεῖρα ἄκρην μαλθακόν· μετριοτήτος γὰρ σημεῖον τῆς πιέξιός σου· τελευτώσης δὲ τῆς ἡμέρης, ἐπὶ ἥσσον δοκείτω πεπιέχθαι· τῇ δὲ τρίτῃ χαλαρά σοι δοκείτω εἶναι τὰ ἐπιδέσματα. κῆν μὲν τι τούτων τῶν εἰρημένων ἐλλείπη, γινώσκειν χρὴ ὅτι χαλαρωτέρη ἐστὶν ἢ ἐπίδεσις τοῦ μετρίου· ἣν δέ τι τῶν εἰρημένων πλεονάζῃ, χρὴ γινώσκειν ὅτι μᾶλλον ἐπιέχθη τοῦ μετρίου· καὶ τούτοις σημαίνόμενος τὸ ὕστερον ἐπιδέων ἢ χαλᾶν μᾶλλον, ἢ πιέζειν. ἀπολύσαντα
 20 δὲ χρὴ τριταῖον ἔοντα κατατεινόμενον καὶ διορθωσάμενον· καὶ ἣν μετρίως τὸ πρῶτον τετυχήκης ἐπιδήσας, ταύτην τὴν ἐπίδεσιν χρὴ ὀλίγω μᾶλλον

¹ Littré inserts αὐθις ἐπιδῆσαι—and renders (as followed by Adams), “Having removed the bandages on the third day, you must make extension and adjust the fracture and bind it up again.” As Petrequin remarks, this seems contrary to common sense, surgery and the express directions

at once but gradually by the number of circumvolutions. You should put additional loose turns now and then at the wrist. The two sets of bandages are a sufficient number for the first dressing.

V. These are the indications of good treatment and correct bandaging:—If you ask the patient whether the part is compressed and he says it is, but moderately and that chiefly at the fracture. A properly bandaged patient should give a similar report of the operation throughout. The following are the indications of a due moderation. During the day of the dressing and the following night the pressure should appear to the patient not to diminish but rather to increase, and on the following day a slight and soft swelling should appear in the hand; you should take this as a sign of the due mean as to pressure. At the end of the day the pressure should seem less, and on the third day you should find the bandages loose. If, then, any of the said conditions are lacking you may conclude that the bandaging was slacker than the mean, but if any of them be excessive you may conclude that the pressure was greater than the mean, and taking this as a guide make the next dressing looser or tighter. You should remove the dressing on the third day after the extension and adjustment,¹ and if your first bandaging hit the

of the author (XXXI). The limb is supposed to be set, any further adjustment being made on the seventh day. Celsus (VIII. 10. 1), Galen (*Met. Med.* VI. 5) and Paulus (VI. 99) all follow Hippocrates, but make no mention of a second setting on the third day. Still, in the case of the leg he seems to recommend interference at every dressing; and grammar is on the side of Littre.

- ἢ ἐκείνην πιέσαι. βάλλεσθαι δὲ χρὴ τὰς ἀρχὰς κατὰ τὸ κῆτηγμα, ὥσπερ καὶ τὸ πρότερον· ἦν μὲν γὰρ τοῦτο πρότερον ἐπιδέης, ἐξιερύαται¹ ἐκ τούτου οἱ ἰχῶρες ἐς τὰς ἐσχατίας ἔνθα καὶ ἔνθα· ἦν δέ τι ἄλλο πρότερον πίεξης, ἐς τοῦτο ἐξιερύαται¹ ἐκ τοῦ πιεχθέντος· ἐς πολλὰ δὲ εὖχρηστον τὸ² συνιέναι. οὕτως οὖν ἄρχεσθαι μὲν αἰεὶ χρὴ τὴν
- 30 ἐπίδεσιν καὶ τὴν πίεξιν ἐκ τούτου τοῦ χωρίου, τὰ δὲ ἄλλα κατὰ λόγον, ὥς προσωτέρω ἀπὸ τοῦ κατήγματος ἀγάγης, ἐπὶ ἡσσον τὴν πίεξιν ποιείσθαι. χαλαρὰ δὲ παντάπασι μηδέποτε περιβάλλειν, ἀλλὰ προσπεπτωκυῖα. ἔπειτα δὲ πλείοσιν ὀθονίοισι χρὴ ἐπιδεῖν ἐκάστην τῶν ἐπιδεσίων. ἐρωτώμενος δὲ φάτω ὀλίγῳ μᾶλλον οἱ πεπιέχθαι, ἢ τὸ πρότερον, καὶ μάλιστα φάτω κατὰ τὸ κῆτηγμα καὶ τὰ ἄλλα δὲ κατὰ λόγον· καὶ ἀμφὶ τῷ οἰδήματι, καὶ ἀμφὶ τῷ πονέειν, καὶ
- 40 ἀμφὶ τῷ ῥήϊζειν, κατὰ λόγον τῆς προτέρης ἐπιδέσιος γινέσθω. ἐπὶ δὲ τριταῖος ἦ, χαλαρώτερά οἱ δοκέτω εἶναι τὰ ἐπιδέσματα· ἔπειτα ἀπολύσαντα χρὴ αὐθις ἐπιδῆσαι, ὀλίγῳ μᾶλλον πιέζοντα, καὶ ἐν πᾶσι τοῖσιν ὀθονίοισιν οἷσί περ ἡμέλλεν ἐπιδεῖσθαι· ἔπειτα δὲ πάντα αὐτὸν ταῦτα καταλαβέτω, ἅπερ καὶ ἐν τῇσι πρώτῃσι
- 47 περιόδοισι τῶν ἐπιδεσίων.

VI. Ἐπὶ δὲ τριταῖος γένηται, ἐβδομαῖος δὲ ἀπὸ τῆς πρώτης ἐπιδέσιος, ἣν ὀρθῶς ἐπιδέχεται, τὸ μὲν οἶδημα ἐν ἄκρῃ τῇ χειρὶ ἔσται, οὐδὲ τοῦτο λίην μέγα· τὸ δ' ἐπιδεόμενον χωρίον ἐν πάσῃσι τῇσιν ἐπιδέσεσιν ἐπὶ τὸ λεπτότερον καὶ ἰσχυρότερον εὐρεθήσεται, ἐν δὲ τῇ ἐβδόμῃ καὶ πάνυ λεπτόν.

¹ ξείργαται bis. See note, p. 158.

proper mean this one should be a little tighter. The heads of the bandages should be applied over the fracture as before, for if you did this before, the serous effusions were driven thence into the outer parts on both sides, but if you formerly made the pressure anywhere else, they were driven into this place (the fracture) from the part compressed. It is useful for many things to understand this. It shows that one should always begin the bandaging and compression at this point, and, for the rest, in proportion as you get further from the point of fracture make the pressure less. Never make the turns altogether slack, but closely adherent. Further, one should use more bandages at each dressing, and the patient when asked should say he felt a little more pressure than before, especially at the point of fracture, and the rest in proportion. And as regards the swelling, feeling of pain and relief, things should be in accord with the previous dressing. When the third day comes, he should find the dressings rather loose. Then after undoing them he should bandage again with a little more pressure and with all the bandages that he is going to use, and afterwards the patient should experience all those symptoms which he had in the first periods of bandaging.

VI. When the third day is reached (the seventh from the first dressing), if he is being properly bandaged, there will be the swelling on the hand, but it will not be very marked. As to the part bandaged, it will be found to be thinner and more shrunken at each dressing, and on the seventh day

- καὶ τὰ ὁστέα τὰ κατεηγότα ἐπὶ μᾶλλον κινεούμενα
καὶ εὐπαράγωγα ἐς κατόρθωσιν. καὶ ἦν ἡ ταῦτα
τοιαῦτα, κατορθωσάμενον χρὴ ἐπιδῆσαι ὥς ἔς νάρ-
10 θηκας, ὀλίγω μᾶλλον πίεςαντα ἢ τὸ πρότερον, ἦν
μὴ πόνος τις πλείων ἢ ἀπὸ τοῦ οἰδήματος τοῦ ἐν
ἄκρῃ τῇ χειρί. ἐπὶν δ' ἐπιδίσης τοῖσιν ὀθονίοισι,
τοὺς νάρθηκας περιθεῖναι χρὴ καὶ περιλαβεῖν ἐν
τοῖσι δεσμοῖσι ὥς χαλαρωτάτοισιν, ὅπόσον ἡρε-
μεῖν, ὥστε μηδὲν συμβάλλεσθαι ἐς τὴν πίεξιν τῆς
χειρὸς τὴν τῶν ναρθήκων πρόσθεσιν. μετὰ δὲ
ταῦτα, ὅ τε πόνος, αἶ τε ῥαστῶναι αἱ αὐταὶ
γινέσθωσαν αἶ περ καὶ ἐν τῇσι πρώτῃσι¹ περι-
όδοισι τῶν ἐπιδεσίων. ἐπὶν δὲ τριταῖος ἔων φῇ
20 χαλαρὸν εἶναι, τότε ἔπειτα χρὴ τοὺς νάρθηκας
ἐρείσασθαι, μάλιστα μὲν κατὰ τὸ κάτηγμα, ἀτὰρ
καὶ τᾶλλα κατὰ λόγον, ἥπερ καὶ ἡ ἐπίδεσις
ἐχάλα ἄρα² μᾶλλον ἢ ἐπίεξεν. παχύτατον δὲ
χρὴ εἶναι τὸν νάρθηκα ἢ ἐξέστη τὸ κάτηγμα, μὴ
μὴν πολλῶ. ἐπιτηδεύειν δὲ χρὴ μάλιστα μὲν κατ'
ἰθυωρίην τοῦ μεγάλου δακτύλου, ὥς μὴ κείσεται ὁ
νάρθηξ, ἀλλὰ τῇ ἢ τῇ, μηδὲ κατὰ τὴν τοῦ σμικροῦ
ἰθυωρίην, ἢ τὸ ὁστέον ὑπερέχει ἐν τῷ καρπῷ,
ἀλλὰ τῇ ἢ τῇ· ἦν δὲ ἄρα πρὸς τὸ κάτηγμα
30 συμφέρη κεῖσθαι κατὰ ταῦτά τινας τῶν ναρθήκων,
βραχυτέρους αὐτοὺς χρὴ τῶν ἄλλων ποιεῖν, ὥς
μὴ ἐξικινέωνται πρὸς τὰ ὁστέα τὰ ὑπερέχοντα
παρὰ τὸν καρπὸν· κίνδυνος γὰρ ἐλκώσιος καὶ
νεύρων ψιλώσιος. χρὴ δὲ διὰ τρίτης ἐρείδειν
τοῖσι νάρθηξι πάνυ ἡσυχῇ, οὕτω τῇ γνώμῃ
ἔχοντα, ὥς οἱ νάρθηκες φυλακῆς εἵνεκα τῆς

¹ προτέρῃσι.

ON FRACTURES, vi.

it will be quite thin, while the fractured bones will be more mobile and ready for adjustment. If this is so, after seeing to the adjustment you should bandage as for splints, making a little more pressure than before, unless there is any increase of pain from the swelling on the hand. When you dress with the bandages you should apply the splints round the limb and include them in ligatures as loose as possible consistently with firmness, so that the addition of the splints may contribute nothing to the compression of the arm. After this the pain and the relief following it should be the same as in the previous periods of bandaging. When, on the third day, he says it is loose, then indeed you should tighten up the splints, especially at the fracture, and the rest in proportion where the dressing also was loose rather than tight. The splint should be thicker where the fracture projects, but not much so, and you should take special care that it does not lie in the line of the thumb, but on one side or the other, nor in the line of the little finger where the bone projects at the wrist, but on one side or the other. If, indeed, it is for the benefit of the fracture that some of the splints should be placed thus, you should make them shorter than the rest, so that they do not reach as far as the bones which project at the wrist, for there is risk of ulceration and denuding of tendons. You should tighten the splints every third day¹ very slightly, bearing in mind that they are put there to maintain

¹ *i.e.* every other day

² Pq. ἐχαλάρα codd. ; but this is not Greek. Kw. omits ἄρα.

ἐπιδέσιος προσκείμεναι¹ ἀλλ' οὐ τῆς πιέξιος
38 εἶνεκεν ἐπιδέδενται.²

VII. Ἦν μὲν οὖν εὖ εἰδῆς ὅτι ἱκανῶς τὰ ὀστέα ἀπύθονται ἐν τῇσι προτέρησι ἐπιδέσεσι, καὶ μητε κνησμοί τινες λυπέωσι, μήτε τις ἑλκωσις μηδεμία ὑποπτεύηται εἶναι, εἰν χρὴ ἐπιδεδέσθαι ἐν τοῖσι νάρθηξι, ἔστ' ἂν ὑπὲρ εἴκοσιν ἡμέρας γένηται. ἐν τριήκοντα δὲ μάλιστα τῇσι συμπύσῃσι κρατύνεται ὀστέα τὰ ἐν τῷ πῆχει τὸ ἐπίπαν· ἀτρεκές δὲ οὐδέν· μάλα γὰρ καὶ φύσις φύσεος καὶ ἡλικίῃ ἡλικίῃ διαφέρει. ἐπὴν δὲ λύσης, ὕδωρ θερμὸν
10 καταχέαι χρὴ καὶ μετεπιδῆσαι, ἥσσον μὲν ὀλίγω πιέσαντα ἢ τὸ πρόσθεν, ἐλάσσοσι δὲ τοῖσιν ὀθονίοισιν ἢ τὸ πρότερον· καὶ ἔπειτα διὰ τρίτης ἡμέρης λύσαντα ἐπιδεῖν, ἐπὶ μὲν ἥσσον πιέζοντα, ἐπὶ δὲ ἐλάσσοσι τοῖσιν ὀθονίοισιν. ἐπὴν δέ, ὅταν τοῖσι νάρθηξι δεθῇ, ὑποπτεύῃς τὰ ὀστέα μὴ ὀρθῶς κείσθαι, ἢ ἄλλο τι ὀχλῇ τὸν τετρωμένον, λῦσαι ἐν τῷ ἡμίσει³ τοῦ χρόνου ἢ ὀλίγω πρόσθεν, καὶ αὖθις μετεπιδῆσαι. δίαίτα δὲ τούτοισιν οἷσιν ἂν μὴ ἑλκεα ἐξ ἀρχῆς γένηται ἢ ὀστέα ἔξω
20 ἐξίσχη, ἀρκεῖ ὑποφαύλη. [σμικρόν τι καὶ γὰρ]⁴ ἐνδεέστερον⁵ χρὴ διαιτᾶν ἄχρις ἡμερέων δέκα, ἅτε δὴ καὶ ἐλινύοντας· καὶ ὄψοισιν ἀπαλοῖσι χρῆσθαι ὅποσα τῇ διεξόδῳ μετριότητα παρασχῆσει, οἶνου δὲ καὶ κρηφαγίης ἀπέχεσθαι· ἔπειτα μέντοι ἐκ προσαγωγῆς ἀνακομίζεσθαι. οὗτος ὁ λόγος ὥσπερ νόμος κείμενος δίκαιος περὶ κατηγμάτων ἰήσιος, ὥς τε χειρίζειν χρὴ, ὥς τε ἀποβαίνειν ἀπὸ τῆς δικαίης χειρίξιος· ὅ τι δ' ἂν μὴ οὕτως ἀποβαίνῃ, εἰδέναι χρὴ ὅτι ἐν τῇ

¹ προσκείμεναι Vulg. : προσκέαται Kw.

the dressing, but not bound in for the sake of pressure.

VII. If you are convinced that the bones are sufficiently adjusted in the former dressings, and there is no painful irritation nor any suspicion of a sore, you should leave the part put up in splints till over the twentieth day. It takes about thirty days altogether as a rule for the bone of the forearm to unite. But there is nothing exact about it, for both constitutions and ages differ greatly. When you remove the dressing, douche with warm water and replace it, using a little less pressure and fewer bandages than before; and after this, remove and re-apply every other day with less pressure and fewer bandages. If, in any case where splints are used, you suspect that the bones are not properly adjusted, or that something else is troubling the patient, remove the dressing and replace it in the middle of the interval or a little sooner. Light diet suffices in those cases where there is no open wound at the first, or protrusion of the bone, for it should be slightly restricted for the first ten days, seeing that the patients are resting; and soft foods should be taken such as favour a due amount of evacuation. Avoid wine and meat, but afterwards gradually feed him up. This discourse gives a sort of normal rule for the treatment of fractures, how one should handle them surgically, and the results of correct handling. If any of the results are not as described, you may

² ἐπιδέωνται Vulg. : ἐπιδεδέεται Kw.

³ μεσηγύ.

⁴ So Galen and some MSS. Omit Littré, Erm. Kw.

⁵ ἐνδεέστερον δέ.

- 30 χειρίξει τι ἐνδεές πεποίηται ἢ πεπλεόνασται. ἔτι δὲ τάδε χρὴ προσσυνιέναι ἐν τούτῳ τῷ ἄπλῳ τρόπῳ, ἃ οὐ κάρτα ἐπιμελέονται οἱ ἰητροί, καίτοι πᾶσαν μελέτην καὶ πᾶσαν ἐπίδεσιν οἶά τε διαφθείρειν ἐστί, μὴ ὀρθῶς ποιούμενα· ἦν γὰρ τὰ μὲν ὁστέα ἄμφω κατηγῇ, ἡ τὸ κάτω μῦνον, ὁ δὲ ἐπιδεδεμένος ἐν ταινίῃ τινὶ τὴν χεῖρα ἔχη ἀναλελαμμένην,¹ τυγχάνη δὲ ἡ ταινίη κατὰ τὸ κάτηγμα πλείστη ἐοῦσα, ἔνθεν δὲ καὶ ἔνθεν ἡ χεὶρ ἀπαιωρῇται, τοῦτον ἀνάγκη τὸ
- 40 ὁστέον εὔρεθῆναι διεστραμμένον ἔχοντα πρὸς τὸ ἄνω μέρος· ἦν δέ, κατηγόντων τῶν ὁστέων οὕτως, ἄκρην τε τὴν χεῖρα ἐν τῇ ταινίῃ ἔχη καὶ παρὰ τὸν ἀγκῶνα, ὁ δὲ ἄλλος πῆχυς [μὴ]² μετέωρος ἦ, οὕτως³ εὔρεθήσεται τὸ ὁστέον ἐς τὸ κάτω μέρος διεστραμμένως ἔχον. χρὴ οὖν, ἐν ταινίῃ πλάτος ἐχούσῃ, μαλθακῇ, τὸ πλείστον τοῦ πῆχεος καὶ
- 47 τὸν καρπὸν τῆς χειρὸς ὁμαλῶς αἰωρεῖσθαι.

- VIII. Ἦν δὲ ὁ βραχίων καταγῇ, ἦν μὲν τις ἀποτανύσας τὴν χεῖρα ἐν τούτῳ τῷ σχήματι διατείνῃ, ὁ μὲν τοῦ βραχίονος κατατεταμένος ἐπιδεθήσεται· ἐπὶ δ' ἐπιδεθεὶς συγκάμψῃ τὸν ἀγκῶνα, ὁ μὲν τοῦ βραχίονος ἄλλο σχῆμα σχήσει. δικαιοτάτη οὖν βραχίονος κατὰ τας ἡδὲ· ξύλον πηχυαῖον ἢ ὀλίγῳ βραχύτερον, ὁποῖοι οἱ στειλαιοὶ εἰσι τῶν σκαφίων, κρεμάσαι χρὴ ἔνθεν καὶ ἔνθεν, σειρῇ δῆσαντα· καθίσαντα δὲ τὸν
- 10 ἄνθρωπον ἐπὶ ὑψηλοῦ τινός, τὴν χεῖρα ὑπερκεῖσθαι, ὥς ὑπὸ τῇ μασχάλῃ γένηται ὁ στειλαιὸς ἔχων συμμέτρως, ὥστε μόλις δύνασθαι καθίν-

¹ ἀναλελαμμένος.

be sure there has been some defect or excess in the surgical treatment. You should acquaint yourself further with the following points in this simple method, points with which practitioners do not trouble themselves very much, though they are such as (if not properly seen to) can bring to naught all your carefulness in bandaging. If both bones are broken, or the lower (ulna) only, and the patient, after bandaging, has his arm slung in a sort of scarf, this scarf being chiefly at the point of fracture, while the arm on either side is unsupported, he will necessarily be found to have the bone distorted towards the upper side; while if, when the bones are thus broken, he has the hand and part near the elbow in the scarf, while the rest of the arm is unsupported, this patient will be found to have the bone distorted towards the lower side. It follows that as much as possible of the arm and wrist should be supported evenly in a soft broad scarf.

VIII. When the humerus is fractured, if one extends the whole arm and keeps it in this posture, the muscle of the arm¹ will be bandaged in a state of extension, but when the bandaged patient bends his arm the muscle will assume another posture. It follows that the most correct mode of extension of the arm is this:—One should hang up a rod, in shape like a spade handle and of a cubit in length or rather shorter, by a cord at each end. Seat the patient on a high stool and pass his arm over the rod so that it comes evenly under the armpit in such a position that the

¹ Biceps.

² Omit; but Galen defends both readings (xviii(2). 415).

³ οὗτος . . . διαστραμμένον ἔχων.

νυσθαι τὸν ἄνθρωπον, σμικροῦ δέοντα μετέωρον
 εἶναι· ἔπειτα θέντα τι ἄλλο ἔφεδρον, καὶ ὑπο-
 θέντα σκύτινον ὑποκεφάλαιον, ἥ ἔν ἡ πλείω,
 ὅπως συμμέτρως σχήσει ὕψους τοῦ πήχεος
 πλαγίου πρὸς ὀρθὴν γωνίην, ἄριστον μὲν σκύτος
 πλατὺ καὶ μαλθακὸν ἥ ταινίην πλατέην ἀμφι-
 βάλλοντα, τῶν μεγάλων τι σταθμίων ἐξαρτῆσαι,
 20 ὃ τι μετρίως ἔξει κατατείνειν· εἰ δὲ μή, τῶν
 ἀνδρῶν ὅστις ἐρρωμένος, ἐν τούτῳ τῷ σχήματι
 τοῦ πήχεος εὐόντος παρὰ τὸν ἀγκῶνα καταναγ-
 καζέτω ἐς τὸ κάτω. ὁ δὲ ἰητρὸς ὀρθὸς μὲν ἐὼν
 χειριζέτω, τὸν ἕτερον πόδα ἐπὶ ὑψηλοτέρου τινὸς
 ἔχων, κατορθώσας δὲ τοῖσι θέναρσι τὸ ὀστέον
 ῥηϊδίως δὲ κατορθώσεται· ἀγαθὴ γὰρ ἡ κατά-
 στασις,¹ ἣν τις καλῶς παρασκευάσεται. ἔπειτα
 ἐπιδείτω, τὰς τε ἀρχὰς βαλλόμενος ἐπὶ τὸ
 κάτηγμα, καὶ τᾶλλα πάντα ὥσπερ πρότερον
 30 παρηνέθη, χειριζέτω· καὶ ἐρωτήματα ταῦτᾶ
 ἐρωτάτω· καὶ σημείοισι χρήσθω τοῖσιν αὐτοῖσι,
 εἰ μετρίως ἔχει, ἥ οὐ· καὶ διὰ τρίτης ἐπιδείτω,
 καὶ ἐπὶ μᾶλλον πιεζέτω. καὶ ἐβδομαῖον ἥ ἐν-
 ναταῖον ἐν νάρθηξι δησάτω· καὶ ἦν ὑποπτεύση
 μὴ καλῶς κεῖσθαι τὸ ὀστέον μεσηγὺν τούτου
 τοῦ χρόνου, λυσάτω, καὶ εὐθετισάμενος μετ-
 επιδησάτω.

Κρατύνεται δὲ μάλιστα βραχίονος ὀστέον
 ἐν τεσσαράκοντα ἡμέρησιν. ἐπὶν δὲ ταύτας
 40 ὑπερβάλῃ, λύειν χρή, καὶ ἐπὶ ἥσσον πιέζειν
 τοῖσιν ὀθονίοισι καὶ ἐπὶ ἐλάσσοσιν ἐπιδεῖν. δίαι-
 ταν δὲ ἀκριβεστέρεν τινὰ ἢ τὸ πρότερον διαιτᾶν,
 καὶ πλείω χρόνον· τεκμαίρεσθαι δὲ πρὸς τοῦ
 οἰδήματος τοῦ ἐν ἄκρῃ τῇ χειρὶ, τὴν ῥώμην

ON FRACTURES, VIII.

man can hardly sit and is almost suspended. Then placing another stool, put one or more leather cushions under the forearm as may suit its elevation when flexed at a right angle. The best plan is to pass some broad soft leather or a broad scarf round the arm and suspend from it heavy weights sufficient for due extension; failing this, let a strong man grasp the arm in this position at the elbow and force it downwards. As to the surgeon, he should operate standing with one foot on some elevated support, adjusting the bone with the palms of his hands. The adjustment will be easy, for there is good extension¹ if it is properly managed. Then let him do the bandaging, putting the heads of the bandages on the fracture and performing all the rest of the operation as previously directed. Let him ask the same questions, and use the same indications to judge whether things are right or not. He should bandage every third day and use greater pressure, and on the seventh or ninth day put it up in splints. If he suspects the bone is not in good position, let him loosen the dressings towards the middle of this period,² and after putting it right, re-apply them.

The bone of the upper arm usually consolidates in forty days. When these are passed one should undo the dressings and diminish the pressure and the number of bandages. A somewhat stricter diet and more prolonged (is required here) than in the former case. Make your estimate from the swelling in the hand, having an eye to the patient's strength.

¹ Reading *κατάτασις*.

² *i.e.* the period in splints.

ὀρεων. προσσυνίεναι δὲ χρὴ καὶ τάδε, ὅτι ὁ
 βραχίων κυρτὸς πέφυκεν εἰς τὸ ἔξω μέρος· εἰς
 τοῦτο τοίνυν τὸ μέρος φιλεῖ διαστρέφεσθαι, ἐπὴν
 μὴ καλῶς ἰητρεύηται· ἀτὰρ καὶ τᾶλλα πάντα
 50 ὁστέα εἰς ὅπερ πέφυκε διεστραμμένα, εἰς τοῦτο καὶ
 ἰητρευόμενα φιλεῖ διαστρέφεσθαι, ἐπὴν κατεαγῇ.
 χρὴ τοίνυν, ἐπὴν τοιοῦτόν τι ὑποπτεύηται, ταινίῃ
 πλατέῃ προσεπιλαμβάνειν τὸν βραχίονα κύκλῳ
 περὶ τὸ στήθος περιδέοντα· καὶ ἐπὴν ἀνα-
 παύεσθαι μέλλῃ, μεσηγὺ τοῦ ἀγκῶνος καὶ τῶν
 πλευρέων σπλῆνά τινα πολύπτυχον πτύξαντα
 ὑποτιθέναι, ἢ ἄλλο τι ὃ τούτῳ ἔοικεν· οὕτω γὰρ
 ἂν ἰθὺν¹ τὸ κύρτωμα τοῦ ὁστέου γένοιτο· φυλάσ-
 σεσθαι δὲ μέντοι χρὴ, ὅπως μὴ ἦ ἄγαν εἰς τὸ
 60 ἔσω μέρος.

IX. Πούς δὲ ἀνθρώπου ἐκ πολλῶν καὶ σμικρῶν
 ὁστέων συγκείμεναι, ὥσπερ καὶ χεὶρ ἄκρῃ· κατ-
 ἄγνωται μὲν οὐ πᾶν τι ταῦτα τὰ ὁστέα, ἦν μὴ
 σὺν τῷ χρωτὶ² τιτρωσκομένῳ ὑπὸ ὀξέος τινὸς
 ἢ βαρέος· τὰ μὲν οὖν τιτρωσκόμενα, ἐν ἑλκωσίῳ
 μέρει εἰρήσεται ὡς χρὴ ἰητρεύειν. ἦν δέ τι
 κινήθῃ ἐκ τῆς χώρας, ἢ τῶν δακτύλων ἄρθρον
 ἢ ἄλλο τι τῶν ὁστέων τοῦ ταρσοῦ καλουμένου,
 ἀναγκάζειν μὲν χρὴ εἰς τὴν ἐωυτοῦ χώραν
 10 ἕκαστον, ὥσπερ καὶ τὰ ἐν τῇ χειρὶ εἴρηται·³
 ἰητρεύειν δὲ κηρωτῇ καὶ σπλήνεσι καὶ ὀθονίοισι
 ὥσπερ καὶ τὰ κατήγματα, πλὴν τῶν ναρθήκων,
 τὸν μὲν αὐτὸν τρόπον πιεζέοντα, διὰ τρίτης δὲ
 ἐπιδέοντα· ὑποκρινέσθω δὲ ὁ ἐπιδεόμενος παρα-
 πλήσια, οἷά περ καὶ ἐν τοῖσι κατήγμασι, καὶ
 περὶ τοῦ πεπιέχθαι καὶ περὶ τοῦ χαλαρὸν εἶναι.⁴

¹ ἀλορδότατον B. Kw. ἰθὺν MV Pq. Littré.

ON FRACTURES, VIII.—IX.

One must also bear in mind that the humerus is naturally convex outwards, and is therefore apt to get distorted in this direction when improperly treated. In fact, all bones when fractured tend to become distorted during the cure towards the side to which they are naturally bent. So, if you suspect anything of this kind, you should pass round it an additional broad band, binding it to the chest, and when the patient goes to bed, put a many-folded compress, or something of the kind, between the elbow and the ribs, thus the curvature of the bone will be rectified. You must take care, however, that it is not bent too much inwards.

IX. The human foot, like the hand, is composed of many small bones. These bones are not often broken, unless the tissues are also wounded by something sharp or heavy. The proper treatment of the wounded parts will be discussed in the section on lesions of soft parts.¹ But if any of the bones be displaced, whether a joint of the toes or some bone of what is called the tarsus, you should press each back into its proper place just in the way described as regards the bones of the hand. Treat as in cases of fracture with cerate, compresses and bandages, but without splints, using pressure in the same way and changing the dressings every other day. The patient's answers both as to pressure and relaxation should be similar to those in cases of fracture. All

¹ Rather "compound fractures," cf. XXIV, XXV. Galen defines ἑλκος as a lesion of a soft part.

² χρώς = τὸ σαρκώδες (Galen).

³ A lost chapter, condensed in *Moch.* XVI, *Joints* XXVI.

⁴ χαλάν.

- ὑγίεια δὲ γίνεται ἐν εἴκοσιν ἡμέρησι τελέως
 ἅπαντα, πλὴν ὅποσα κοινωνεῖ τοῖσι τῆς κνήμης
 ὀστέοισι καὶ αὐτῇ τῇ ἴξει.¹ συμφέρεται δὲ κατα-
 20 κείσθαι τοῦτον τὸν χρόνον. ἀλλὰ γὰρ οὐ
 τολμέουσιν ὑπερορῶντες τὸ νόσημα, ἀλλὰ περι-
 έρχονται πρὶν ὑγιέες γενέσθαι. διὰ τοῦτο καὶ
 οἱ πλεῖστοι οὐκ ἐξυγιαίνουσι τελέως. ἀλλὰ
 πολλῶν αὐτοὺς ὁ πόνος ὑπομνήσκει· εἰκότως,
 ὅλον γὰρ τὸ ἄχθος τοῦ σώματος οἱ πόδες ὀχέ-
 ουσι. ὁπότε οὖν μήπω ὑγιέες ἔοντες ὁδοι-
 πορέωσι, φλαύρως συναλθάσεται² τὰ ἄρθρα τὰ
 κινηθέντα· διὰ τοῦτο ἄλλοτε καὶ ἄλλοτε ὁδοι-
 29 πορεύοντες ὀδυνῶνται τὰ πρὸς τῇ κνήμῃ.

- X. Τὰ δὲ κοινωνέοντα τοῖσι τῆς κνήμης ὀστέοισι
 μείζω τε τῶν ἐτέρων ἐστί, καὶ κινηθέντων τούτων
 πολυχρονιωτέρη ἢ ἄλθεξις. Ἰησις μὲν οὖν ἡ
 αὐτῇ· ὀθονίοισι δὲ πλείοσι χρῆσθαι καὶ σπλή-
 νεσι, καὶ ἐπὶ πᾶν ἔνθεν καὶ ἔνθεν ἐπιδεῖν· πιέζειν
 δὲ ὥσπερ καὶ τᾶλλα πάντα, ταύτῃ μάλιστα ἢ
 ἐκινήθῃ, καὶ τὰς πρώτας περιβολὰς τῶν ὀθονίων
 κατὰ ταῦτα ποιεῖσθαι· ἐν δὲ ἐκάστη τῶν ἀπολυ-
 σίων ὕδατι πολλῷ θερμῷ χρῆσθαι· ἐν πᾶσι δὲ
 10 πολλὸν ὕδωρ καταχεῖν τοῖσι κατ' ἄρθρα σίνεσιν.
 αἱ δὲ πιέξεις καὶ αἱ χαλίσιες ἐν τοῖσιν αὐτοῖσι
 χρόνοισι τὰ αὐτὰ σημεῖα δεικνύοντων ἅπερ ἐπὶ
 τοῖσι πρόσθεν καὶ τὰς μετεπιδέσιας ὡσαύτως
 χρῆ ποιεῖσθαι. ὑγιέες δὲ τελέως οὗτοι γίνονται
 ἐν τεσσεράκοντα ἡμέρησι μάλιστα, ἣν τολμέωσι
 κατακεῖσθαι· ἣν δὲ μή, πάσχουσι ταῦτα ἅ καὶ
 17 πρότερον, καὶ ἐπὶ μᾶλλον.

XI. Ὅσοι δὲ πηδήσαντες ἀφ' ὑψηλοῦ τινὸς

¹ κατ' αὐτὴν τὴν ἴξιν.

these bones are completely healed in twenty days, except those which are connected with the leg-bones in a vertical line. It is good to lie up during this period, but patients, despising the injury, do not bring themselves to this, but go about before they are well. This is the reason why most of them do not make a complete recovery, and the pain often returns; naturally so, for the feet carry the whole weight. It follows that when they walk about before they are well, the displaced joints heal up badly; on which account they have occasional pains in the parts near the leg.

X.¹ The bones which are in connection with those of the leg are larger than the others,² and when they are displaced healing takes much longer. Treatment, indeed, is the same, but more bandages and pads should be used, also extend the dressings completely in both directions. Use pressure, as in all cases so here especially, at the point of displacement, and make the first turns of the bandage there. At each change of dressing use plenty of warm water; indeed, douche copiously with warm water in all injuries of joints. There should be the same signs as to pressure and slackness in the same periods as in the former cases, and the change of dressings should be made in the same way. These patients recover completely in about forty days, if they bring themselves to lie up; failing this, they suffer the same as the former cases, and to a greater degree.

XI. Those who, in leaping from a height, come

¹ Displacement of the astragalus?

² "Those of the wrist." Adams.

ἑστηρίξαντο τῇ πτέρνῃ ἰσχυρῶς, τούτοις διίσ-
 τανται μὲν τὰ ὀστέα, φλέβια δὲ ἐκχυμούνται
 ἀμφιφλασθείσης τῆς σαρκὸς ἀμφὶ τὸ ὀστέον,
 οἷδιμα δὲ ἐπιγίνεται καὶ πόνος πολὺς. τὸ γὰρ
 ὀστέον τοῦτο οὐ σμικρὸν ἐστὶ, καὶ ὑπερέχει μὲν
 ὑπὸ τὴν ἰθυωρίην τῆς κνήμης, κοινωνεῖ δὲ φλεψὶ
 καὶ νεύροισι ἐπικαίροισι· ὁ τένων δὲ ὀπίσθιος
 τούτῳ προσήρτηται τῷ ὀστέῳ. τούτους χρῆ
 10 ἰητρεύειν μὲν κηρωτῇ καὶ σπλήνεσι καὶ ὀθονί-
 οισιν· ὕδατι δὲ θερμῷ πλείστῳ ἐπὶ τούτοις
 χρῆσθαι καὶ ὀθονίων πλειόνων ἐπὶ τούτοις δεῖ
 καὶ ἄλλως ὥς βελτίστων καὶ προσηνεστάτων.
 καὶ ἦν μὲν τύχῃ ἀπαλὸν τὸ δέρμα φύσει ἔχον
 τὸ ἀμφὶ τῇ πτέρνῃ,¹ ἑὰν οὕτως· ἦν δὲ παχὺ καὶ
 σκληρόν, οἷα μετεξέτεροι ἴσχουσιν, κατατάμνειν
 χρῆ ὁμαλῶς καὶ διαλεπτύνειν, μὴ διατιτρώσκοντα.
 ἐπιδεῖν δὲ ἀγαθῶς οὐ πάντος ἀνδρός ἐστὶ τὰ
 τοιαῦτα· ἦν γὰρ τις ἐπιδέῃ, ὥσπερ καὶ τὰ ἄλλα
 20 τὰ κατὰ τὰ σφυρὰ ἐπιδεῖται, ὅτε μὲν περὶ τὸν
 πόδα περιβαλλόμενος, ὅτε δὲ περὶ τὸν τένοντα,
 αἱ ἀποσφίγξεις αὐταὶ χωρίζουσι τὴν πτέρνην
 ἢ τὸ φλάσμα ἐγένετο· καὶ οὕτω κίνδυνος σφα-
 κελίσαι τὸ ὀστέον τὸ τῆς πτέρνης· καίτοι ἦν
 σφακελίση, τὸν αἰῶνα πάντα ἱκανὸν ἀντίσχειν
 τὸ νόσημα. καὶ γὰρ τᾶλλα ὅσα μὴ ἐκ τοιούτου
 τρόπου σφακελίζει, ἀλλ' ἐν κατακλίσει μελαν-
 θείσης τῆς πτέρνης ὑπὸ ἀμελείης τοῦ σχήματος
 ἢ ἐν κνήμῃ τρώματος γενομένου ἐπικαίρου καὶ
 30 χρονίου καὶ κοινοῦ τῇ πτέρνῃ, ἢ ἐν μηρῷ ἢ ἐπ'
 ἄλλῳ νοσήματι ὑπτιασμοῦ χρονίου γενομένου,
 ὁμῶς καὶ τοῖσι τοιούτοις χρόνια, καὶ ὀχλῶδεα
 καὶ πολλάκις ἀναρρηγνύμενα, ἦν μὴ χρηστῇ μὲν

down violently on the heel, get the bones separated, while there is extravasation from the blood-vessels since the flesh is contused about the bone. Swelling supervenes and severe pain, for this bone is not small, it extends beyond the line of the leg, and is connected with important vessels and cords. The back tendon¹ is inserted into this bone. You should treat these patients with cerate, pads and bandages, using an abundance of hot water, and they require plenty of bandages, the best and softest you can get. If the skin about the heel is naturally smooth, leave it alone, but if thick and hard as it is in some persons, you should pare it evenly and thin it down without going through to the flesh. It is not every man's job to bandage such cases properly, for if one applies the bandage, as is done in other lesions at the ankle, taking one turn round the foot and the next round the back tendon, the bandage compresses the part and excludes the heel where the contusion is, so that there is risk of necrosis of the heel-bone; and if there is necrosis the malady may last the patient's whole life. In fact, necrosis from other causes, as when the heel blackens while the patient is in bed owing to carelessness as to its position, or when there is a serious and chronic wound in the leg connected with the heel, or in the thigh, or another malady involving prolonged rest on his back—all these necroses are equally² chronic and troublesome, and often break out afresh if not treated with most

¹ Tendo Achillis.

² δμῶς. Littré's emendation for ὅμως, "nevertheless" (Kw. and codd.).

μελέτη θεραπευθῇ, πολλῇ δὲ ἡσυχίᾳ, ὥς τὰ γε σφακελίζοντα· ἐκ τοῦ τοιούτου δὲ τρόπου σφακελίζοντα καὶ κινδύνους μεγάλους τῷ σώματι παρέχει πρὸς τῇ ἄλλῃ λύμῃ. καὶ γὰρ πυρετοὶ ὑπεροξέες, συνεχέες, τρομώδεις, λυγγώδεις, γνώμης ἀπτόμενοι, καὶ ὀλιγήμεροι κτείνοντές τε·

40 γένοιντο δ' ἂν καὶ φλεβῶν αἱμορρόων πελιώσιες ναρκώσιες¹ καὶ γαγγραινώσιες ὑπὸ τῆς πίεξις· γένοιτο δ' ἂν ταῦτα ἔξω τοῦ ἄλλου σφακελισμοῦ. ταῦτα μὲν οὖν εἴρηται, οἷα τὰ ἰσχυρότατα φλάσματα γίνεται· τὰ μέντοι πλείστα ἡσυχαιῶς ἀμφιφλάται καὶ οὐδεμίᾳ πολλῇ σπουδῇ τῆς μελέτης, ἀλλ' ὅμως ὀρθῶς γε δεῖ χειρίζειν. ἐπὴν μέντοι ἰσχυρὸν δόξῃ εἶναι τὸ ἔρεισμα, τὰ τε εἰρημένα ποιεῖν χρή, καὶ τὴν ἐπίδεσιν τὴν πλείστην ποιεῖσθαι ἀμφὶ τὴν πτέρυγην περι-

50 βάλλοντα, ἄλλοτε πρὸς τὰ ἄκρα τοῦ ποδὸς ἀντιπεριβάλλοντα, ἄλλοτε πρὸς τὰ μέσα, ἄλλοτε πρὸς τὰ περὶ τὴν κνήμην· προσεπιδεῖν δὲ καὶ τὰ πλησίον πάντα ἔνθεν καὶ ἔνθεν, ὥσπερ καὶ πρόσθεν εἴρηται· καὶ ἰσχυρὴν μὲν μὴ ποιεῖσθαι τὴν πίεξιν, ἐν πολλοῖσι δὲ τοῖσιν ὀθονίοισιν. ἄμεινον δὲ καὶ ἐλλέβορον πιπίσκειν² αὐθημερὸν ἢ τῇ ὑστεραίᾳ· ἀπολῦσαι δὲ τριταῖον καὶ αὐθις μετεπιδῆσαι. σημεῖα δὲ τάδε, εἰ παλιγκοταίνει ἢ οὐ· ἐπὴν μὲν τὰ ἐκχυμώματα

60 τῶν φλεβῶν καὶ τὰ μελάσματα καὶ τὰ ἐγγὺς ἐκείνων ὑπέρυθρα γίνηται καὶ ὑπόσκληρα, κίνδυνος παλιγκοτῆσαι· ἀλλ' ἢν μὲν ἀπύρετος ἦ, φαρμακεύειν ἄνω χρή, ὥσπερ εἴρηται, καὶ ὅσα ἂν μὴ συνεχῇ³ πυρεταίνηται·⁴ ἢν δὲ συνεχῇ πυρεταίνηται, μὴ φαρμακεύειν, ἀπέχειν δὲ σιτίων καὶ

skilful attention and long rest. Necroses of this sort, indeed, besides other harm, bring great dangers to the body, for there may be very acute fevers, continuous and attended by tremblings, hiccoughs and affections of the mind, fatal in a few days. There may also be lividity and congestion of the large blood-vessels, loss of sensation and gangrene due to compression, and these may occur without necrosis of the bone. The above remarks apply to very severe contusions, but the parts are often moderately contused and require no very great care, though, all the same, they must be treated properly. When, however, the crushing seems violent the above directions should be observed, the greater part of the bandaging being about the heel, taking turns sometimes round the end of the foot, sometimes about the middle part, and sometimes carrying it up the leg. All the neighbouring parts in both directions should be included in the bandage, as explained above; and do not make strong pressure, but use many bandages. It is also good to give a dose of hellebore on the first and second days. Remove the bandage and re-apply it on the third day. The following are signs of the presence and absence of aggravations. When there are extravasations from the blood-vessels, and blackenings, and the neighbouring parts become reddish and rather hard, there is danger of aggravation. Still, if there is no fever you should give an emetic as was directed; also in cases where the fever is not continuous; but if there is continued fever, do not give an evacuant, but avoid food, solid

¹ *ναυσιώσεις* (regurgitations), Galen and most MSS., but hard to accept.

² *πίσαι*.

³ *συνεχει*.

⁴ *πυρεταλνῆ* bis.

ῥοφημάτων, ποτῶ δὲ χρῆσθαι ὕδατι καὶ μὴ οἴνῳ,
 ἀλλὰ τῷ ὀξυγλυκεῖ. ἦν δὲ μὴ μέλλῃ παλιγκο-
 ταίνειν τὰ ἐκχυμώματα καὶ τὰ μελάσματα καὶ
 τὰ περιέχοντα, ὑπόχλωρα γίνεται καὶ οὐ σκληρά·
 70 ἀγαθὸν τοῦτο τὸ μαρτύριον ἐν πᾶσι τοῖσιν ἐκ-
 χυμώμασι, τοῖσι μὴ μέλλουσι παλιγκοταίνειν·
 ὅσα δὲ σὺν σκληρύσμασι πελιοῦται, κίνδυνος
 μὲν μελανθῆναι. τὸν δὲ πόδα ἐπιτηδεύειν χρή
 ὅπως ἀνωτέρω τοῦ ἄλλου σώματος ἔσται τὰ
 πλείστα ὀλίγον. ὑγιῆς δ' αὖ γένοιτο ἐν ἐξήκοντα
 76 ἡμέρησιν, εἰ ἀτρεμεῖ.¹

XII. Ἡ δὲ κνήμη δύο ὀστέα ἔχει,² τῇ μὲν
 συχνῶ λεπτότερον τὸ ἕτερον τοῦ ἐτέρου, τῇ δὲ
 οὐ πολλῶ λεπτότερον· συνέχεται δὲ ἀλλήλοισι
 τὰ πρὸς τοῦ ποδός, καὶ ἐπίφυσιν κοινὴν ἔχει,
 ἐν ἰθωρίῃ δὲ τῆς κνήμης οὐ συνέχεται· τὰ δὲ
 πρὸς τοῦ μηροῦ συνέχεται, καὶ ἐπίφυσιν ἔχει, καὶ
 ἡ ἐπίφυσις διάφυσιν· μακρότερον δὲ τὸ [ἕτερον]
 ὀστέον σμικρῶ τῷ³ κατὰ τὸν σμικρὸν δάκτυλον·
 καὶ ἡ μὲν φύσις τοιαύτη τῶν ὀστέων τῶν ἐν τῇ
 10 κνήμῃ.

XIII. Ὀλισθάνει δὲ ἔστιν ὅτε τὰ μὲν πρὸς
 τοῦ ποδός, ὅτε μὲν σὺν τῇ ἐπιφύσει ἀμφότερα
 τὰ ὀστέα, ὅτε δὲ ἡ ἐπίφυσις ἐκινήθη, ὅτε δὲ τὸ
 ἕτερον ὀστέον. ταῦτα δὲ ὀχλώδεα μὲν ἦσσαν ἢ τὰ
 ἐν τῷ καρπῷ τῶν χειρῶν, εἰ τολμῶεν ἀτρεμεῖν οἱ
 ἄνθρωποι. ἡσιν δὲ παραπλησίη, οἷη περ ἐκείνων
 τήν τε γὰρ ἐμβολὴν χρή ποιεῖσθαι ἐκ κατα-
 τάσιος, ὥσπερ ἐκείνων, ἰσχυροτέρης δὲ δεῖται
 τῆς κατατάσιος, ὅσῳ καὶ ἰσχυρότερον τὸ σῶμα
 10 ταύτῃ. ἐς δὲ τὰ πλείστα μὲν ἀρκέουσιν ἄνδρες

¹ ἀτρεμέοι.² ἑστίν.

or fluid, and for drink use water and not wine, but hydromel may be taken.¹ If there is not going to be aggravation, the effusions and blackenings and the parts around become yellowish and not hard. This is good evidence in all extravasations that they are not going to get worse, but in those which turn livid and hard there is danger of gangrene. One must see that the foot is, as a rule, a little higher than the rest of the body. The patient will recover in sixty days if he keeps at rest.

XII. The leg has two bones, one much more slender than the other at one end, but not so much at the other end. The parts near the foot are joined together and have a common epiphysis. In the length of the leg they are not united, but the parts near the thigh-bone are united and have an epiphysis, and the epiphysis has a diaphysis.² The bone on the side of the little toe is slightly the longer. This is the disposition of the leg-bones.

XIII. The bones are occasionally dislocated at the foot end, sometimes both bones with the epiphysis, sometimes the epiphysis is displaced, sometimes one of the bones. These dislocations give less trouble than those of the wrist, if the patients can bring themselves to lie up. The treatment is similar to that of the latter, for reduction is to be made by extension as in those cases, but stronger extension is requisite since the body is stronger in this part. As a rule two men suffice, one pulling one way and one

¹ A decoction of honeycomb in water, cf. Galen xviii(2). 466.

² Spinous process or medial projection.

³ Pq. τφ for τε codd.: omitting ἕτερον cf. XVIII, XXXVII.

δύο, ὁ μὲν ἔνθεν, ὁ δὲ ἔνθεν τείνοντες. ἦν δὲ
 μὴ ἰσχύωσιν, ἰσχυροτέραν ῥηίδιον ἐστὶ ποιεῖν
 τὴν κατάτασιν· ἡ γὰρ πλήμνην κατορύξαντα
 χρή, ἡ ἄλλο τι ὅ τι τούτῳ ἔοικεν, μαλθακὸν τι
 περὶ τὸν πόδα περιβάλλειν· ἔπειτα πλατέσι
 βοείοισιν ἱμάσιν περιδήσαντα τὸν πόδα τὰς
 ἀρχὰς τῶν ἱμάντων ἡ πρὸς ὕπερον ἡ πρὸς ἕτερον
 ξύλον προσδήσαντα, τὸ ξύλον πρὸς τὴν πλήμνην
 ἄκρον ἐντιθέντα ἐπανακλᾶν,¹ τοὺς δὲ ἀντιτείνειν
 20 ἄνωθεν, τῶν τε ὤμων ἐχομένους καὶ τῆς ἰγνύης.
 ἐστὶ δὲ καὶ τὸ ἄνω τοῦ σώματος ἀνάγκη προσλα-
 βεῖν τοῦτο μὲν ἦν βουλῇ, ξύλον στρογγύλον,
 λεῖον, κατορύξας βαθέως, μέρος τι αὐτοῦ
 ὑπερέχον τοῦ ξύλου μεσηγὺ τῶν σκελέων
 ποιήσασθαι παρὰ τὸν περίαιον, ὥς κωλύῃ
 ἀκολουθεῖν τὸ σῶμα τοῖσι πρὸς ποδῶν τείνου-
 σιν· ἔπειτα πρὸς τὸ τεινόμενον σκέλος μὴ ῥέπειν,
 τὸν δὲ τινα πλάγιον παρακαθήμενον ἀπωθεῖν
 τὸν γλουτόν, ὥς μὴ περιέλκηται τὸ σῶμα.
 30 τοῦτο δὲ καὶ ἦν βούλῃ, περὶ τὰς μασχάλας
 ἔνθεν καὶ ἔνθεν τὰ ξύλα παραπέπηγεν,² αἱ δὲ
 χεῖρες παρατεταμέναι φυλάσσονται,³ προσεπι-
 λαμβανέτω⁴ δέ τις κατὰ τὸ γόνυ, καὶ οὕτως
 ἀντιτείνοιτο. τοῦτο δ' ἦν παρὰ τὸ γόνυ βούλη-
 ται,⁵ ἄλλους ἱμάντας περιδήσας καὶ περὶ τὸν
 μηρόν, πλήμνην ἄλλην ὑπὲρ κεφαλῆς κατορύξας,
 ἐξαρτήσας τοὺς ἱμάντας ἔκ τινος ξύλου, τὸ ξύλον
 στηρίζων ἐς τὴν πλήμνην τάναντία τῶν πρὸς
 ποδῶν ἔλκειν. τοῦτο δ' ἦν βούλῃ, ἀντὶ τῶν
 40 πλημνέων δοκίδα ὑποτείνας ὑπὸ τὴν κλίνην
 μετρίην, ἔπειτα πρὸς τῆς δοκίδος ἔνθεν καὶ ἔνθεν
 τὴν κεφαλὴν στηρίζων καὶ ἀνακλῶν τὰ ξύλα,

the other, but if they cannot do it, it is easy to make the extension more powerful. Thus, one should fix a wheel-nave or something similar in the ground, put a soft wrapping round the foot, and then binding broad straps of ox-hide about it attach the ends of the straps to a pestle or some other rod. Put the end of the rod into the wheel-nave and pull back, while assistants hold the patient on the upper side grasping both at the shoulders and hollow of the knee. The upper part of the body can also be fixed by an apparatus. First, then you may fix a smooth, round rod deeply in the ground with its upper part projecting between the legs at the fork, so as to prevent the body from giving way when they make extension at the foot. Also it should not incline towards the leg which is being extended, but an assistant seated at the side should press back the hip so that the body is not drawn sideways. Again, if you like, the pegs may be fixed at either armpit, and the arms kept extended along the sides. Let someone also take hold at the knee, and so counter-extension may be made. Again, if one thinks fit, one may likewise fasten straps about the knee and thigh, and fixing another wheel-nave in the ground above the head, attach the straps to a rod; use the nave as a fulcrum for the rod and make extension counter to that at the feet. Further, if you like, instead of the wheel-naves, stretch a plank of suitable length under the bed, then, using the head of the plank at each end as fulcrum, draw back the rods and make exten-

¹ ἐνθέντα ἀνακλᾶν. ² παραπεπήγη. ³ φυλάσσονται.
⁴ παρεπιλαμβάνηται. ⁵ βούλη.

κατατείνειν τοὺς ἱμάντας· ἦν δὲ θέλης, ὀνίσκους
καταστήσας ἔνθεν καὶ ἔνθεν, ἐπ' ἐκείνων τὴν
κατάτασιν ποιεῖσθαι. πολλοὶ δὲ καὶ ἄλλοι
τρόποι κατατασίων· ἄριστον δέ, ὅστις ἐν πόλει
μεγάλῃ ἡτρεῦει, κεκτῆσθαι ἐσκευασμένον ξύλον,
ἐν ᾧ πᾶσαι αἱ ἀναγκαι ἔσονται πάντων μὲν
κατηγμάτων, πάντων δὲ ἄρθρων ἐμβολῆς ἐκ
50 κατατάσιος καὶ μοχλεύσιος· ἀρκεῖ δὲ τὸ ξύλον,
ἣν ἦ τοιοῦτον οἶον οἱ τετράγωνοι στύλοι οἱοι
δρυῖνοι γίνονται, μῆκος καὶ πλάτος καὶ πάχος.

Ἐπὴν δὲ ἱκανῶς καταταινύσης, ῥηίδιον ἤδη τὸ
ἄρθρον ἐμβαλεῖν· ὑπεραιωρεῖται γὰρ ἐς ἰθυωρίην
ὑπὲρ τῆς ἀρχαίης ἑδρης. κατορθοῦσθαι οὖν
χρὴ τοῖσι θέναρσι τῶν χειρῶν, τοῖσι μὲν ἐς τὸ
ἐξεστηκὸς ἐρείδοντα, τοῖσι δὲ ἐπὶ θάτερα κατώτε-
58 ρον τοῦ σφυροῦ ἀντερείδοντα.

XIV. Ἐπὴν δ' ἐμβάλης, ἦν μὲν οἶόν τε ἦ,
κατατεταμένον ἐπιδεῖν χρὴ· ἦν δὲ κωλύηται
ὑπὸ τῶν ἱμάντων, ἐκείνους λύσαντα ἀντικατα-
τείνειν, ἔστ' ἂν ἐπιδήσης. ἐπιδεῖν δὲ τὸν αὐτὸν
τρόπον καὶ τὰς ἀρχὰς ὡσαύτως βαλλόμενον κατὰ
τὸ ἐξεστηκός, καὶ τὰς περιβολὰς τὰς πρώτας
πλείστας κατὰ τοῦτο ποιεῖσθαι, καὶ τοὺς σπλή-
νας πλείστους κατὰ τοῦτο, καὶ τὴν πῖεξιν
μάλιστα κατὰ τῶντ'· προσεπιδεῖν δὲ καὶ ἔνθεν
10 καὶ ἔνθεν ἐπὶ συχνόν· μᾶλλον δέ τι τοῦτο τὸ
ἄρθρον πεπιέχθαι χρὴ ἐν τῇ πρώτῃ ἐπιδέσει ἢ
τὸ ἐν τῇ χειρί. ἐπὴν δὲ ἐπιδήσης, ἀνωτέρω μὲν
τοῦ ἄλλου σώματος ἐχέτω τὸ ἐπιδεθέν, τὴν δὲ
θέσιν δεῖ ποιεῖσθαι οὕτως, ὅπως ἥκιστα ἀπαιω-

sion on the straps. And if you choose, set up windlasses at either end and make the extension by them. There are also many other methods for extensions. The best thing for anyone who practises in a large city is to get a wooden apparatus comprising all the mechanical methods for all fractures and for reduction of all joints by extension and leverage. This wooden apparatus will suffice if it be like the quadrangular supports such as are made of oak¹ in length, breadth and thickness.

When you make sufficient extension it is then easy to reduce the joint for it is elevated in a direct line above its old position. It should therefore be adjusted with the palms of the hands, pressing upon the projecting part with one palm and with the other making counter pressure below the ankle on the opposite side.²

XIV. After reduction, you should, if possible, apply a bandage, while the limb is kept extended. If the straps get in the way, remove them and keep up counter extension while bandaging. Bandage in the same way (as for fractures) putting the heads of the bandages on the projecting part and making the first and most turns there, also most of the compresses should be there and the pressure should come especially on this part. Also extend the dressing considerably to either side. This joint requires somewhat greater pressure at the first bandaging than does the wrist. After dressing let the bandaged part be higher than the rest of the body, and put it up in a position in which the foot is as little as

¹ Adams' "threshing boards"—Littre's *τριβόλοι*, a rash suggestion which he afterwards withdrew.

² The nature of these dislocations is discussed on pp. 425 ff.

ρηθήσεται ὁ πούς. τὸν δὲ ἰσχυασμὸν τοῦ σώματος οὕτως ποιεῖσθαι, ὁποῖν τινὰ δύναμιν ἔχει καὶ τὸ ὀλίσθημα· τὰ μὲν γὰρ σμικρόν, τὰ δὲ μέγα ὀλισθάνει. τὸ ἐπίπαν δὲ ἰσχυαίνειν μᾶλλον καὶ ἐπὶ πλείω χρόνον χρή ἐν τοῖσι κατὰ
 20 τὰ σκέλεα τρώμασι ἢ ἐν τοῖσι κατὰ τὰς χεῖρας.¹ καὶ γὰρ μέζω καὶ παχύτερα ταῦτα ἐκείνων· καὶ δὴ καὶ ἀναγκαῖον ἐλινύειν τὸ σῶμα καὶ κατακεῖσθαι. μετεπιδῆσαι δὲ τὸ ἄρθρον οὔτε τι κωλύει τριταῖον οὔτε κατεπείγει· καὶ τὰ ἄλλα πάντα παραπλησίως χρή ἰητρεύειν, ὥσπερ καὶ τὰ παροιχόμενα. καὶ ἦν μὲν τολμᾷ ἀτρέμα κατακεῖσθαι, ἱκαναὶ τεσσαράκοντα ἡμέραι, ἦν μούνον ἐς τὴν ἐωυτῶν χώραν τὰ ὀστέα αὐθις καθίζηται· ἦν δὲ μὴ θέλῃ ἀτρεμεῖν, χρῶτο μὲν
 30 ἂν οὐ ραδίως² τῷ σκέλει, ἐπιδεῖσθαι δὲ ἀναγκάζοιτ' ἂν πολὺν χρόνον. ὅποσα μέντοι τῶν ὀστέων μὴ τελέως ἵζει ἐς τὴν ἐωυτῶν χώραν, ἀλλὰ τι ἐπιλείπει, τῷ χρόνῳ λεπτύνεται ἰσχίον καὶ μηρὸς καὶ κνήμη· καὶ ἦν μὲν ἔσω ὀλίσθη, τὸ ἔξω μέρος λεπτύνεται, ἦν δὲ ἔξω, τὸ ἔσω· τὰ
 36 πλείστα δὲ ἐς τὸ ἔσω ὀλισθάνει.

XV. Ἐπὴν δὲ κνήμης ὀστέα ἀμφοτέρα καταγῇ ἄνευ ἐλκώσιος, κατατάσιος ἰσχυροτέρης δεῖται. τείνειν³ τούτων τῶν τροπων ἐνίοισι τῶν προειρημένων τισί, ἦν μεγάλαι αἱ παραλλάξεις ἔωσιν. ἱκαναὶ δὲ καὶ αἱ ἀπὸ τῶν ἀνδρῶν κατατάσιες· τὰ πλείστα γὰρ ἀρκέοιεν ἂν δύο ἄνδρες ἐρρωμένοι, ὁ μὲν ἔνθεν, ὁ δὲ ἔνθεν ἀντιτείνοντες. τείνειν δὲ ἐς τὸ ἰθὺ χρή κατὰ φύσιν καὶ κατὰ τὴν

¹ κατὰ χεῖρα.² βραδέως, omit οὐ.³ κατατείνειν.

possible unsupported.¹ The patient should undergo a reducing process corresponding to his strength and to the displacement, for the displacement may be small or great. As a rule the reducing treatment should be stricter and more prolonged in injuries about the leg region than in those about the arm region, for the former parts are larger and stouter than the latter. And it is especially needful for the body to be at rest and lie up. As to rebandaging the joint on the third day, there is neither hindrance nor urgency, and one should conduct all the other treatment as in the previous cases. If the patient brings himself to keep at rest and lie up, forty days are sufficient, provided only that the bones are back again in their places. If he will not keep at rest, he will not easily recover the use of the leg and will have to use bandages for a long time. Whenever the bones are not completely replaced but there is something wanting, the hip, thigh and leg gradually become atrophied. If the dislocation is inwards the outer part is atrophied, if outwards, the inner: now most dislocations are inwards.²

XV. When both leg-bones are broken without an external wound, stronger extension is required. If there is much overlapping make extension by some of those methods which have been described. But extensions made by man-power are also sufficient, for in most cases two strong men are enough, one pulling at each end. The traction should be in a straight line in accordance with the natural direction

¹ Not merely prevented from hanging down, but kept at right angles to the leg (cf. Galen).

² *i.e.* of the foot outwards and the leg inwards.

- ἰθυωρίην τῆς κνήμης καὶ τοῦ μηροῦ, καὶ ἦν κνήμης
 10 ὅστέα κατεηγυίης κατατείνης, καὶ ἦν μηροῦ.
 καὶ ἐπιδεῖν δὲ οὕτως ἐκτεταμένων ἀμφοτέρων,
 ὁπότερον ἂν τούτων ἐπιδέης· οὐ γὰρ ταῦτὰ
 συμφέρει σκέλει τε καὶ χειρί· πῆχχος μὲν γὰρ
 καὶ βραχίονος ἐπὴν ἐπιδεθῶσιν ὅστέα κατεηγότα,
 ἀναλαμβάνεται ἢ χεῖρ, καὶ ἦν ἐκτεταμένα
 ἐπιδέης, τὰ σχήματα τῶν σαρκῶν ἑτεροιοῦται
 ἐν τῇ συγκαμψει τοῦ ἀγκῶνος· ἀδύνατος γὰρ
 ὁ ἀγκῶν ἐκτετάσθαι πολὺν χρόνον· οὐ γὰρ
 πολλάκις ἐν τοιούτῳ εἶθισται ἐσχηματῖσθαι,
 20 ἀλλ' ἐν τῷ συγκεκάμφθαι· καὶ δὴ καὶ ἅτε
 δυνάμενοι οἱ ἄνθρωποι περιῖέναι συγκεκάμφθαι
 κατὰ τὸν ἀγκῶνα δέονται. σκέλος δὲ ἔν τε τῇσιν
 ὁδοιπορίησιν καὶ ἐν τῷ ἐστάναι εἶθισται ὅτε μὲν
 ἐκτετάσθαι, ὅτε δὲ σμικροῦ δεῖν ἐκτέτασθαι· καὶ
 εἶθισται καθεῖσθαι ἐς τὸ κάτω κατὰ τὴν φύσιν,
 καὶ δὴ καὶ πρὸς τὸ ὀχέειν τὸ ἄλλο σῶμα· διὰ τοῦτο
 εὐφορον αὐτῷ ἐστὶ τὸ ἐκτετάσθαι, ὅταν ἀνάγκην¹
 ἔχῃ· καὶ δὴ καὶ ἐν τῇσι κοιτῇσι πολλάκις ἐν τῷ
 σχήματι τούτῳ ἐστὶν [ἐν τῷ ἐκτετάσθαι].² ἐπὴν
 30 δὲ δὴ τρωθῇ, ἀνάγκη³ καταδουλοῦται τὴν
 γνώμην, ὅτι ἀδύνατοι μετεωρίζεσθαι γίνονται,
 ὥστε οὐδὲ μέμνηνται περὶ τοῦ συγκαμφθῆναι
 καὶ ἀναστῆναι, ἀλλ' ἀτρεμέουσι⁴ ἐν τούτῳ τῷ
 σχήματι κείμενοι. διὰ οὖν ταύτας τὰς προφά-
 σιας χειρὸς καὶ σκέλεος οὔτε ἡ κατάτασις οὔτε
 ἡ ἐπίδεσις τοῦ σχήματος συμφέρει ἡ αὐτή. ἦν
 μὲν οὖν ἱκανὴ ἡ κατάτασις ἡ ἀπὸ τῶν ἀνδρῶν ἦ,
 οὐ δεῖ μάτην πονεῖσθαι—καὶ γὰρ σολοικότερον
 μηχανοποιεῖν μηδὲν δέον—ἦν δὲ μὴ ἱκανὴ ἡ κατὰ-
 40 τασις ἀπὸ τῶν ἀνδρῶν, καὶ τῶν ἄλλων τινὰ τῶν

of the leg and thigh, both when it is being made for fractures of the leg bones and of the thigh. Apply the bandage while both¹ are extended, whichever of the two you are dressing, for the same treatment does not suit both leg and arm. For when fractures of the forearm and upper arm are bandaged, the arm is slung, and if you bandage it when extended the positions of the fleshy parts are altered by bending the elbow. Further, the elbow cannot be kept extended a long time, since it is not used to that posture, but to that of flexion. And besides, since patients are able to go about after injuries of the arm, they want it flexed at the elbow. But the leg both in walking and standing is accustomed to be sometimes extended and sometimes nearly so, and it is naturally directed downwards and, what is more, its function is to support the body. Extension therefore is easily borne when necessary and indeed it frequently has this position in bed. If then it is injured, necessity brings the mind into subjection, because patients are unable to rise, so that they do not even think of bending their legs and getting up, but keep lying at rest in this posture. For these reasons, then, the same position either in making extension or bandaging is unsuitable for both arm and leg. If, then, extension by man-power is enough, one should not take useless trouble, for to have recourse to machines when not required is rather absurd. But if extension by man-power is not enough,

¹ *i.e.* thigh and leg.

¹ ἀνάγκη.

² Seems an obvious gloss. Most editors omit.

³ καὶ ἡ ἀνάγκη.

⁴ τολμῶσιν.

ἀναγκέων προσφέρειν, ἥντινά γε προσχωρή.¹
 ὅταν δὲ δὴ ἱκανῶς καταταθῇ, ῥηίδιον ἤδη κατορ-
 θώσασθαι τὰ ὀστέα καὶ ἐς τὴν φύσιν ἀγαγεῖν,
 τοῖσι θέναρσι τῶν χειρῶν ἀπευθύνοντα καὶ
 45 ἐξευκρινέοντα.

XVI. Ἐπὴν δὲ κατορθώσης, ἐπιδεῖν τοῖσιν
 ὀθονίοισι κατατεταμένον, ἥν τ' ἐπὶ δεξιὰ ἥν τ' ἐπ'
 ἀριστερὰ περιφέρειν συμφέρη αὐτοῖσι τὰ πρῶτα
 ὀθόνια· βάλλεσθαι δὲ τὴν ἀρχὴν τοῦ ὀθονίου
 κατὰ τὸ κάτηγμα, καὶ περιβάλλεσθαι κατὰ
 τοῦτο τὰς πρῶτας περιβολάς· κᾶπειτα νέμεσθαι
 ἐπὶ τὴν ἄνω κνήμην ἐπιδέων, ὥσπερ ἐπὶ τοῖσιν
 ἄλλοισι κατήγμασι εἴρηται. τὰ δὲ ὀθόνια
 πλατύτερα χρὴ εἶναι καὶ μακρότερα καὶ πλέω
 10 πολὺ αὖ τὰ² κατὰ τὸ σκέλος τῶν ἐν τῇ χειρί.
 ἐπὴν δ' ἐπιδήσης, καταθεῖναι ἐφ' ὀμαλοῦ τινὸς
 καὶ μαλθακοῦ, ὥστε μὴ διεστράφθαι ἢ τῇ ἢ τῇ,
 μήτε λορδὸν μήτε κυφὸν εἶναι· μάλιστα δὲ
 συμφέρει προσκεφάλαιον, ἢ λίνεον ἢ ἐρίνεον,
 μὴ σκληρόν, λαπαρὸν μέσον κατὰ μῆκος ποιή-
 σαντα, ἢ ἄλλο τι ὃ τούτῳ ἔοικεν.

Περὶ γὰρ τῶν σωλήνων τῶν ὑποτιθεμένων ὑπὸ τὰ
 σκέλεα τὰ κατεηγότα, ἀπορέω ὅ τι συμβουλευσῶ·
 ἢ ὑποτιθέναι χρὴ ἢ οὐ; ὠφελέουσι μὲν γάρ,
 20 οὐχ ὅσον δὲ οἱ ὑποτιθέντες οἴονται· οὐ γὰρ
 ἀναγκάζουσι οἱ σωλήνες ἀτρεμεῖν, ὥς οἴονται·
 οὔτε γὰρ τῷ ἄλλῳ σώματι στρεφομένῳ ἢ ἔνθα
 ἢ ἔνθα ἐπαναγκάζει ὁ σωλὴν μὴ ἐπακολουθεῖν
 τὸ σκέλος, ἥν μὴ ἐπιμελῆται αὐτὸς ὠνθρωπος·
 οὔτε αὖ τὸ³ σκέλος ἄνευ τοῦ σώματος κωλύει ὁ
 σωλὴν κινηθῆναι ἢ τῇ ἢ τῇ· ἀλλὰ μὴν ἀστερ-

¹ προσχωρή.

bring in some of the mechanical aids, whichever may be useful.¹ When once sufficient extension is made, it becomes fairly easy to adjust the bones to their natural position by straightening them and making coaptation with the palms of the hands.

XVI. After adjustment, apply the bandages while the limb is extended, making the turns with the first bandage, either to right or left as may be suitable. Put the head of the bandage at the fracture and make the first turns there, and then carry the bandaging to the upper part of the leg as was directed for the other fractures. The bandages should be broader and longer and much more numerous for the leg parts than those of the arm. On completing the dressing, put up the limb on something smooth and soft so that it does not get distorted to either side or become concave or convex. The most suitable thing to put under is a pillow of linen or wool, not hard, making a median longitudinal depression in it, or something that resembles this.

As for the hollow splints which are put under fractured legs I am at a loss what to advise as regards their use. For the good they do is not so great as those who use them suppose. The hollow splints do not compel immobility as they think, for neither does the hollow splint forcibly prevent the limb from following the body when turned to either side, unless the patient himself sees to it, nor does it hinder the leg itself apart from the body from moving this way or that. Besides, it is, of course,

¹ *ἥντινα* Littré; *ἥν* vulg.: "if any is of use."

² For *αὐτὰ* (codd.); cf. below, line 25. *τὰ* K^w.

³ *αὐτό*.

γέστερον ξύλον ὑποτετάσθαι, ἣν μὴ ὁμῶς ἂν¹ τις
 μαλθακόν τι ἐς αὐτὸ ἐντεθῇ· εὐχρηστότατον δέ
 ἐστὶν ἐν τῇσι μεθυποστρώσεσι καὶ ἐν τῇσιν ἐς
 30 ἄφοδον προχωρήσειν. ἔστιν οὖν σὺν σωλῆνι
 καὶ ἄνευ σωλῆνος, καὶ καλῶς καὶ αἰσχροῦς
 κατασκευάσασθαι. πιθανώτερον δὲ τοῖσι δημό-
 τησίιν ἐστι καὶ τὸν ἱητρὸν ἀναμαρτητότερον
 εἶναι, ἣν σωλὴν ὑποκέηται· καίτοι ἀτεχνέστερόν
 γέ ἐστιν. δεῖ μὲν γὰρ ἐφ' ὁμαλοῦ καὶ μαλθακοῦ
 κεῖσθαι πάντη πάντως ἐς ἰθύ· ἐπεὶ τοί γε
 ἀνάγκη κρατηθῆναι τὴν ἐπίδεσιν ὑπὸ τῆς δια-
 στροφῆς τῆς ἐν τῇ διαθέσει, ὅποι ἂν ῥέπη καὶ
 ὀπόσα ἂν ῥέπη. ὑποκρινέσθω δὲ ὁ ἐπιδεδεμένος
 40 ταῦτα, ἅπερ καὶ πρότερον εἴρηται· καὶ γὰρ τὴν
 ἐπίδεσιν χρὴ τοιαύτην εἶναι καὶ τὸ οἶδημα οὕτως
 ἐξαείρεσθαι ἐς τὰ ἄκρεα καὶ τὰς χαλύσιας οὕτω,
 καὶ τὰς μετεπιδέσιας διὰ τρίτης· καὶ εὕρισκέσθω
 ἰσχυρότερον τὸ ἐπιδεόμενον, καὶ τὰς ἐπιδέσιας ἐπὶ
 μᾶλλον ποιεῖσθαι καὶ πλέοσι τοῖσιν ὀθονίοισιν·
 περιλαμβάνειν τε τὸν πόδα χαλαρῶς, ἣν μὴ ἄγαν
 ἐγγὺς ἢ τοῦ γούνατος τὸ τρῶμα. κατατείνειν δὲ
 μετρίως καὶ ἐπικατορθοῦν ἐφ' ἐκάστη ἐπιδέσει χρὴ
 τὰ ὀστέα· ἣν γὰρ ὀρθῶς μὲν ἱητρεύηται, κατὰ
 λόγον δὲ τὸ οἶδημα χωρῇ, ἔτι² μὲν λεπτότερον καὶ
 50 ἰσχυρότερον τὸ ἐπιδεόμενον χωρίον ἔσται, ἔτι δὲ αὖ
 παραγωγότερα τὰ ὀστέα, ἀνακούοντα τῆς κατα-
 τάσιος μᾶλλον. ἐπὶ δὲ ἐβδομαῖος ἢ ἐνναταῖος
 ἢ ἐνδεκαταῖος γένηται, τοὺς νάρθηκας προστι-
 θέναι,³ ὥσπερ καὶ ἐπὶ τοῖσιν ἄλλοισι κατήγμασι
 εἴρηται. τῶν δὲ ναρθήκων τὰς ἐνέδρας χρὴ
 φυλάσσεσθαι κατὰ τε τῶν σφυρῶν τὴν ἴξιν καὶ
 κατὰ τὸν τένοντα τὸν ἐν τῇ κνήμῃ τοῦ ποδός.

rather unpleasant to have wood under the limb unless at the same time one inserts something soft. But it is very useful in changing the bed clothes, and in getting up to go to stool. It is thus possible either with or without the hollow splint to arrange the matter well or clumsily. Still the vulgar have greater faith in it, and the practitioner will be more free from blame if a hollow splint is applied, though it is rather bad practice. Anyhow, the limb should be on something smooth and soft and be absolutely straight, since it necessarily follows that the bandaging is overcome by any deviation in posture, whatever the direction or extent of it may be. The patient should give the same answers as those above mentioned, for the bandaging should be similar, and there should be the like swelling on the extremities, and so with the looseness and the changes of dressing every third day. So, too, the bandaged part should be found more slender and greater pressure be used in the dressings and more bandages. You should also make some slack turns round the foot if the injury is not very near the knee. One should make moderate extension and adjustment of the bones at each dressing; for if the treatment be correct and the oedema subsides regularly, the bandaged part will be more slender and attenuated while the bones on their side will be more mobile and lend themselves more readily to extension. On the seventh, ninth, or eleventh day splints should be applied as was directed in the case of other fractures, and one must be careful as to the position of the splints, both in the line of the ankles, and about the back tendon

¹ ὁμαλον Kw. in Hermes XXVII. αὐτῆς in text.

² ἐπὶ his.

³ χρῆ προστιθέναι.

- ὅστέα δὲ κνήμης κρατύνεται ἐν τεσσαράκοντα
 ἡμέρησιν, ἣν ὀρθῶς ἰητρεύηται. ἣν δὲ ὑποπτεύης
 60 τῶν ὀστέων τι δεῖσθαι τινος διορθώσιος ἢ τινα
 ἔλκωσιν ὀρρωδῆς, ἐν τῷ μεσηγὺ χρόνῳ χρή
 62 λύσαντα καὶ εὐθετισάμενον μετεπιδῆσαι.

XVII. Ἦν δὲ τὸ ἕτερον ὀστέον κατεηγῇ ἐν
 κνήμῃ, κατατάσιος μὲν ἀσθενεστέρης δεῖται. οὐ
 μὴν ἐπιλείπειν χρή, οὐδὲ βλακεύειν ἐν τῇ κατα-
 τάσει, μάλιστα μὲν τῇ πρώτῃ ἐπιδέσει κατα-
 τείνεσθαι ὅσον ἐφικνέεται αἰεὶ ποτε πάντα τὰ
 κατήγματα, εἰ δὲ μή, ὥς τάχιστα· ὃ τι γὰρ
 ἂν μὴ κατὰ τρόπον ηὐθετισμένων¹ τῶν ὀστέων
 ἐπιδέων τις πῆξῃ, ὀδυναίτερον τὸ χωρίον γίνεται.
 9 ἢ δὲ ἄλλη ἰητρείη ἢ αὐτή.

- XVIII. Τῶν δὲ ὀστέων, τὸ μὲν ἔσω τοῦ ἀντι-
 κνημίου καλεομένου ὀχλωδέστερον ἐν τῇ ἰητρείῃ
 ἐστί, καὶ κατατάσιος μᾶλλον δεόμενον, καὶ ἣν
 μὴ ὀρθῶς τὰ ὀστέα τεθῇ, ἀδύνατον κρύψαι·
 φανερόν γάρ καὶ ἄσαρκον πᾶν ἐστίν· καὶ ἐπι-
 βαίνειν ἐπὶ τὸ σκέλος πολλῷ βραδύτερον δύναιντ'
 ἂν, τούτου κατεηγότος. ἣν δὲ τὸ ἔξω ὀστέον
 κατεηγῇ,² πολὺ μὲν εὐφορώτερον φέρουσι, πολὺ
 10 δὲ εὐκρυπτότεροι, καὶ ἣν μὴ καλῶς συντεθῇ
 (ἐπίσαρκον γάρ ἐστιν), ἐπὶ πόδας τε ταχέως
 ἵστανται, τὸ πλείστον γὰρ τοῦ ἄχθεος ὀχεὶ τὸ
 ἔσωθεν τοῦ ἀντικνημίου ὀστέον. ἅμα μὲν γὰρ
 αὐτῷ τῷ σκέλει καὶ τῇ ἰθυωρίῃ τοῦ ἄχθεος τοῦ
 κατὰ τὸ σκέλος, τὸ πλεῖον ἔχει τοῦ πόνου τὸ ἔσω
 ὀστέον· τοῦ γὰρ μηροῦ ἢ κεφαλῇ ὑπεροχεῖ τὸ
 ὑπερθεῖν τοῦ σώματος, αὕτη δὲ ἔσωθεν πέφυκε
 τοῦ σκέλεος καὶ οὐκ ἔξωθεν, ἀλλὰ κατὰ τὴν τοῦ

¹ εὐθετισμένων.² καταγῇ.

ON FRACTURES, xvi.—xviii.

from leg to foot. The bones of the leg solidify in forty days if properly treated. If you suspect that one of the bones requires some adjustment, or are afraid of ulceration, you should unbandage the part in the interval and reapply after putting it right.

XVII. If one¹ of the leg-bones be broken, the extension required is weaker: there should, however, be no shortcoming or feebleness about it. Especially at the first dressing sufficient extension should be made in all fractures so as to bring the bones together, or, failing this, as soon as possible, for when one in bandaging uses pressure, if the bones have not been properly set, the part becomes more painful. The rest of the treatment is the same.

XVIII. Of the bones, the inner of the so-called shin is the more troublesome to treat, requiring greater extension, and if the fragments are not properly set, it cannot be hid, for it is visible and entirely without flesh. When this bone is broken, patients take longer before they can use the leg, while if the outer bone be fractured they have much less inconvenience to bear, and, even if not well set, it is much more readily concealed; for it is well covered: and they can soon stand. For the inner shin bone carries the greatest part of the weight, since both by the disposition of the leg itself and by the direct line of the weight upon the leg the inner bone has most of the work. Further, the head of the thigh-bone sustains the body from below and has its natural direction towards the inner side of the leg and not the outer, but is in the line of the shin

¹ Jittré and others apply this to the fibula, but the limitation seems uncalled for.

- ἀντικνημίου ἴξιν· ἅμα δὲ τὸ ἄλλο ἡμῖς τοῦ
 σώματος γειτονεύεται μᾶλλον ταύτῃ τῇ ἴξει,
 20 ἀλλ' οὐχὶ τῇ ἔξωθεν· ἅμα δέ, ὅτε παχύτερον
 τὸ ἔσω τοῦ ἔξωθεν, ὥσπερ καὶ ἐν τῷ πῆχει τὸ
 κατὰ τὴν τοῦ μικροῦ δακτύλου ἴξιν λεπτότερον
 καὶ μακρότερον. ἐν μέντοι τῷ ἄρθρῳ τῷ κάτω¹
 οὐχ ὁμοίῃ ἢ ὑπότασις τοῦ ὀστέου τοῦ μακροτέρου·
 ἀνομοίως γὰρ ὁ ἀγκὼν καὶ ἡ ἰγνὺή κάμπτεται.
 διὰ οὖν ταύτας τὰς προφάσιας τοῦ μὲν ἔξωθεν
 ὀστέου κατεηγότος,² ταχεῖαι αἱ ἐπιβάσεις, τοῦ δὲ
 28 ἔσωθεν κατεηγότος, βραδεῖαι αἱ ἐπιβάσεις.

- XIX. Ἦν δὲ τὸ τοῦ μηροῦ ὀστέον καταγῆ, τὴν
 κατάτασιν χρὴ ποιεῖσθαι περὶ παντός, ὅπως
 μὴ ἐνδεεστέως σχήσει· πλεονασθεῖσα μὲν γὰρ
 οὐδὲν ἂν σίνοιτο· οὐδὲ γὰρ εἰ διεστεῶτα τὰ
 ὀστέα ὑπὸ τῆς ἰσχύος τῆς κατατάσιος ἐπιδέοι
 τις, οὐκ ἂν δύναίτο κρατεῖν ἢ ἐπίδεσις ὥστε
 διεστάναι, ἀλλὰ συνέλθοι ἂν πρὸς ἄλληλα τὰ
 ὀστέα ὅτι τάχιστα [ἂν]³ ἀφείησαν οἱ τείνοντες·
 παχεῖαι γὰρ καὶ ἰσχυραὶ αἱ σάρκες εἶναι,
 10 κρατήσουσι τῆς ἐπιδέσιος, ἀλλ' οὐ κρατη-
 θήσονται. περὶ οὗ οὖν ὁ λόγος, διατείνειν εὖ
 μάλα καὶ ἰδιαστρέπτως χρή, μηδὲν ἐπιλείποντα·
 μεγάλη γὰρ ἡ αἰσχύνη καὶ βλάβη βραχύτερον
 τὸν μηρὸν ἀποδείξει. χεὶρ μὲν γάρ, βραχυτέρη
 γενομένη, καὶ συγκρυφθεῖη ἂν καὶ οὐ μέγα τὸ
 σφάλμα· σκέλος δὲ βραχύτερον γενόμενον χωλὸν
 ἀποδείξει⁴ τὸν ἄνθρωπον· τὸ γὰρ ὑγιὲς ἐλέγχει
 παρατιθέμενον μακρότερον εἶναι, ὥστε λυσιτελεῖ
 τὸν μέλλοντα κακῶς ἰητρεύεσθαι, ἀμφοτέρω
 20 καταγῆναι τὰ σκέλεα μᾶλλον ἢ τὸ ἕτερον·
 ἰσόρροπος γοῦν ἂν εἴη αὐτὸς ἐωυτῷ. ἐπὶ μὲντοι

bone. So, too, the corresponding half of the body is nearer the line of this bone than that of the outer one, and besides, the inner is thicker than the outer, just as in the forearm the bone on the side of the little finger is longer and more slender; but in this lower articulation the longer bone does not lie underneath in the same way, for flexion at the elbow and knee are dissimilar. For these reasons, when the outer bone is fractured patients soon get about; but when the inner one is broken they do so slowly.

XIX. If the thigh-bone is fractured, it is most important that there should be no deficiency in the extension that is made, while any excess will do no harm. In fact, even if one should bandage while the bones were separated by the force of the extension, the dressing would have no power to keep them apart, but they would come together immediately when the assistants relaxed their tension. For the fleshy part being thick and powerful will prevail over the bandaging, and not be overcome by it. To come to our subject, one should extend very strongly and without deviation leaving no deficiency, for the disgrace and harm are great if the result is a shortened thigh. The arm, indeed, when shortened may be concealed and the fault is not great, but the leg when shortened will leave the patient lame, and the sound leg being longer (by comparison) exposes the defect; so that if a patient is going to have unskilful treatment, it is better that both his legs should be broken than one of them, for then at least he will be in equilibrium. When, therefore, you have made suffi-

¹ τῷ κάτω ἄρθρῳ τούτῳ.

³ Omit B M V K w.

² καταγέντος bis.

⁴ ἀποδείξει.

ἱκανῶς κατατανύσης, κατορθωσάμενον χρή τοῖσι
 θέναρσι τῶν χειρῶν ἐπιδεῖν τὸν αὐτὸν τρόπον,
 ὥσπερ καὶ πρόσθεν γέγραπται, καὶ τὰς ἀρχὰς
 βαλλόμενοι, ὥσπερ εἴρηται, καὶ νεμόμενοι ἐς τὸ
 ἄνω τῇ ἐπιδέσει. καὶ ὑποκρινέσθω ταῦτα ὥσπερ
 καὶ πρόσθεν, καὶ πονεῖτω κατὰ ταῦτα καὶ
 ῥηίζέτω· καὶ μετεπιδείσθω ὡσαύτως, καὶ ναρ-
 θήκων πρόσθεσις ἡ αὕτη. κρατύνεται δὲ ὁ μηρὸς
 30 ἐν πεντήκοντα ἡμέρησιν.

XX. Προσσυνιέναι δὲ χρή καὶ τόδε, ὅτι ὁ
 μηρὸς γαῦσός ἐστιν ἐς τὸ ἔξω μέρος μᾶλλον ἢ
 ἐς τὸ ἔσω, καὶ ἐς τὸ ἔμπροσθεν μᾶλλον ἢ ἐς
 τοῦπισθεν· ἐς ταῦτα τοίνυν τὰ μέρεα καὶ δια-
 στρέφεται, ἐπὶ μὴ καλῶς ἰητρεύηται· καὶ δὴ καὶ
 κατὰ ταῦτα ἡσυχότερος αὐτὸς ἐνυτοῦ ἐστίν, ὥστε
 οὐδὲ συγκρύπτειν δύνανται, ἐν τῇ διαστροφῇ.
 ἣν οὖν τι τοιοῦτον ὑποπτεύης, μηχανοποιεῖσθαι
 χρή οἷά περ ἐν τῷ βραχίονι τῷ διεστραμμένῳ
 10 παρήνηται.¹ προσπεριβίλλειν δὲ χρή ὀλίγα
 τῶν ὀθονίων κύκλῳ ἀμφὶ τὸ ἰσχύιον καὶ τὰς ἰξύας,
 ὅπως ἂν οἱ βουβῶνές τε καὶ τὸ ἄρθρον τὸ κατὰ
 τὴν πλιχάδα καλουμένην προσεπιδέηται· καὶ
 γὰρ ἄλλως συμφέρεи, καὶ ὅπως μὴ τὰ ἄκρεα τῶν
 ναρθήκων σίνηται πρὸς τὰ ἀνεπίδετα προσβαλ-
 λόμενα. ἀπολείπειν δὲ χρή ἀπὸ τοῦ γυμνοῦ αἰεὶ
 τοὺς νάρθηκας καὶ ἔνθεν καὶ ἔνθεν ἱκανῶς.² καὶ
 τὴν θέσιν αἰεὶ τῶν ναρθήκων προμηθεῖσθαι χρή,
 ὅπως μήτε κατὰ τὸ ὀστέον τῶν ἐξεχόντων παρὰ
 20 τὰ ἄρθρα φύσει πεφυκότων μήτε κατὰ τὸ
 21 [ἄρθρον]³ νεῦρον ἔσται.

XXI. Τὰ δὲ οἰδήματα τὰ κατ' ἰγνύην, ἢ κατὰ
 πόδα, ἢ κατὰ τι ἄλλο ἐξαειρεύμενα⁴ ὑπὸ τῆς

cient extension, you should adjust the parts with the palms of the hands and bandage in the same way as was described before, placing the head of the bandage as directed and carrying it upwards. And he should give the same answers as before, and experience the same trouble and relief. Let the change of dressing be made in the same way, and the same application of splints. The thigh-bone gets firm in forty days.

XX. One should also bear the following in mind, that the thigh-bone is curved outwards rather than inwards, and to the front rather than to the back, so it gets distorted in these directions if not skilfully treated. Futhermore it is less covered with flesh on these parts so that distortions cannot be hidden. If, then, you suspect anything of this kind, you should have recourse to the mechanical methods recommended for distortion of the upper arm. Some additional turns of bandage should be made round the hip and loins so that the groins and the joint at the so-called fork may be included, for besides other benefits, it prevents the ends of the splints from doing damage by contact with the uncovered parts. The splints should always come considerably short of the bare part at either end, and care should always be taken as to their position so that it is neither on the bone where there are natural projections about the joint, nor on the tendon.

XXI. As to the swellings which arise owing to pressure behind the knee or at the foot or elsewhere,

¹ Cf. VIII.

² *ἰκάρον*.

³ *ἄρθρον* could., except B, which omits. Kw. omits.

⁴ *ἐξαιρούμενα*.

- πιέξις, εἰρίοισι πολλοῖσι ῥυπαροῖσιν, εὖ κατ-
 εργασμένοισιν, οἶνω καὶ ἐλαίῳ ῥήνας, κηρωτῇ
 ὑποχρίων, καταδεῖν, καὶ ἦν πιέζωσιν οἱ νάρθηκες,
 χαλὰν θᾶσσον ἰσχυαίνοισ δ' ἄν, εἰ ἐπάνω ἐς¹ τοὺς
 νάρθηκας ὀφονίοισι ἰσχυοῖσιν ἐπιδέοις τὰ οἰδή-
 ματα, ἀρξάμενος ἀπὸ τοῦ κατωτάτω ἐπὶ τὸ ἄνω
 νεμόμενος· οὕτω γὰρ ἂν τάχιστα ἰσχυὸν τὸ οἰδήμα
 10 γένοιτο, καὶ ὑπερθοίῃ² ἂν ὑπὲρ τὰ ἀρχαῖα ἐπιδέσ-
 ματα· ἀλλ' οὐ χρὴ τούτῳ τῷ τρόπῳ χρῆσθαι
 τῆς ἐπιδέσιος, ἦν μὴ κίνδυνος ἦ ἐν τῷ οἰδήματι
 φλυκταινώσιος ἢ μελασμοῦ· γίνεται δὲ οὐδὲν
 τοιοῦτον, ἦν μὴ ἄγαν τις πιέξῃ τὸ κάτηγμα, ἢ
 κατακρεμάμενον ἔχῃ, ἢ κινήται τῇ χειρί, ἢ ἄλλο
 16 τι προσπίπτῃ ἐρεθιστικὸν ἐς³ τὸν χρῶτα.

- XXII. Σωλῆνα δὲ ἦν μὲν τις ὑπ' αὐτὸν τὸν
 μηρὸν ὑποθεῖη μὴ ὑπερβάλλοντα τὴν ἰγνύην,
 βλάπτοι ἂν μᾶλλον ἢ ὠφελέοι· οὔτε γὰρ ἂν τὸ
 σῶμα κωλύοι οὔτε τὴν κνήμην, ἄνευ τοῦ μηροῦ
 κινεῖσθαι· ἀσηρὸν γὰρ ἂν εἴη πρὸς τὴν ἰγνύην
 προσβαλλόμενον· καὶ ὁ ἥκιστα δεῖ, τοῦτ' ἂν
 ἐποτρύνοι ποιεῖν, [ἥκιστα γὰρ δεῖ]⁴ κατὰ τὸ γόνυ
 κάμπτειν· πᾶσαν γὰρ ἂν τύρβην παρέχοι τῇσιν
 ἐπιδέσεσιν, καὶ μηροῦ ἐπιδεδεμένου καὶ κνήμης,
 10 ὅστις κατὰ τὸ γόνυ κάμπτοι. ἀνάγκη γὰρ ἂν
 εἴη τούτῳ τοὺς μύας ἄλλοτε καὶ ἄλλοτε ἄλλο
 σχῆμα ἴσχειν· ἀνάγκη δ' ἂν εἴη καὶ τὰ ὀστέα
 τὰ κατεηγότα κίνησιν ἔχειν. περὶ παντὸς οὖν
 ποιητέον τὴν ἰγνύην ἐντετάσθαι. δοκέοι ἂν
 [ὁμοίως]⁵ ὁ σωλὴν ὁ περιέχων⁶ πρὸς τὸν πόδα ἀπὸ

¹ ἐπαρὲς Kw. suggested by Erm., confirmed by B.

² ὑπερθείη codd. ὑπερθοίη Littré. ὑπέλθοι . . . ὑπὸ B Kw.

³ πρὸς Kw.

dress them with plenty of crude wool, well pulled out, sprinkling it with oil and wine, after anointing with cerate, and if the splints cause pressure relax them at once. You will reduce the swellings by applying slender bandages after removing¹ the splints, beginning from the lowest part and passing upwards, for so the swelling would be most rapidly reduced and flow back above the original dressing. But you should not use this method of bandaging unless there is danger of blisters forming or mortification at the swelling. Now, nothing of this kind happens unless one puts great pressure on the fracture, or the part is kept hanging down or is scratched with the hand, or some other irritant affects the skin.

XXII. As to a hollow splint, if one should pass it under the thigh itself and it does not go below the bend of the knee it would do more harm than good; for it would prevent neither the body nor the leg from moving apart from the thigh, would cause discomfort by pressing against the flexure of the knee, and incite the patient to bend the knee, which is the last thing he should do. For when the thigh and leg are bandaged, he who bends the knee causes all sorts of disturbance to the dressings, since the muscles will necessarily change their relative positions and there will also necessarily be movement of the fractured bones. Special care, then, should be taken to keep the knee extended. I should think that a hollow splint reaching [evenly?] from hip to

¹ Reading ἐπανεῖς.

⁴ Kw. omits.

⁵ ὁμοίως seems out of place. μοι B Kw.

⁶ ὑπερέχων.

τοῦ ἰσχύου, ὠφελεῖν ὑποτιθέμενος· καὶ ἄλλως
κατ' ἰγνύην ταινίην χαλαρῶς περιβάλλειν σὺν
τῷ σωλῆνι, ὥσπερ τὰ παιδία ἐν τῇσι κοίτῃσι
σπαργανοῦται· εἶτα ἐπὴν ὁ μηρὸς ἐς τὸ ἄνω
20 διαστρέφοιτο¹ ἢ ἐς τὸ πλάγιον, εὐκατασχε-
τώτερον εἶη ἂν σὺν τῷ σωλῆνι οὕτως. ἦν οὖν
12 διαμπερὲς ἦ,² ποιητέος ὁ σωλὴν, ἢ οὐ ποιητέος.

XXIII. Πτέρυγος δὲ ἄκρης κύρτα χρὴ ἐπι-
μελεῖσθαι ὥς εὐθέτως ἔχῃ, καὶ ἐν τοῖσι κατὰ
κνήμην καὶ ἐν τοῖσι κατὰ μηρὸν κατήγμασιν. ἦν
μὲν γὰρ ἀπαιωρῆται ὁ πούς τῆς ἄλλης κνήμης
ἡρματισμένης, ἀνάγκη κατὰ τὸ ἀντικνήμιον τὰ
ὀστέα κυρτὰ φαίνεσθαι· ἦν δὲ ἡ μὲν πτέρυγος
ὑψηλοτέρη [ἢ] τοῦ μετρίου ἡρτισμένη,³ ἢ δὲ ἄλλη
κνήμη ὑπομετέωρος ἦ, ἀνάγκη τὸ ὀστέον τοῦτο
κατὰ τὸ ἀντικνήμιον τοῦτο κοιλότερον φανῆναι
10 τοῦ μετρίου, προσέτι καὶ ἦν ἡ πτέρυγος τυγχάνῃ
ἐούσα τοῦ ἀνθρώπου φύσει μεγάλη. ἀτὰρ καὶ
κρατύνεται πάντα τὰ ὀστέα βραδύτερον, ἦν μὴ
κατὰ φύσιν κείμενα [ἢ, καὶ τὰ μὴ]⁴ ἀτρε-
μέοντα ἐν τῷ αὐτῷ σχήματι καὶ αἱ πωρώσιες
15 ἀσθενέστεραι.

XXIV. Ταῦτα μὲν δὴ, ὅσοισι τὰ μὲν ὀστέα
κατέηγεν, ἐξέχει δὲ μή, μηδὲ ἄλλως ἔλκος ἐγένετο.
οἷσι δὲ καὶ τὰ ὀστέα κατέηγεν ἀπλῶ τῷ τρόπῳ
καὶ μὴ πολυσχιδεῖ, αὐτὴ ἡμέρα ἐμβληθέντα ἢ τῇ
ὑστεραίῃ, καὶ κατὰ χώραν ἰζόμενα, καὶ μὴ
ἐπίδοξος ἢ ἀπόστασις παρασχίδων ὀστέων ἀπ-
ιέναι, ἢ καὶ οἷσιν ἔλκος μὲν ἐγένετο, τὰ δὲ ὀστέα
τὰ κατεηγότα οὐκ ἐξίσχει, οὐδ' ὁ τρόπος τῆς
κατήξιος τοιοῦτος οἷος παρασχίδας ὀστέων ἐούσας

¹ διαστρέφεται.² διαμπερὲς σοι.

foot would be useful, especially with a band passed loosely round at the knee to include the splint, as babies are swaddled in their cots. Then if the thigh-bone is distorted upwards (*i.e.* forwards) or sideways it will thus be more easily controlled by the hollow splint. You should, then, use the hollow splint for the whole limb or not at all.

XXIII. In fractures both of the leg and of the thigh great care should be taken that the point of the heel is in good position. For if the foot is in the air while the leg is supported, the bones at the shin necessarily present a convexity, while if the foot is propped up higher than it should be, and the leg imperfectly supported,¹ this bone in the shin part has a more hollow appearance than the normal, especially if the heel happens to be large compared with the average in man. So, too, all bones solidify more slowly if not placed in their natural position and kept at rest in the same posture, and the callus is weaker.

XXIV. The above remarks apply to those whose bones are fractured without protrusion or wound of other kind. In fractures with protrusion, where they are single and not splintered, if reduced on the same or following day, the bones keeping in place, and if there is no reason to expect elimination of splinters, or even cases in which, though there is an external wound, the broken bones do not stick out, nor is the nature of the fracture such that any

¹ ὑπομετέωρος, "rather low." Adams.

² ἡρματισμένη ᾗ.

³ καταμένη Kw.'s conjecture. B M V omit ᾗ. B has καὶ τὰ μὲν μῆ.

- 10 ἐπιδόξους εἶναι ἀναπλῶσαι τοὺς τοιούτους οἱ
 μὲν μήτε μέγα ἀγαθὸν μήτε μέγα κακὸν ποιούντες,
 ἡτρεύνουσι τὰ μὲν ἔλκεα καθαρτικῶ τινί, ἢ
 πισσηρὴν ἐπιθέντες, ἢ ἔναιμον ἢ ἄλλο τι ὦν
 εἰώθασι ποιεῖν· ἐπάνω δὲ τοὺς οἰνηροὺς σπλήνας
 ἢ εἴρια ῥυπαρὰ ἐπιδέουσιν ἢ ἄλλο τι τοιούτου.
 ἐπὶ δὲ τὰ ἔλκεα καθαρὰ γένηται καὶ ἤδη
 συμφύηται, τότε τοῖσιν ὀθονίοισι συγχροῖσι πει-
 ρῶνται ἐπιδεῖν καὶ νάρθηξι κατορθοῦν. αὕτη
 μὲν ἢ ἱήσις ἀγαθὸν τι ποιεῖ, κακὸν δὲ οὐ μέγα.
 20 τὰ μέντοι ὅστέα οὐχ ὁμοίως δύναται ἰδρῦεσθαι ἐς
 τὴν ἐωυτῶν χώρην, ἀλλὰ τινι¹ ὀγκηρότερα
 σώματα τοῦ καιροῦ ταύτῃ γίνεται· γένοιτο δ' ἂν
 βραχύτερα, ὦν ἀμφότερα τὰ ὅστέα κατέηγεν ἢ
 24 πῆχους ἢ κινήμης.

XXV. Ἄλλοι δ' αὖ τινές εἰσι οἱ ὀθονίοισι τὰ
 τοιαῦτα ἡτρεύνουσι εὐθέως καὶ ἔνθεν μὲν καὶ ἔνθεν
 ἐπιδέουσιν τοῖσιν ὀθονίοισι, κατὰ δὲ τὸ ἔλκος
 αὐτὸ διαλείπουσι, καὶ ἐῶσιν ἀνεψύχθαι· ἔπειτα
 ἐπιτιθέασιν ἐπὶ τὸ ἔλκος τῶν καθαρτικῶν τι,
 καὶ σπλήνεσιν οἰνηροῖσι ἢ εἰρίοισι ῥυπαροῖσι
 θεραπεύουσιν. αὕτη ἢ ἱήσις κακὴ, καὶ εἰκὸς
 τοὺς οὕτως ἡτρεύνοντας τὰ μέγιστα ἀσυνετεῖν,
 καὶ ἐν τοῖσιν ἄλλοισι κατήγμασι καὶ ἐν τοῖσι
 10 τοιούτοισιν. μέγιστον γάρ ἐστι τὸ γινώσκειν
 καθ' ὅποιον τρόπον χρὴ τὴν ἀρχὴν μὲν βάλ-
 λεσθαι τοῦ ὀθονίου, καὶ καθ' ὅποιον μάλιστα
 πεπύεσθαι, καὶ οἷά τε ὠφελέονται ἢν ὀρθῶς τις
 βάλληται τὴν ἀρχὴν καὶ πιέξῃ ἢ μάλιστα χρὴ,
 καὶ οἷα βλάπτονται ἢν μὴ ὀρθῶς τις βάλληται
 μηδὲ πιέξῃ ἢ μάλιστα χρὴ, ἀλλὰ ἔνθεν καὶ εἴθεν.
 εἴρηται μὲν οὖν καὶ ἐν τοῖς πρόσθεν γεγραμ-

splinters are likely to come to the surface:—in such cases they do neither much good nor much harm who treat the wound with a cleansing plaster, either pitch cerate, or an application for fresh wounds, or whatever else they commonly use, and bind over it compresses soaked in wine, or uncleansed wool or something of the kind. And after the wounds are cleansed and already united, they attempt to make adjustment with splints and use a number of bandages. This treatment does some good and no great harm. The bones, however, cannot be so well settled in their proper place, but become somewhat unduly swollen at the point of fracture.¹ If both bones are broken, either of forearm or leg, there will also be shortening.

XXV. Then there are others who treat such cases at once with bandages, applying them on either side, while they leave a vacancy at the wound itself and let it be exposed. Afterwards, they put one of the cleansing applications on the wound, and treat it with pads steeped in wine, or with crude wool. This treatment is bad, and those who use it probably show the greatest folly in their treatment of other fractures as well as these. For the most important thing is to know the proper way of applying the head of the bandage, and how the chief pressure should be made, also what are the benefits of proper application and of getting the chief pressure in the proper place, and what is the harm of not placing the bandage rightly, and of not making pressure where it should chiefly be, but at one side or the other. Now, the results of each were ex-

¹ ὀστέα for σώματα; callus develops.

² τὴν καὶ τὰ ὀστέα.

- μένοισιν, ὅποια ἀφ' ἐκατέρων¹ ἀποβαίνει· μαρ-
 τυρεῖ δὲ καὶ αὐτὴ ἡ ἰητρείη· ἀνάγκη γὰρ τῷ οὕτως
 20 ἐπιδεομένῳ τὸ οἶδος ἐξαίρεσθαι ἐς αὐτὸ τὸ ἔλκος.
 καὶ γὰρ εἰ ὑγιῆς χρῶς ἔνθεν καὶ ἔνθεν ἐπιδεθείη,
 ἐν μέσῳ δὲ διαλειφθείη, μάλιστα κατὰ τὴν
 διάλειψιν οἰδήσειεν ἂν καὶ ἄχροιήσειεν· πῶς
 οὖν οὐχὶ ἔλκος γε ταῦτα ἂν πάθοι; ἀναγκαίως
 οὖν ἔχει ἄχρουν μὲν καὶ ἐκπεπλιγμένον τὸ ἔλκος
 εἶναι, δακρυῶδές τε καὶ ἀνεκπύητον, ὅστέα δέ,
 καὶ μὴ μέλλοντα ἀποστῆναι, ἀποστατικὰ γενέ-
 σθαι· σφυγμῶδές τε καὶ πυρῶδες τὸ ἔλκος ἂν
 εἴη. ἀναγκάζονται δὲ διὰ τὸ οἶδος ἐπικατα-
 30 πλάσσειν· ἀσύμφορον δὲ καὶ τοῦτο τοῖσιν ἔνθεν
 καὶ ἔνθεν ἐπιδεομένοισιν· ἄχθος γὰρ ἀνωφελές
 πρὸς τῷ ἄλλῳ σφυγμῷ ἐπιγίνεται. τελευτῶντες
 δὲ ἀπολύουσι τὰ ἐπιδέσματα, ὅποταν σφιν
 παλιγκοτῇ, καὶ ἰητρεύουσι τὸ λοιπὸν ἄνευ ἐπι-
 δέσιος· οὐδὲν δὲ ἦσσον, καὶ ἦν τι ἄλλο τρῶμα
 τοιοῦτον λάβωσι, τῷ αὐτῷ τρόπῳ ἰητρεύουσιν·
 οὐ γὰρ οἴονται τὴν ἐπίδεσιν τὴν ἔνθεν καὶ ἔνθεν,
 καὶ τὴν ἀνάψυξιν τοῦ ἔλκεος αἰτίην εἶναι, ἀλλὰ
 ἄλλην τινὰ ἀτυχίην· οὐ μέντοι γε ἂν ἔγραφον
 40 περὶ τούτου τοσαῦτα, εἰ μὴ εὖ μὲν ἦδεν ἀσύμ-
 φορον εἶδεν τὴν ἐπίδεσιν, συχνοὺς δὲ οὕτως
 ἰητρεύοντας, ἐπικαίρον δὲ τὸ ἀπομάθημα, μαρ-
 τύριον δὲ τοῦ ὀρθῶς γεγράφειν τὰ πρόσθεν
 γεγράμμενα εἴτε μάλιστα πιεστέα τὰ κατήγματα
 45 εἴτε ἥκιστα.

¹ ἐκατέρου.

¹ That is, an unhealthy discharge without "purification."

² Exposure here cannot mean exposure to cold or even bareness—the foolish surgeons cover the wound with wool or

plained in what has been written above. The treatment, too, is itself evidence; for in a patient so bandaged the swelling necessarily arises in the wound itself, since if even healthy tissue were bandaged on this side and that, and a vacancy left in the middle, it would be especially at the vacant part that swelling and decoloration would occur. How then could a wound fail to be affected in this way? For it necessarily follows that the wound is discoloured with everted edges, and has a watery discharge devoid of pus,¹ and as to the bones, even those which were not going to come away do come away. The wound will become heated and throbbing, and they are obliged to put on an additional plaster because of the swelling; and this too will be harmful to patients bandaged at either side of the wound, for an unprofitable burden is added to the throbbing. They finally take off the dressings, when they find there is aggravation, and treat it for the future without bandaging. Yet none the less, if they get another wound of the same sort, they use the same treatment, for they do not suppose that the outside bandaging and exposure² of the wound is to blame, but some mishap. However, I should not have written so much about this had I not known well the harmfulness of this dressing and that many use it; and that it is of vital importance to unlearn the habit. Besides, it is an evidence of the truth of what was written before on the question whether the greatest or least pressure should come at the fracture.³

pads.—it means absence of due pressure, the proper graduation of which is the main point in Hippocratic bandaging.

³ According to Adams this warning was still necessary in his time.

XXVI. Χρὴ δέ, ὥς ἐν κεφαλαίῳ εἰρῆσθαι, οἷσιν
 ἂν μὴ ἐπίδοξος ἦ ἢ τῶν ὁστέων ἀπόστασις
 ἔσσεσθαι, τὴν αὐτὴν ἱητρείην ἱητρεύειν, ὥσπερ ἂν
 οἷσιν ὁστέα μὲν κατεηγότα εἴη, ἔλκος δὲ μὴ
 ἔχοντα· τὰς τε γὰρ κατατάσιας καὶ κατορθώσιας
 τῶν ὁστέων τὸν αὐτὸν τρόπον ποιεῖσθαι, τὴν τε
 ἐπίδεσιν παραπλήσιον τρόπον. ἐπὶ μὲν αὐτὸ
 τὸ ἔλκος πισσηρὴν κηρωτὴν χρίσαντα, σπλῆνα
 λεπτὸν διπλόον ἐπιδεθῆναι,¹ τὰ δὲ πέριξ κηρωτῇ
 10 λεπτῇ χρίειν. τὰ δὲ ὀθόνια καὶ τὰ ἄλλα πλα-
 τύτερά τινι ἐσχισμένα ἔστω, ἢ εἰ μὴ ἔλκος εἶχεν·
 καὶ ᾧ ἂν πρώτῳ ἐπιδέηται, συχνῶ ἔστω τοῦ
 ἔλκεος πλατύτερον. τὰ γὰρ στενότερα τοῦ
 ἔλκεος ζώσαντα ἔχει τὸ ἔλκος· τὸ δὲ οὐ χρή.
 ἀλλ' ἢ πρώτη περιβολὴ ὅλον κατεχέτω τὸ ἔλκος,
 καὶ ὑπερεχέτω τὸ ὀθόνιον ἔνθεν τε καὶ ἐνθεν.
 βάλλεσθαι μὲν οὖν χρὴ τὸ ὀθόνιον κατ' αὐτὴν τὴν
 ἵξιν τοῦ ἔλκεος, πιέζειν δὲ ὀλίγῳ ἡσσον ἢ εἰ
 μὴ ἔλκος εἶχεν, ἐπινέμεσθαι δὲ τῇ ἐπιδέσει
 20 ὥσπερ καὶ πρόσθεν εἴρηται. τὰ δὲ ὀθόνια αἰεὶ
 μὲν τοῦ τρόπου τοῦ μαλθακοῦ ἔστωσαν, μᾶλλον
 δέ τε² δεῖ ἐν τοῖσι τοιούτοισιν, ἢ εἰ μὴ ἔλκος εἶχεν.
 πλῆθος δὲ τῶν ὀθονίων· μὴ ἐλάσσῳ ἔστω τῶν
 πρότερον εἰρημένων, ἀλλὰ τινι καὶ πλείῳ. ἦν
 δὲ ἐπιδεθῇ, δοκεῖτω τῷ ἐπιδεδεμένῳ ἡρμόσθαι³
 μὲν, πεπιέχθαι δὲ μὴ· φάτω δὲ κατὰ τὸ ἔλκος
 μάλιστα ἡρμόσθαι. τοὺς δὲ χρόνους τοὺς αὐτοὺς
 μὲν χρὴ εἶναι ἐπὶ τὸ μᾶλλον δοκεῖν ἡρμόσθαι,
 τοὺς αὐτοὺς δὲ ἐπὶ τὸ μᾶλλον δοκεῖν χαλᾶν,
 30 ὥσπερ καὶ ἐν τοῖσι πρόσθεν εἴρηται. μετεπιδεῖν
 δὲ διὰ τρίτης, πάντα μεταποιέοντα ἐς τοὺς
 τρόπους τοὺς παραπλησίους, ὥσπερ καὶ πρόσθεν

XXVI.¹ To speak summarily, when there is no likelihood of elimination of bone, one should use the same treatment as in cases of fracture without external wound. The extensions and adjustments of the bones should be made in the same way, and so too with the bandaging. After anointing the wound itself with pitch cerate, bind a thin doubled compress over it, and anoint the surrounding parts with a thin layer of cerate. The bandages and other dressings should be torn in rather broader strips than if there was no wound, and the one first used should be a good deal wider than the wound; for bandages narrower than the wound bind it like a girdle, which should be avoided; rather let the first turn take in the whole wound, and let the bandage extend beyond it on both sides. One should, then, put the bandage just in the line of the wound, make rather less pressure than in cases without a wound, and distribute the dressing as directed above. The bandages should always be of the pliant kind, and more so in these cases than if there was no wound. As to number, let it not be less than those mentioned, before but even a little greater. When the bandaging is finished it should appear to the patient to be firm without pressure, and he should say that the greatest firmness is over the wound. There should be the same periods of a sensation of greater firmness, and greater relaxation as were described in the former cases. Change the dressings every other day, making the changes in similar

¹ Proper treatment of compound fractures.

¹ ἐπιθεῖναι.

² τε.

³ ἡρμάσθαι bis.

εἴρηται, πλὴν ἐς τὸ σύμπαν ἡσσόν τινι πιέζειν
ταῦτα ἢ ἐκεῖνα. καὶ ἦν κατὰ λόγον τὰ εἰκότα
γένηται, ἰσχυρότερον μὲν αἰεὶ εὐρεθήσεται τὸ κατὰ
τὸ ἔλκος, ἰσχυρὸν δὲ καὶ τὸ ἄλλο πᾶν τὸ ὑπὸ
τῆς ἐπιδέσιος κατεχόμενον· καὶ αἱ τε ἐκπυήσεις
ἔσονται θάσσους ἢ τῶν ἄλλως ἰητρευμένων
ἐλκέων, ὅσα τε σαρκία ἐν τῷ τρώματι ἐμελάνθη
40 καὶ ἐθανατώθη, θᾶσσον περιρρήγνυται καὶ ἐκπίπ-
τει ἐπὶ ταύτῃ τῇ ἰητρείῃ ἢ ἐν τῇσι ἄλλησιν, ἐς
ὤτειλās τε θᾶσσον ὀρμᾶται τὸ ἔλκος οὕτως ἢ
ἄλλως ἰητρευμένον. πάντων δὲ τούτων αἴτιον
ὅτι ἰσχυρὸν μὲν τὸ κατὰ τὸ ἔλκος χωρίον γίνεται,
ἰσχυρὰ δὲ τὰ περιέχοντα. τὰ μὲν οὖν ἄλλα
πάντα παραπλησίως χρὴ ἰητρεύειν, ὥς τὰ ἄνευ
ἐλκώσιος ὁστέα κατηγνύμενα· τοὺς δὲ νάρθηκας
οὐ χρὴ προστιθέναι. διὰ τοῦτο καὶ τὰ ὀθόνια
χρὴ τούτοις πλείω εἶναι ἢ τοῖσιν ἐτέροις, ὅτι
50 τε ἡσσον πιέζεται, ὅτι τε οἱ νάρθηκες βραδύτεροι¹
προστιθένται· ἦν μέντοι τοὺς νάρθηκας προσ-
τιθῆς, μὴ κατὰ τὴν ἵξιν τοῦ ἔλκεος προστιθέναι,
ἄλλως τε καὶ χαλαρῶς προστιθέναι, προμηθεύ-
μενος² ὅπως μηδεμίῃ σφίγξις μεγάλη ἔσται
ἀπὸ τῶν νερθῆκων· εἴρηται δὲ τοῦτο καὶ ἐν τοῖσι
πρότερον γεγραμμένοις. τὴν μέντοι δίαιταν
ἀκριβεστέραν καὶ πλείω χρόνον χρὴ ποιεῖσθαι
οἷσιν ἐξ ἀρχῆς ἔλκεα γίνεται καὶ οἷσιν ὁστέα
ἐξίσχει· καὶ τὸ σύμπαν δὲ εἰρῆσθαι, ἐπὶ τοῖσιν
60 ἰσχυροτάτοις τρώμασιν ἀκριβεστέραν καὶ
61 πολυχρονιωτέραν εἶναι χρὴ τὴν δίαιταν.

XXVII. Ἡ αὐτὴ ἰητρεία τῶν ἐλκέων καὶ οἷσιν
ὁστέα μὲν κατέηγεν, ἔλκος δὲ ἐξ ἀρχῆς μηδὲν
ἦ, ἦν δὲ ἐν τῇ ἰητρείῃ ἔλκος γένηται, ἢ τοῖσιν
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fashion except that, on the whole, the pressure should be less in these cases. If the case takes a natural course according to rule, the part about the wound will be found progressively diminished and all the rest of the limb included in the bandage will be slender. Purification¹ will take place more rapidly than in wounds treated otherwise, and all fragments of blackened or dead tissue are more rapidly separated and fall off under this treatment than with other methods. The wound, too, advances more quickly to cicatrisation thus than when treated otherwise. The cause of all this is that the wound and the surrounding parts become free from swelling. In all other respects, then, one should treat these cases like fractures without a wound, but splints should not be used.² This is why the bandages should be more numerous than in the other cases both because there is less pressure and because the splints are applied later. But if you do apply splints, do not put them in the line of the wound; especially apply them loosely, taking care that there is no great compression from the splints. This direction was also given above. Diet, however, should be more strict and kept up longer in cases where there is a wound from the first and where the bones protrude, and on the whole, the greater the injury the more strict and prolonged should be the dieting.

XXVII. The same treatment of the wounds applies also to cases of fracture which are at first without wound, but where one occurs during treat-

¹ *i.e.* discharge of laudable pus.

² We must evidently understand "so soon."

¹ βραδύτερον.

² προμηθευμένοις codd. Pq.

- ὀθονίοισι μᾶλλον πιεχθέντος, ἢ ὑπὸ νάρθηκος
 ὠενέδρης, ἢ ὑπὸ ἄλλης τινὸς προφάσιος. γινώ-
 σκεται μὲν οὖν τὰ τοιαῦτα, ἣν ἔλκος ὑπὴ, τῇ
 τε ὀδύνῃ καὶ τοῖσι σφυγμοῖσιν· καὶ τὸ οἶδημα
 τὸ ἐν τοῖσι ἄκροισι σκληρότερον γίγνεται τῶν
 τοιούτων, καὶ εἰ τὸν δάκτυλον ἐπαγάγοις, τὸ
 10 ἔρευθος ἐξαείρεται,¹ ἀτὰρ καὶ αὖθις ἀποτρέχει
 ταχέως. ἣν οὖν τι τοιοῦτον ὑποπτεύῃς, λύσαντα
 χρή, ἣν μὲν ἡ κνησμὸς κατὰ τὰς ὑποδεσμίδας
 ἢ ἐπὶ² τὸ ἄλλο τὸ ἐπιδεδεμένον πισσηρῇ κηρωτῇ
 ἀντὶ τῆς ἐτέρης χρήσθαι· ἣν δὲ τούτων μὲν μηδὲν
 ἦ, αὐτὸ δὲ τὸ ἔλκος ἡρεθισμένον εὐρίσκεται
 μέλαν ἐπὶ πολὺ ἢ³ ἀκάθαρτον, καὶ τῶν μὲν
 σαρκῶν ἐκφυησομένων, τῶν δὲ νεύρων προσεκ-
 πεσουμένων, τούτους οὐδὲν δεῖ ἀναψύχειν παντά-
 πασιν, οὐδέ τι φοβεῖσθαι τὰς ἐκφυήσιας ταύτας,
 20 ἀλλ' ἰητρεύειν τὰ μὲν ἄλλα παραπλήσιον τρόπον,
 ὥσπερ καὶ οἷσιν ἐξ ἀρχῆς ἔλκος ἐγένετο. τοῖσι
 δὲ ὀθονίοισιν ἄρχεσθαι χρή ἐπιδέοντα ἀπὸ τοῦ
 οἰδήματος τοῦ ἐν τοῖσιν ἀκρέοισι πάννυ χαλαρῶς,
 καὶ ἔπειτα ἐπινέμεσθαι τῇ ἐπιδέσει αἰεὶ ἐς τὸ
 ἄνω, καὶ πεπιέχθαι μὲν οὐδαμῇ, ἡρμόσθαι⁴ δὲ
 μάλιστα κατὰ τὸ ἔλκος, τὰ δὲ ἄλλα ἐπὶ ἥσσον.
 τὰ δὲ ὀθόνια τὰ πρῶτα, ταῦτα μὲν καθαρὰ ἔστω
 καὶ μὴ στενί· τὸ δὲ πλῆθος τῶν ὀθονίων ἔστω
 ὅσον περ καὶ ἐν τοῖσι νάρθηξιν, εἰ ἐπιδέονται,⁵ ἢ
 30 ὀλίγω ἔλασσον. ἐπὶ δὲ αὐτὸ τὸ ἔλκος ἱκανὸν
 σπληνίον τῇ λευκῇ κηρωτῇ κεχρισμένον· ἣν τε
 γὰρ σὰρξ ἣν τε νεῦρον μελανθῇ, προσεκπεσεῖται·
 τὰ γὰρ τοιαῦτα οὐ χρή δριμέσιν ἰητρεύειν, ἀλλὰ

¹ ἐλείργεται Kw.'s conjecture. Kw.'s note ἐλείργεται scripsi, ἐξαρείεται B¹, ἐξαείρεται B² Pq., ἐξαείραται M V, ἐξαιρέεται

ment either through too great compression by bandages or the pressure of a splint or some other cause. In such cases the occurrence of ulceration is recognised by pain and throbbing: also the swelling on the extremities gets harder, and if you apply the finger the redness is removed but quickly returns. So, if you suspect anything of this kind you should undo the dressings, if there is irritation below the under bandages, or in the rest of the bandaged part, and use pitch cerate instead of the other plaster. Should there be none of this, but the sore itself is found to be irritated, extensively blackened or foul with tissues about to suppurate and tendons on the way to be thrown off, it is by no means necessary to leave them exposed, or to be in any way alarmed at these suppurations, but treat them for the future in the same manner as cases in which there is a wound from the first. The bandaging should begin from the swelling at the extremities and be quite slack; then it should be carried right on upwards, avoiding pressure in any place, but giving special support at the wound and decreasing it elsewhere. The first bandages must be clean and not narrow, their number as many as when splints are applied or a little fewer. On the wound itself a compress anointed with white cerate is sufficient; for if flesh or tendon be blackened it will also come away. One should treat such cases not with irritant, but

Litt., ἐξανίσταται Wb, τὸ ἔρευθος ἐξαίρεται Galen in cit., ἐξαρύαται: ἐκκενοῦται ἐκθλίβεται Galen in cœcygesî. Such is the discord about this word whenever it occurs; but the meaning seems obvious.

² καὶ omitting ἤ. ³ ἡ ἐπὶ πολὺ ἀκάθαρτον omitting μέλαν.
⁴ ἡρμάσθαι. ⁵ ἐπιδέοιτο.

μιλθακοῖσιν, ὥσπερ τὰ περίκυστα. μετεπιδεῖν δὲ διὰ τρίτης, νάρθηκας δὲ μὴ προστιθέναι· ἀτρεμεῖν δὲ ἐπὶ μᾶλλον ἢ τὸ πρόσθεν, καὶ ὀλιγοσιτεῖν· εἰδέναι δὲ χρὴ εἶτε σάρξ, εἶτε νεῦρον τὸ ἐκπεσούμενον ἔστι, ὅτι οὕτω πολλῶ μὲν ἥσσον νέμεται ἐπὶ πλεῖον, πολλῶ δὲ θᾶσσον
 40 ἐκπεσεῖται, πολλῶ δὲ ἰσχυρότερα τὰ περιέχοντα ἔσται, ἢ εἴ τις ἀπολύσας τὰ ὀθόνια ἐπιθείη τι τῶν καθαρτικῶν φαρμάκων ἐπὶ τὸ ἔλκος. καίτοι καὶ ἦν ἐκπέσῃ τὸ ἐκπυησόμενον, θᾶσσόν τε σαρκούται ἐκείνως ἢ ἐτέρως ἰητρευόμενον, καὶ θᾶσσον ὠτειλούται. πάντα μὲν ἔστι ταῦτα ὀρθῶς ἐπιδεῖν καὶ μετρίως ἐπίστασθαι. προσσυμβάλλεται δὲ καὶ τὰ σχήματα καὶ οἷα χρὴ εἶναι, καὶ ἡ ἄλλη
 48 δίαίτα, καὶ τῶν ὀθονίων ἡ ἐπιτηδειότης.

XXVIII. Ἦν δὲ ἄρα ἐξαπατηθῆς ἐν τοῖσι νεοτρώτοισι, μὴ οἶόμενος ὁστέων ἀπόστασιν ἔσεσθαι, τὰ δ' ἐπίδοξα ἢ ἀναπλῶσαι, οὐ χρὴ ὀρρωδεῖν τοῦτον τὸν τρόπον τῆς ἰητρείης, οὐδὲν γὰρ ἂν μέγα φλαῦρον γένοιτ' ἂν,¹ ἦν μόνον οἷός τε ἦς τῇ χειρὶ τὰς ἐπιδέσις ἀγαθὰς καὶ ἀσινέας ποιεῖσθαι. σημεῖον δὲ τόδε, ἦν μέλλῃ ὁστέων ἀπόστασις ἔσεσθαι ἐν τῷ τρόπῳ τούτῳ τῆς ἰητρείης· πῦον γὰρ συχνὸν ῥέει ἐκ τοῦ ἔλκεος
 10 καὶ ὄργαν φαίνεται. πυκνότερον οὖν μετεπιδεῖσθαι² διὰ τὸ πλάδον· ἐπεὶ ἄλλως τε καὶ ἀπύρετοι γίνονται, ἦν μὴ κάρτα πιέζωνται ὑπὸ τῆς ἐπιδέσις, καὶ τὸ ἔλκος καὶ τὰ περιέχοντα ἰσχνά· ὅσαι μὲν οὖν λεπτῶν πάνυ ὁστέων

¹ γένοιτο.² μετεπιδεῖν.

with mild applications, just like burns. Change the dressing every other day but do not apply splints. Keep the patient at rest and on low diet even more than in the former case. One should know if either flesh and tendon is going to come away that the loss will be much less extensive and will be brought about much quicker, and the surrounding parts will be much less swollen (by this treatment), than if on removing the bandage one applied some detersive plaster to the wound. Besides, when the part that is going to suppurate off does come away, flesh formation and cicatrisation will be more rapid with the former treatment than with any other. The whole point is to know the correct method and due measure in dressing these cases. Correctness of position also contributes to the result, as well as diet and the suitability of the bandages.

XXVIII. If, perchance, you are deceived in fresh cases, and think there will be no elimination of bones, yet they show signs of coming to the surface, the use of the above mode of treatment need not cause alarm, for no great damage will be done if only you have sufficient manual skill to apply the dressings well and in a way that will do no harm. The following is a sign of approaching elimination of bone in a case thus treated. A large amount of pus flows from the wound, which appears turgid. So the dressing should be changed more often because of the soaking,¹ for thus especially they get free from fever, if there is no great compression by the bandages, and the wound and surrounding parts are not engorged. But separations of very small fragments require no great

¹ "Maceration," "abundance of humours."

- ἀποστάσεις, οὐδεμίας μεγάλης μεταβολῆς δέονται, ἀλλ' ἡ χαλαρώτερα ἐπιδεῖν, ὥς μὴ ἀπολαμβάνηται τὸ πῦον, ἀλλ' εὐαπόρρυντον, ἡ καὶ πυκνότερον μετεπιδεῖν ἔστ' ἂν ἀποστῇ τὸ ὀστέον, καὶ
- 19 νάρθηκας μὴ προστιθέναι.

- XXIX. Ὅπόσοισι δὲ μείζονος ὀστέου ἀπόστασις ἐπίδοξος γένηται, ἣν τε ἐξ ἀρχῆς προγνῶς, ἣν τε καὶ ἔπειτα μεταγνῶς, οὐκ ἔτι τῆς αὐτῆς ἰητρείης δεῖται,¹ ἀλλὰ τὰς μὲν κατατάσιαις καὶ τὰς διορθώσιαις οὕτω ποιεῖσθαι ὥσπερ εἴρηται· σπλῆνας δὲ χρὴ διπλοῦς, πλάτος μὲν ἡμισπιθαιμαίους, μὴ ἐλάσσους (ὅποῖον δὲ ἂν τι καὶ τὸ τρῶμα ἦ, πρὸς τοῦτο τεκμαίρεσθαι), μῆκος δὲ βραχυτέρους μὲν ὀλίγῳ ἢ ὥστε δις περιῖκνεῖσθαι
- 10 περὶ τὸ σῶμα τὸ τετρωμένον, μακροτέρους δὲ συχνῶ ἢ ὥστε ἅπαξ περιῖκνεῖσθαι, πλῆθος δὲ ὀπόσους ἂν συμφέρῃ, ποιησάμενον, τούτους ἐν οἴνῳ μέλανι αὐστηρῶ βρέχοντα, χρὴ ἐκ μέσου ἀρχόμενον, ὥς ἀπὸ δύο ἀρχῶν ὑποδεσμὶς ἐπιδεῖται, περιελίσσειν, κἄπειτα σκεπαρνηδὸν παραλλάσσοντα τὰς ἀρχὰς ἀφιέναι. ταῦτα κατὰ τε αὐτὸ τὸ ἔλκος ποιεῖν καὶ κατὰ τὸ ἔνθεν καὶ ἔνθεν τοῦ ἔλκεος· καὶ πεπιέχθω μὲν μῆ, ἀλλ' ὅσον ἔρμασμοῦ ἔνεκεν τοῦ ἔλκεος προσκείσθω. ἐπὶ
- 20 δὲ αὐτὸ τὸ ἔλκος ἐπιτιθέναι χρὴ πισσηρήν, ἡ τι τῶν ἐναίμων ἡ τι τῶν ἄλλων φαρμάκων, ὃ τι σύντροφόν² ἐστίν [ὃ] ἐπιτέγξει.³ καὶ ἦν μὲν ἡ ὥρη θερινὴ ἦ, ἐπιτέγγειν τῷ οἴνῳ τοὺς σπλῆνας πυκνά· ἦν δὲ χειμερινὴ ἡ ὥρη ἦ, εἴρια πολλὰ

alteration of treatment beyond either loose bandaging so as not to intercept the pus but allow it to flow away freely; or even more frequent change of dressing till the bone separates, and no application of splints.

XXIX. But in cases where separation of a rather large bone is probable, whether you prognosticate it from the first, or recognise it later, the treatment should not be the same, but, while the extensions and adjustments should be done as was directed, the compresses should be double, half a span¹ in breadth at least—take the nature of the wound as standard for this—and in length a little less than will go twice round the wounded part, but a good deal more than will go once round. Provide as many of these as may suffice, and after soaking them in dark astringent wine, apply them beginning from their middle as is done with a two headed under bandage; enveloping the part and then leaving the ends crossed obliquely, as with the adze-shaped bandage. Put them both over the wound itself and on either side of it, and though there should be no compression, they should be applied firmly so as to support the wound. On the wound itself one should put pitch cerate or one of the applications for fresh injuries or any other appropriate remedy which will serve as an embrocation. If it is summer time soak the compresses frequently with wine, but if

¹ Adams strangely calls a span a fathom here and elsewhere.

¹ δει.

² σύντροφόν, as Galen says, means “appropriate,” as in *Surgery*, XI.

³ ἐπιτέγει. Pq. takes as a verb. Kw. apparently takes it as subst., omitting ζ.

ῥυπαρὰ νενοτισμένα οἴνω καὶ ἐλαίῳ¹ ἐπικείσθω. ἱξαλὴν δὲ χρὴ ὑποτετάσθαι, καὶ εὐαπόρρυστα ποιεῖν, φυλάσσοντα τοὺς ὑπορρόους, μεμνημένον ὅτι οἱ τόποι οὗτοι, ἐν τοῖσι αὐτοῖσι σχήμασι πολλὸν χρόνον κειμένοισι, ἐκτρίμματα δυσάκεστα
30 ποιέουσιν.

- XXX. "Ὅσους δὲ μὴ οἶόν τε ἐπίδεσει ἰήσασθαι διὰ τινὰ τούτων τῶν εἰρημένων τρόπων ἢ τῶν ῥηθησομένων, τούτους περὶ πλέονος χρὴ ποιεῖσθαι ὅπως εὐθέτως σχήσουσι τὸ κατηγὸς τοῦ σώματος κατ' ἰθυωρίην, προσέχοντα τὸν νύον καὶ τῷ ἀνωτέρῳ δὲ μᾶλλον ἢ τῷ κατωτέρῳ. εἰ δέ τις μέλλοι καλῶς καὶ εὐχερῶς ἐργάζεσθαι, ἄξιον καὶ μηχανοποιήσασθαι, ὅπως κατὰ τασιν δικαίην καὶ μὴ βιαίην σχήσῃ² τὸ κατηγὸς τοῦ σώματος.
10 μᾶλλον³ δὲ ἐν κνήμῃ ἐνδέχεται μηχανοποιεῖν. εἴσι μὲν οὖν τινὲς οἱ ἐπὶ πᾶσι τοῖσι τῆς κνήμης κατήγμασι, καὶ τοῖσι ἐπιδεομένοισι καὶ τοῖσι μὴ ἐπιδεομένοισι, τὸν πόδα ἄκρον προσδέουσι πρὸς τὴν κλίνην ἢ πρὸς ἄλλο τι ξύλον παρὰ τὴν κλίνην κατορύξαντες. οὗτοι μὲν οὖν πάντα κακὰ ποιοῦσιν, ἀγαθὸν δὲ οὐδέν· οὔτε γὰρ τοῦ κατατείνεσθαι ἄκος ἐστὶ τὸ προσδεδέσθαι τὸν πόδα, οὐδὲν γὰρ ἦσσον τὸ ἄλλο σῶμα προσχωρήσει πρὸς τὸν πόδα καὶ οὕτως οὐκ ἂν ἔτι τείνοιτο.
20 οὐτ' αὖ⁴ ἐς τὴν ἰθυωρίην οὐδὲν ὠφελεῖ, ἀλλὰ καὶ βλάπτει· στρεφομένου γὰρ τοῦ ἄλλου σώματος ἢ τῇ ἢ τῇ, οὐδὲν κωλύσει ὁ δεσμὸς τὸν πόδα καὶ τὰ ὀστέα τὰ τῷ ποδὶ προσηρτημένα ἐπακολουθεῖν τῷ ἄλλῳ σώματι· εἰ δὲ μὴ προσεδέδετο, ἦσσον ἂν διεστρέφετο· ἦσσον γὰρ ἂν ἐγκατελείπετο ἐν τῇ κινήσει τοῦ ἄλλου σώματος. εἰ δέ

winter apply plenty of crude wool moistened with wine and oil. A goat's skin should be spread underneath to make free course for discharges, giving heed to drainage and bearing in mind that these regions (when patients lie a long time in the same posture) develop sores difficult to heal.

XXX. As to cases which cannot be treated by bandaging in one of the ways which have been or will be described, all the more care should be taken that they shall have the fractured limb in good position in accord with its normal lines, seeing to it that the slope is upwards rather than downwards. If one intends to do the work well and skilfully, it is worth while to have recourse to mechanism, that the fractured part may have proper but not violent extension. It is especially convenient to use mechanical treatment for the leg. Now, there are some who in all cases of leg fractures, whether they are bandaged or not, fasten the foot to the bed, or to some post which they fix in the ground by the bed. They do all sorts of harm and no good; for extension is not ensured by fastening the foot, since the rest of the body will none the less move towards the foot, and thus extension will not be kept up. Nor is it of any use for preserving the normal line, but even harmful. For when the rest of the body is turned this way or that, the ligature in no way prevents the foot and the bones connected with it from following the movement: If it were not tied up, there would be less distortion, for it would not be left behind so much in the movement of the rest of the body. Instead of this, one should get two

¹ Cf. the good Samaritan.

² μάλιστα.

³ σχήσει.

⁴ αὐτήν.

- τις σφαίρας δύο ῥάψαιτο ἐκ σκύτεος Αἰγυπτίου
 τοιαύτας οἷας φορέουσιν οἱ ἐν τῇσι μεγάλῃσι
 πέδησι πολλὸν χρόνον πεπεδημένοι, αἱ δὲ
 30 σφαῖραι ἔχοιεν ἔνθεν καὶ ἔνθεν χιτῶνας τὰ μὲν
 πρὸς τοῦ τρώματος βαθυτέρους, τὰ δὲ πρὸς τῶν
 ἄρθρων βραχυτέρους, εἶεν δὲ ὀγκηραὶ μὲν καὶ
 μαλθακαί, ἀρμόζουσαι δέ, ἡ μὲν ἄνωθεν¹ τῶν
 σφυρῶν, ἡ δὲ κάτωθεν² τοῦ γόνατος· ἐκ δὲ
 πλαγίης ἐκατέρης³ δισσὰ ἐκατέρωθεν ἔχοι προσ-
 ηρτημένα ἢ ἀπλόου ἱμάντος ἢ διπλόου, βραχύ-
 τερα⁴ ὥσπερ ἀγκύλας, τὰ μὲν τι τοῦ σφυροῦ
 ἐκατέρωθεν, τὰ δέ τι τοῦ γόνατος· [καὶ ἡ ἄνωθεν
 σφαῖρα ἕτερα τοιαῦτα ἔχοι]⁵ κατὰ τὴν ἰθυωρίην
 40 τὴν αὐτήν. κᾶπειτα κραναῖνας ῥάβδους τέσσαρας
 λαβὼν, ἴσας τὸ μέγεθος ἀλλήλησιν ἐχούσας,
 πάχος μὲν ὡς δακτυλιαίας, μῆκος δέ, ὡς κεκαμ-
 μέναι ἐναρμόσουσιν ἐς τὰ ὑπαιωρήματα, ἐπιμε-
 λόμενος ὅπως τὰ ἄκρα τῶν ῥάβδων μὴ ἐς τὸν
 χρῶτα, ἀλλ' ἐς τὰ ἄκρα τῶν σφαιρέων ἐγκέλσῃ.
 εἶναι δὲ χρὴ ζεύγεα τρία τῶν ῥάβδων, καὶ πλέω,
 καὶ τινι μακροτέρας τὰς ἐτέρας τῶν ἐτέρων καὶ
 τινι καὶ βραχυτέρας καὶ σμικροτέρας, ὡς καὶ
 μᾶλλον διατείνειν,⁶ ἣν βούληται, καὶ ἡσσον·
 50 καὶ ἔστωσαν δὲ αἱ ῥάβδοι ἐκατέραι ἔνθεν καὶ
 ἔνθεν τῶν σφυρῶν. ταῦτα τοίνυν εἰ καλῶς
 μηχανοποιηθεῖη, τὴν τε κατάτασιν καὶ δικαίην
 ἂν παρέχοι καὶ ὁμαλὴν κατὰ τὴν ἰθυωρίην, καὶ
 τῷ τρώματι πόνος οὐδεὶς ἂν εἴη· τὰ γὰρ ἀποπι-
 ἐσματα, εἴ τι καὶ ἀποπιέζοιτο, τὰ μὲν ἂν ἐς τὸν
 πόδα ἀπάγοιτο, τὰ δὲ ἐς τὸν μηρόν· αἱ τε ῥάβδοι
 εὐθετώτεραι, αἱ μὲν ἔνθεν, αἱ δὲ ἔνθεν τῶν
 σφυρῶν, ὥστε μὴ κωλύεσθαι τὴν θέσιν τῆς

rounded circlets sewn in Egyptian leather such as are worn by those who are kept a long time shackled in the large fetters. The circlets should have coverings on both sides deeper on the side facing the injury and shallower on that facing the joints. They should be large and soft, fitting the one above the ankle, the other below the knee. They should have on each side two attachments of leather thongs, single or double, short like loops, one set at the ankle on either side, the other on either side of the knee (and the upper circlet should have others like them in the same straight line, *i.e.* just opposite those below). Then take four rods of cornel wood of equal size, the thickness of a finger; and of such length as when bent they fit into the appendices, taking care that the ends of the rods do not press upon the skin but on the projecting edges of the circlet. There should be three or more pairs of rods, some longer than the others and some shorter and more slender, so as to exert greater or less tension at pleasure. Let the rods be placed separately on either side of the ankles. This mechanism if well arranged will make the extension both correct and even in accordance with the normal lines, and cause no pain in the wound, for the outward pressure, if there is any, will be diverted partly to the foot and partly to the thigh. The rods are better placed, some on one side and some on the other side of the ankles, so as not to interfere with the position of the

¹ τῷ ἄνωθεν.

² τῷ κάτωθεν.

³ ἐκατέρῃ.

⁴ βραχέα.

⁶ K.w. omits; Erm. omits the rest of the sentence also.

⁶ διατείνης,

κνήμης· τό τε τρώμα εὐκατάσκεπτον καὶ εὐ-
 60 βάστακτον· οὐδὲν γὰρ ἐμποδῶν, εἴ τις ἐθέλοι τὰς
 δύο τῶν ῥάβδων τὰς ἄνωτέρω αὐτὰς πρὸς ἀλ-
 λήλας ζεύξαι, καὶ ἦν τις κούφως βούλοιτο ἐπι-
 βάλλειν, ὥστε τὸ ἐπιβαλλόμενον μετέωρον ἀπὸ
 τοῦ τρώματος εἶναι. εἰ μὲν οὖν αἴ τε σφαῖραι
 προσηνέες καὶ καλαὶ καὶ μαλθακαὶ καὶ καιναὶ
 ῥαφέειν, καὶ ἡ ἔντασις τῶν ῥάβδων χρηστῶς
 ἐνταθείη, ὥσπερ ἤδη εἴρηται, εὐχρηστον τὸ
 μηχανήμα· εἰ δέ τι τούτων μὴ καλῶς ἔξει,
 βλάβητοι ἂν μᾶλλον ἢ ὠφελέοι. χρή δὲ καὶ τὰς
 70 ἄλλας μηχανὰς ἢ καλῶς μηχανᾶσθαι, ἢ μὴ
 μηχανᾶσθαι, αἰσχροὺν γὰρ καὶ ἄτεχρον μηχανο-
 72 ποιέοντα ἀμηχανοποιεῖσθαι.

XXXI. Τοῦτο δέ, οἱ πλείστοι τῶν ἱητρῶν τὰ
 κατήγματα καὶ τὰ σὺν ἔλκεσι καὶ τὰ ἄνευ ἐλκέων,
 τὰς πρώτας τῶν ἡμερέων ἱητρεύουσιν εἰρίοισι
 ῥυπαροῖσιν· καὶ οὐδέν τι ἄτεχρον δοκέει τοῦτο
 εἶναι. ὅπόσοι μὲν οὖν ἀναγκάζονται ὑπὸ τῶν
 αὐτίκα νεοτρώτων ἐόντων, οὐκ¹ ἔχοντες ὀθόνια,
 εἰρίοισι παρασκευάσασθαι, τούτοισι πλείστη
 συγγνώμη· οὐ γὰρ ἂν τις ἔχοι ἄνευ ὀθονίων ἄλλο
 τι πολλῷ βέλτιον εἰρίου ἐπιδῆσαι² τοιαῦτα· εἶναι
 10 δὲ χρή πάμπολλα καὶ πάνυ καλῶς εἰργασμένα καὶ
 μὴ τρηχέα· τῶν γὰρ ὀλίγων καὶ φλαύρων ὀλίγη
 καὶ ἡ δύναμις. ὅσοι δὲ ἐπὶ μῆν ἢ δύο ἡμέρας
 εἴρια ἐπιδεῖν δικαιοῦσι, τρίτῃ δὲ καὶ τετάρτῃ
 ὀθονίοισιν ἐπιδέοντες πιέζουσι, καὶ κατατείνουσι

¹ μή.² ἐπιδῆσαι ἐπί.

leg; and the wound is both easy to examine and easy to handle.¹ For, if one pleases, there is nothing to prevent the two upper rods from being tied together, so that, if one wants to put something lightly over it, the covering is kept up away from the wound. If then the circlets are supple, of good quality, soft and newly sewn, and the extension² by the bent rods suitably regulated as just described, the mechanism is of good use, but if any of these things are not well arranged it will harm rather than help. Other mechanisms also should either be well arranged or not used, for it is shameful and contrary to the art to make a machine and get no mechanical effect.

XXXI. Again, most practitioners treat fractures, whether with or without wounds, by applying uncleaned wool during the first days, and this appears in no way contrary to the art. Those who because they have no bandages are obliged to get wool for first-aid treatment³ are altogether excusable, for in the absence of bandages one would have nothing much better than wool with which to dress such cases; but it should be plentiful, well pulled out and not lumpy; if small in amount and of poor quality its value is also small. Now, those who think it correct to dress with wool for one or two days, and on the third or fourth day use bandages with compression and extension just at this period

¹ "Arrange" (Adams), better than "maintain" (Littré, Petrequin); "sustinere aliquid" (Ern.) suits the context—"easily bears a covering," but see Herod. II. 125.

² *ἐντασις* perhaps connected with use of word in architecture, "slight outward curvature."

³ Cf. Aristoph. *Acharn.* 12, *Vesp.* 275, *Lysist.* 987 on this use of wool.

τότε μάλιστα, οὔτοι πολὺ τι τῆς ἱητρικῆς καὶ
 κάρτα ἐπικαιρον ἀσυνετέουσιν· ἥκιστα γὰρ χρὴ
 τῇ τρίτῃ ἡμέρῃ ἢ τῇ τετάρτῃ στυφελίζειν πάντα
 τὰ τρώματα, ὥς ἐν κεφαλαίῳ εἰρήσθαι· καὶ
 μηλώσιας δὲ ¹ πάσας φυλάσσεσθαι χρὴ ἐν
 20 ταύτῃσι τῇσιν ἡμέρῃσι, καὶ ὁπόσοισιν ἄλλοισι
 τρώμασι ² ἡρέθισται. τὸ ἐπίπαν γὰρ ἢ τρίτῃ καὶ
 τετάρτῃ ἡμέρῃ ἐπὶ τοῖσι πλείστοισι τῶν τρωμά-
 των τίκτει τὰς παλιγκοτήσιας, καὶ ὅσα ἐς
 φλεγμονὴν καὶ ἀκαθαρσίην ὁρμᾷ, καὶ ὅσα ἂν ἐς
 πυρετοὺς ἦ· καὶ μάλα πολλοῦ ἄξιον τοῦτο τὸ
 μάθημα, εἴ πέρ τι καὶ ἄλλο· τίνι γὰρ οὐκ
 ἐπικοινωνεῖ τῶν ἐπικαιροτάτων ἐν ἱητρικῇ, οὐ
 κατὰ τὰ ἔλκεα μόνον, ἀλλὰ καὶ κατ' ἄλλα πολλὰ
 νοσήματα ; εἰ μὴ τις φήσειε καὶ τᾶλλα νοσήματα
 30 ἔλκεα εἶναι· ἔχει γὰρ τινα καὶ οὗτος ὁ λόγος
 ἐπιείκειαν· πολλαχῇ γὰρ ἡδέλφισται τὰ ἕτερα
 τοῖσι ἐτέροισι. ὁπόσοι μέντοι δικαιοῦσιν εἰρίοισι
 χρῆσθαι, ἔστ' ἂν ἐπτὰ ἡμέραι παρέλθωσιν, ἔπειτα
 κατατείνειν τε καὶ κατορθοῦν καὶ ὀθονίοισιν
 ἐπιδεῖν, οὔτοι οὐκ ἂν ἀσύνετοι ὁμοίως φανεῖν·
 καὶ γὰρ τῆς φλεγμονῆς τὸ ἐπικαιρότατον παρ-
 ελήλυθε, καὶ τὰ ὀστέα χαλαρὰ [καὶ εὐθεται] ³ μετὰ
 ταύτας τὰς ἡμέρας ἂν εἴη. πολλῶ μέντοι ἦσ-
 σηται καὶ αὕτη ἡ μελέτη τῆς ἐξ ἀρχῆς τοῖσιν
 40 ὀθονίοισιν ἐπιδέσιος· κεῖνος μὲν γὰρ ὁ τρόπος
 ἐβδομαίους ἐόντας ἀφλεγμάντους ἀποδείκνυσι,
 καὶ παρασκευάζει νάρθηξι τελέως ἐπιδεῖν· οὗτος
 δὲ ὁ τρόπος πολὺν ὑστερεῖ, βλάβας δέ τινας καὶ
 ἄλλας ἔχει. ἀλλὰ μακρὸν ἂν εἴη πάντα γράφειν.
 Ὅπόσοισι δὲ τὰ ὀστέα κατεηγότα καὶ ἐξ-

¹ χρή.² τρώματα.³ Pq. omits.

are very ignorant of the healing art, and that on a most vital point. For, to speak summarily, the third or fourth day is the very last on which any lesion should be actively interfered with; and all probings as well as everything else by which wounds are irritated¹ should be avoided on these days. For, as a rule, the third or fourth day sees the birth of exacerbations in the majority of lesions, both where the tendency is to inflammation and foulness, and in those which turn to fever. And if any instruction is of value this is very much so. For what is there of most vital importance in the healing art to which it does not apply, not only as regards wounds but many other maladies? Unless one calls all maladies wounds, for this doctrine also has reasonableness, since they have affinity one to another in many ways. But those who think it correct to use wool till seven days are completed and then proceed to extension, coaptation and bandaging would appear not so unintelligent, for the most dangerous time for inflammation is past, and the bones after this period will be found loose and easy to put in place. Still, even this treatment is much inferior to the use of bandages from the beginning, for that method results in the patients being without inflammation on the seventh day and ready for complete dressing with splints, while the former one is much slower, and has some other disadvantages; but it would take long to describe everything.

In cases where the fractured and projecting bones

¹ Littré—Adams, "in wounds attended by irritation," seems pleonastic (he has said that no wound is to be interfered with). *ὅκῳσα ἔλλα οἴσιν ἡρέθισται τρώμασιν* (Petrequin). This view is confirmed by Kw.'s reading,

ἰσχοντα μὴ δύνηται ἐς τὴν ἐωυτῶν χώρην καθι-
 δρῦεσθαι, ἥδε ἢ κατάστασις.¹ σιδήρια χρὴ
 ποιεῖσθαι ἐς τοῦτον τὸν τρόπον οὐπερ² οἱ μοχλοὶ
 ἔχουσιν, οἷς οἱ λατύποι χρέονται, τὸ μὲν τι
 50 πλατύτερον, τὸ δέ τι στενότερον· εἶναι δὲ χρὴ
 καὶ τρία καὶ ἔτι πλείω, ὥς τοῖσι μάλιστα
 ἀρμόζουσί τις χρῆσαιτο.³ ἔπειτα τούτοισι χρὴ
 ἅμα τῇ κατατάσει μοχλεύειν ὑπερβάλλοντα, πρὸς
 μὲν τὸ κατώτερον⁴ τοῦ ὀστέου τὸ κατώτερον
 ἐρείδοντα, πρὸς δὲ τὸ ἀνώτερον⁵ τὸ ἀνώτερον τοῦ
 σιδηρίου, ἀπλῶ δὲ λόγῳ, ὥσπερ εἰ λίθον τις ἢ
 ξύλον μοχλεύοι ἰσχυρῶς· ἔστω δὲ σθεναρὰ τὰ
 σιδήρια ὥς οἶόν τε, ὥς μὴ κάμπτηται. αὕτη
 μεγάλη τιμωρία, ἣν τε τὰ σιδήρια ἐπιτήδεια ἢ
 60 καὶ μοχλεύηται τις ὥς χρὴ· ὅποσα γὰρ ἀνθρώ-
 ποισιν ἄρμενα μεμηχάνηται, πάντων ἰσχυρότατά
 ἐστί τρία ταῦτα, ὄνου τε περιαγωγὴ καὶ μόχλευ-
 σις καὶ σφήνωσις· ἄνευ δὲ τούτων, ἢ ἐνὸς δέ⁶
 τινος ἢ πάντων, οὐδὲν τῶν ἔργων τῶν ἰσχυρο-
 τάτων οἱ ἄνθρωποι ἐπιτελέουσιν. οὐκ οὐκ ἀτι-
 μαστή αὕτη ἢ μόχλευσις· ἢ γὰρ οὕτως ἐμπε-
 σεῖται τὰ ὀστέα, ἢ οὐκ ἄλλως. ἦν δ' ἄρα τοῦ
 ὀστέου τὸ ἄνω παρηλλαγμένον μὴ ἐπιτήδειον
 ἔχῃ ἐνέδρην τῷ μοχλῷ, ἀλλὰ πάροξον ᾧ
 70 παραφέρῃ,⁷ παραγλύψασα χρὴ τοῦ ὀστέου
 ἐνέδρην τῷ μοχλῷ ἀσφαλέα ποιήσασθαι· μοχλεύ-
 ει δὲ χρὴ καὶ τείνειν αὐτήμερα ἢ δευτεραῖα,
 τριταῖα δὲ μή, τεταρταῖα δὲ ὥς ἥκιστα καὶ
 πεμπταῖα. καὶ μὴ ἐμβάλλοντα, ὀχλήσαντι δὲ
 ἐν ταύτησι τῇσιν ἡμέρησι, φλεγμονὴν αὖ

¹ καταστήσαι used by Asiatic Greeks for "put in its place." Galen, XVIII(2). 590.

cannot be settled into their proper place, the following is the method of reduction. One must have iron rods made in fashion like the levers used by stone masons, broader at one end and narrower at the other.¹ There should be three and even more that one may use those most suitable. Then one should use these, while extension is going on, to make leverage, pressing the under side of the iron on the lower bone, and the upper side against the upper bone, in a word just as if one would lever up violently a stone or log. The irons should be as strong as possible so as not to bend. This is a great help, if the irons are suitable and the leverage used properly; for of all the apparatus contrived by men these three are the most powerful in action—the wheel and axle, the lever and the wedge. Without some one, indeed, or all of these, men accomplish no work requiring great force. This lever method, then, is not to be despised, for the bones will be reduced thus or not at all. If, perchance, the upper bone over-riding the other affords no suitable hold for the lever, but being pointed, slips past,² one should cut a notch in the bone to form a secure lodgment for the lever. The leverage and extension should be done on the first or second day, but not on the third, and least of all on the fourth and fifth. For to cause disturbance without reduction on these days would set up inflam-

¹ "One rather broader—another narrower," Adams.

² "Presents a point which makes the lever slip," Pq.; "the protruding part is sharp," Adams.

² ὕπερ.

³ ἀρμόττουσι . . . χρήσεται.

⁴ κατωτέρω.

⁵ ἀνωτέρω.

⁶ τέ.

⁷ πάροξυν παραφέρη. πάροξυν ἔδν Littré.

ποιήσῃ, καὶ ἐμβάλλοντι οὐδὲν ἦσσον· σπασμὸν
 μέντοι ἐμβάλλοντι πολὺ ἂν μᾶλλον ποιήσειεν ἢ
 ἀπορήσαντι ἐμβάλλειν. ταῦτα εὖ χρὴ εἰδέναι·
 καὶ γὰρ εἰ ἐπιγένοιτο σπασμὸς ἐμβάλλοντι,
 80 ἐλπίδες μὲν οὐ πολλαὶ σωτηρίας· λυσιτελεῖ δὲ
 ὀπίσω ἐκβάλλειν τὸ ὀστέον, εἰ οἶόν τε εἴη
 ἀόχλως. οὐ γὰρ ἐπὶ τοῖσι χαλαρωτέροισι τοῦ
 καιροῦ σπασμοὶ καὶ τέτανοι ἐπιγίνονται, ἀλλὰ
 ἐπὶ τοῖσιν ἐντεταμένοισι μᾶλλον. περὶ οὗ οὖν
 ὁ λόγος, οὐ χρὴ ἐνοχλεῖν ἐν τῇσι προειρημένῃσιν
 ἡμέρησι ταύτησι, ἀλλὰ μελετᾶν ὅπως ἥκιστα
 φλεγμανεῖ τὸ ἔλκος καὶ μάλιστα ἐκπυήσῃ.
 ἐπὴν δὲ ἐπτά ἡμέραι παρέλθωσιν ἢ ὀλίγω
 πλείους, ἣν ἀπύρετος ἦ, καὶ μὴ φλεγμαίνει τὸ
 90 ἔλκος, τότε ἦσσον κωλύει πειρῆσθαι ἐμβάλλειν,
 ἣν ἐλπίζης κρατήσῃ, ἣν δὲ μή, οὐδὲν δεῖ μάτην
 92 ὀχλεῖν καὶ ὀχλεῖσθαι.

XXXII. Ἦν μὲν οὖν ἐμβάλλῃς τὰ ὀστέα ἐς τὴν
 ἐωυτῶν χώραν, γεγράφεται ἤδη οἱ τρόποι οἷως ¹
 χρὴ ἰητρεῦειν, ἣν τε ἐλπίζης ὀστέα ἀποστήσεσθαι
 ἣν τε μή. χρὴ δέ, καὶ ἣν μὲν ἐλπίζης ὀστέα
 ἀποστήσεσθαι, [ὥς ἔφην,] ² τῷ τρόπῳ τῶν ὀθονίων
 ἐπὶ πᾶσι τοῖσι τούτοις τὴν ἐπίδεσιν ποιεῖσθαι
 ἐκ μέσου τοῦ ὀθονίου ἀρχόμενον, ὥς ἐπὶ τὸ
 πολὺ, ὥς ἀπὸ δύο ἀρχῶν ὑποδεσμὶς ἐπιδεῖται·
 τεκμαίρεσθαι δὲ χρὴ πρὸς τὴν μορφήν τοῦ ἔλκεος,
 10 ὅπως ἥκιστα σεσηρὸς καὶ ἐκπεπλιγμένον ἔσται
 παρὰ τὴν ἐπίδεσιν· τοῖσι μὲν γὰρ ἐπὶ δεξιὰ
 ἐπιδεῖν συντρόφως ³ ἔχει, τοῖσι δὲ ἐπ' ἡριστερά,
 13 τοῖσι δὲ ἀπὸ δύο ἀρχέων.

¹ ὥς.

mation, and no less so if there was reduction; spasm, indeed, would much more likely be caused if reduction succeeded than if it failed. It is well to know this, for if spasm supervenes after reduction there is not much hope of recovery. It is advantageous to reproduce the displacement, if it can be done without disturbance, for it is not when parts are more relaxed than usual that spasms and tetanus supervene, but when they are more on the stretch. As regards our subject, then, one should not disturb the parts on the days above mentioned, but study how best to oppose inflammation in the wound and favour suppuration. At the end of seven days, or rather more, if the patient is free from fever and the wound not inflamed, there is less objection to an attempt at reduction, if you expect to succeed; otherwise you should not give the patient and yourself useless trouble.

XXXI. The proper modes of treatment after you reduce the bones to their place have already been described, both when you expect bones to come away and when you do not. Even when you expect bones to come away you should use in all such cases the method of separate bandages, as I said, beginning generally with the middle of the bandage as when an under-bandage is applied from two heads. Regulate the process with a view to the shape of the wound that it may be as little as possible drawn aside or everted by the bandaging: for in some cases it is appropriate to bandage to the right, in others to the left, in others from two heads.

² Omit Littré, Erm.

³ συντρίψας = οἰκείως (Galen). Cf. XXIX.

XXXIII. Ὅποσα δὲ κατηγορήθη ὅστέα ἐμπε-
 σεῖν, ταῦτα [αὐτὰ]¹ εἰδέναι χρή ὅτι ἀποστήσεται,
 καὶ ὅσα τελέως ἐψιλώθη τῶν σαρκῶν. ψιλοῦται
 δὲ ἐνίων μὲν τὸ ἄνω μέρος, μετεξετέρων δὲ
 κυκλωθὲν ἀμφιθνήσκουσιν² αἱ σάρκες· καὶ τῶν
 μὲν ἀπὸ τοῦ ἀρχαίου τρώματος σεσάπρισται
 ἔνια τῶν ὀστέων, τῶν δὲ οὐ· καὶ τῶν μὲν μᾶλλον,
 τῶν δὲ ἥσσον· καὶ τὰ μὲν σμικρά, τὰ δὲ μεγάλα.
 διὰ οὖν ταῦτα τὰ εἰρημένα οὐκ ἔστιν ἐνὶ ὀνόματι
 10 εἰπεῖν, ὅποτε τὰ ὀστέα ἀποστήσεται· τὰ μὲν
 γὰρ διὰ σμικρότητα, τὰ δὲ διὰ τὸ ἐπ' ἄκρου
 ἔχεσθαι, θᾶσσον ἀφίσταται· τὰ δέ, διὰ τὸ μὴ
 ἀφίστασθαι, ἀλλὰ λεπιδουῖσθαι, καταξηρανθέντα
 καὶ σαπρὰ γεγόμενα· πρὸς δὲ τούτοις, διαφέρει
 τι καὶ ἰητρείῃ ἰητρείης. ὥς μὲν οὖν τὸ ἐπίπαν
 τάχιστα τούτων ὀστέα ἀφίσταται ὧν τάχιστα
 μὲν αἱ ἐκπυήσιες, τάχιστα δὲ καὶ κάλλισται αἱ
 σαρκοφυῖαι, καὶ γὰρ αἱ ὑποφνόμεναι σάρκες
 κατὰ τὸ σинаρὸν αὐται μετεωρίζουσι τὰ ὀστέα
 20 ὥς ἐπὶ τὸ πολὺ. ὅλος μὲν ὁ κύκλος τοῦ ὀστέου,
 ἣν ἐν τεσσαράκοντα ἡμέρησιν ἀποστή, καλῶς
 ἀποστήσεται· ἔνια γὰρ ἐς ἐξήκοντα ἡμέρας
 ἀφικνεῖται [ἢ καὶ πλείους].³ τὰ μὲν γὰρ ἀραιότερα
 τῶν ὀστέων θᾶσσον ἀφίσταται, τὰ δὲ στερεώ-
 τερα, βραδύτερον· τὰ δὲ ἄλλα τὰ μείω, πολλὸν
 ἐνδοτέρω, ἄλλα δ' ἄλλως. ἀποπρίειν δ' ὀστέον
 ἐξέχον ἐπὶ τῶνδε τῶν προφασίων χρή· ἣν μὴ
 δύνηται ἐμβάλλειν, μικροῦ δέ τινος αὐτῷ δοκῇ
 δεῖν παρελθεῖν, καὶ οἷόν τε ἢ παραιρεθῆναι· ἣν
 30 τε ἀσηρὸν ἢ καὶ θραυδόν τι τῶν σαρκίων, καὶ
 δυσθεσίην παρέχῃ, ψιλόν τε τυγχάνῃ ἔόν, καὶ

¹ Omit B, Pq.

XXXIII. As to bones which cannot be reduced, it should be known that just these will come away, as also will those which are completely denuded. In some cases the upper part of the bones are denuded, in others the soft parts surrounding them perish, and the starting point of the necrosis is, in some of the bones, the old wound, in others not. It is more extensive in some and less so in others, and some bones are small, others large. It follows from the above that one cannot make a single statement as to when the bones will come away, for some separate sooner owing to their small size, others because they come at the end (of the fracture) while others do not come away (as wholes) but are exfoliated after desiccation and corruption. Besides this, the treatment makes a difference. As a general rule, bones are most quickly eliminated in cases where suppuration is quickest, and the growth of new flesh most rapid and good; for it is the growth of new flesh in the lesion that as a rule lifts up the fragments. As to a whole circle of bone, if it comes away in forty days it will be a good separation, for some cases go on to sixty days or even more. The more porous bones come away more quickly, the more solid more slowly; for the rest, the smaller ones take much less time, and so variously. The following are the indications for resection of a protruding bone: if it cannot be reduced, but only some small portion seems to come in the way, and it is possible to remove it; if it is harmful, crushing some of the tissues, and causing wrong position of the part, and if it is denuded, this also should

² περιθνήσκουσι.

³ Kw. Omits.

τὸ τοιοῦτον¹ ἀφαιρεῖν χρή. τὰ δὲ ἄλλα οὐδὲν μέγα διαφέρει, οὔτε ἀποπρίσαι οὔτε μὴ ἀποπρίσαι. σαφές γὰρ εἶδέναι χρή ὅτι ὅστέα, ὅσα τελέως στερέεται τῶν σαρκῶν καὶ ἐπιξηραίνεται, ὅτι πάντα τελέως ἀποστήσεται. ὅσα δὲ ἀπολεπιδούσθαι μέλλει, ταῦτα οὐ χρή ἀποπρίειν· τεκμαίρεσθαι δὲ χρή ἀπὸ τῶν τεταγμένων

39 σημείων τὰ τελέως ἀποστησόμενα.

XXXIV. Ἰητρεύειν δὲ τοὺς τοιούτους σπλήνεσι καὶ τῇ οἰνηρῇ ἰητρείῃ, ὥσπερ καὶ πρόσθεν γέγραπται ἐπὶ τῶν ἀποστησομένων ὀστέων. φυλάσσεσθαι δὲ χρή μὴ ψυχροῖσι² τέγγειν τὸν πρῶτον χρόνον· ῥιγέων γὰρ πυρετώδων κίνδυνος· κίνδυνος δὲ καὶ σπασμῶν· προκαλεῖται γὰρ σπασμὸν τὰ ψυχρά, ποτὶ δὲ καὶ ἔλκη. εἶδέναι δὲ χρή ὅτι ἀνάγκη βραχύτερα τὰ σώματα ταύτη γίνεσθαι, ὧν ἀμφότερα τὰ ὀστέα κατεηγότα καὶ
10 παρηλλαγμένα ἰητρεύηται, καὶ οἷς ὅλος ὁ κύκλος
11 τοῦ ὀστέου ἀπέστη.

XXXV. "Οσοισι³ δὲ μηροῦ ὀστέον ἢ βραχίονος ἐξέσχεν, οὔτοι οὐ μάλα περιγίνονται. τὰ γὰρ ὀστέα μεγάλα καὶ πολυμύελα, καὶ πολλὰ καὶ ἐπίκαιρα τὰ συντιτρωσκόμενα νεῦρα⁴ καὶ μύες καὶ φλέβες· καὶ ἦν μὲν ἐμβάλλης, σπασμοὶ φιλέουσι ἐπιγίνεσθαι, μὴ ἐμβληθεῖσι δὲ πυρετοὶ ὀξέες καὶ ἐπίχολοι καὶ λυγγώδεις, καὶ ἐπιμελαίνονται· περιγίνονται δὲ οὐχ ἥσσον, οἷσι μὴ ἐμβληθῇ, μὴ πειρηθῇ⁵ ἐμβάλλεσθαι· ἔτι δὲ μᾶλλον περι-
10 γίνονται, οἷσι τὸ κάτω μέρος τοῦ ὀστέου ἐξέσχεν,

¹ τοιοῦτο.

² καταψυχροῖσι (B M V). Kw. adopts Ermerins's suggestion κάρτα.

be removed. In other cases it makes no great difference whether there is resection or not. For one should bear clearly in mind that when bones are entirely deprived of soft parts and dried up they will all come away completely: and one should not resect those bones which are going to be exfoliated. Draw your conclusion as to bones which will come away completely from the symptoms set forth.

XXXIV. Treat such cases with compresses and vinous applications as described above in the case of bones about to be eliminated. Take care not to moisten with cold fluids at first, for there is risk of feverish rigors and further risk of spasms, for cold substances provoke spasms and sometimes¹ ulcerations. Bear in mind that there must be shortening of the parts in cases where, when both bones are broken, they are treated while over-lapping, also in cases where the circle of bone is eliminated entire.

XXXV. Cases where the bone of the thigh or upper arm protrudes rarely recover; for the bones are large and contain much marrow, while the cords, muscles and blood vessels which share in the injury are numerous and important. Besides, if you reduce the fracture, convulsions are liable to supervene, while in cases not reduced there are acute bilious fevers with hiccough and mortification. Cases where reduction has not been made or even attempted are no less likely to recover, and recovery is more frequent when the lower than when the upper part

¹ This seems the place where *ποτὶ* means *ποτὲ* as Galen says in his Lexicon, but *ποτὶ καὶ* is an expression peculiar to these treatises and means "especially." See Diels, *op. cit.*

² Ὅσων.

⁴ καὶ νεῦρα.

⁵ ἐνεβλήθη . . . ἐπειρήθη.

ἢ οἷσι τὸ ἄνω· περιγίνονται δ' ἂν καὶ οἷσιν ἐμβληθείη, σπανίως γε μήν. μελέται γὰρ μελετών μέγα διαφέρουσι, καὶ φύσιες φύσιων τῶν σωμάτων ἐς εὐφορίην. διαφέρει δὲ μέγα, καὶ ἦν ἔσω τοῦ βραχίονος καὶ τοῦ μηροῦ τὰ ὀστέα ἐξέχῃ· πολλαὶ γὰρ καὶ ἐπίκαιροι κατατάσεις φλεβῶν ἐν τῷ ἔσω μέρει, ὧν ἔνιαι τιτρωσκόμεναι σφάγιαί εἰσιν· εἰσὶ δὲ καὶ ἐν τῷ ἔξω μέρει, ἦσσαν δέ. ἐν τοῖσιν οὖν τοιούτοις τρώμασι
 20 τοὺς μὲν κινδύνους οὐ χρή λήθειν ὁποιοῖ τινές εἰσι, καὶ προλέγειν χρή πρὸς τοὺς καιρούς. εἰ δὲ ἀναγκάζοιο μὲν ἐμβάλλειν, ἐλπίζοις δὲ ἐμβάλλειν, καὶ μὴ πολλὴ ἢ παράλλαξις εἴη τοῦ ὀστέου, καὶ μὴ συνδεδραμήκοιεν οἱ μύες—φιλέουσι γὰρ συνθεῖν—ἢ μόχλευσις καὶ τούτοις
 26 μετὰ τῆς κατατάσιος εὖ ἂν συλλαμβάνοιτο.

XXXVI. Ἐμβάλλοντα δέ, ἐλλέβορον μαλθακὸν πιπίσαι χρή αὐθήμερον, ἦν αὐθήμερον ἐμβληθῇ, εἰ δὲ μή, οὐδ' ἐγχειρεῖν χρή. τὸ δὲ ἔλκος ἰητρεύειν χρή· οἷσί περ κεφαλῆς ὀστέα κατεγυγίης καὶ ψυχρὸν μηδὲν προσφέρειν, σιτίων δὲ στερῆσαι τελέως· καὶ ἦν μὲν πικρόχολος φύσει ἦ, ὀξύγλυκυ εὐῶδες ὀλίγον ἐφ' ὕδωρ ἐπιστάζοντα τούτῳ διαιτᾶν· ἦν δὲ μὴ πικρόχολος ἦ, ὕδατι πόματι χρῆσθαι· καὶ ἦν μὲν πυρεταίνῃ
 10 συνεχῶς, τεσσαρακαίδεκα ἡμέρησι¹ τὸ ἐλάχιστον οὕτῳ διαιτᾶν, ἦν δὲ ἀπύρετος ἦ, ἑπτὰ ἡμέρησιν· ἔπειτα ἐκ προσαγωγῆς κατὰ λόγον ἐς φαύλην δίαιταν ἄγειν. καὶ οἷσιν μὴ² ἐμβληθῇ τὰ ὀστέα, καὶ τὴν φαρμακείην χρή τοιαύτην ποιεῖσθαι, καὶ

¹ ἡμέρας bis.² ἂν μὴ.

of the bone projects. There may be survival even in cases where reduction is made, but it is rare indeed. There are great differences between one way of dealing with the case and another, and between one bodily constitution and another as to power of endurance. It also makes a great difference whether the bone protrudes on the inner or outer side of the arm or thigh, for many important blood vessels stretch along the inner side, and lesions of some of them are fatal; there are also some on the outside, but fewer. In such injuries, then, one must not overlook the dangers or the nature of some of them, but foretell them as suits the occasion. If you have to attempt reduction and expect to succeed and there is no great overriding of the bone, and the muscles are not retracted (for they are wont to retract) leverage combined with extension would be well employed even in these cases.

XXXVI. After reduction one should give a mild dose of hellebore on the first day, if it is reduced on the first day, otherwise one should not even attempt it. The wound should be treated with the remedies used for the bones of a broken head. Apply nothing cold and prescribe entire abstinence from solid food. If he is of a bilious nature give him a little aromatic hydromel¹ sprinkled in water, but if not, use water as beverage. And if he is continuously febrile keep him on this regimen for fourteen days at least, but if there is no fever, for seven days, then return by a regular gradation to ordinary diet. In cases where the bones are not reduced, a similar purgation should be made and so with the management of the wounds

¹ Decoction of honeycomb in water = ἀπόμελι in XI; cf. Galen on its preparation.

τῶν ἐλκέων τὴν μελέτην καὶ τὴν δίαιταν· ὡσαύτως καὶ τὸ ἀπαιωρεύμενον¹ τοῦ σώματος μὴ κατατείνειν, ἀλλὰ καὶ προσάγειν μᾶλλον, ὥστε χαλαρώτερον εἶναι τὸ κατὰ τὸ ἔλκος. τῶν δὲ ὁστέων ἀπόστασις² χρονίη, ὥσπερ καὶ πρόσθεν
 20 εἴρηται. μάλιστα δὲ χρὴ τὰ τοιαῦτα διαφυγεῖν, ἅμα ἢν τις καλὴν ἔχῃ τὴν ἀποφυγὴν. αἷ τε γὰρ ἐλπίδες ὀλίγαι, καὶ οἱ κίνδυνοι πολλοί· καὶ μὴ ἐμβάλλων ἄτεχνος ἂν δοκέοι εἶναι, καὶ ἐμβάλλων ἐγγυτέρω ἂν τοῦ θανάτου ἀγάγοι ἢ
 25 σωτηρίης.

XXXVII. Τὰ δὲ ὀλισθήματα τὰ κατὰ τὰ γούνατα καὶ τὰ διακινήματα τῶν ὁστέων εὐηθέστερα πολὺ τῶν κατ' ἀγκῶνα κινήμάτων καὶ ὀλισθημάτων· τό τε γὰρ ἄρθρον τοῦ μηροῦ εὐσταλέστερον ὥς ἐπὶ μεγέθει ἢ τὸ τοῦ βραχίονος, καὶ δικαίην φύσιν μῦνον ἔχον, καὶ ταύτην περιφερέα· τὸ δὲ τοῦ βραχίονος ἄρθρον μέγα τε καὶ βαθμίδας πλείονας ἔχον. πρὸς δὲ τούτοις, τὰ μὲν τῆς κινήσεως ὁστέα παραπλήσια μῆκος
 10 ἐστὶ καὶ σμικρόν τε οὐκ ἄξιον λόγου τὸ ἔξω ὁστέον ὑπερέχει, οὐδενὸς μεγάλου κώλυμα εἶναι, ἀφ' οὗ πέφυκεν ὁ ἔξω τένων ὁ παρὰ τὴν ἰγνύην· τὰ δὲ τοῦ πήχεος ὁστέα ἄνιστά ἐστιν, καὶ τὸ βραχύτερον παχύτερον συχνῶ, τὸ δὲ λεπτότερον πολλὸν ὑπερβάλλει καὶ ὑπερέχει τὸ ἄρθρον· ἐξήρηται μέντοι καὶ τούτων³ τῶν νεύρων κατὰ τὴν κοινὴν σύμφυσιν τῶν ὁστέων· πλείον δὲ μέρος ἔχει τῆς ἐξαρτήσεως τῶν νεύρων ἐν τῷ βραχίονι τὸ λεπτὸν ὁστέον ἢ περὶ τὸ παχύ. ἢ
 20 μὲν οὖν φύσις τοιουτότροπος τῶν ἄρθρων τούτων

¹ ἀπορεύμενον.

² ἢ ἀπόστασις,

³ τοῦτο.

and the regimen. Likewise do not stretch the unreduced part,¹ but even bring it more together so that the seat of the wound may be more relaxed. Elimination of the bones takes time, as was said before. One should especially avoid such cases if one has a respectable excuse, for the favourable chances are few, and the risks many. Besides, if a man does not reduce the fracture, he will be thought unskilful, while if he does reduce it he will bring the patient nearer to death than to recovery.

XXXVII. Dislocations at the knee and disturbances of the bones are much milder than displacements and dislocations at the elbow; for the articular end of the thigh-bone is more compact in relation to its size than is that of the arm-bone, and it alone has a regular conformation, a rounded one, whereas the articular end of the humerus is extensive, having several cavities. Besides this the leg-bones are about the same size, the outer one overtops the other to some little extent not worth mention,² and opposes no hindrance to any large movement though the external tendon of the ham arises from it. But the bones of the forearm are unequal, and the shorter (radius) much the thicker, while the more slender one (ulna) goes far beyond and overtops the joint. This, however, is attached to the ligaments at the common junction of the bones.³ The slender bone has a larger share than the thicker one of the attachments of ligaments in the arm. Such then is the disposition of these articulations and of

¹ Kw.'s reading is the most suitable.

² A curious error, perhaps due to an effort to make the fibula resemble the ulna as far as possible. (The fibula does not reach the top of the tibia.)

³ The ulna is attached to the ligaments of the elbow joint, at the point where it joins the radius. Galen.

καὶ τῶν ὁστέων τοῦ ἀγκῶνος. καὶ διὰ τὸν
τρόπον τῆς φύσιος τὰ κατὰ τὸ γόνυ ὅστέα
πολλάκις μὲν ὀλισθάνει, ῥηϊδίως δὲ ἐμπίπτει·
φλεγμονὴ δὲ οὐ μεγάλη προσγίνεται, οὐδὲ δεσμός
τοῦ ἄρθρου. ὀλισθάνει δὲ τὰ πλεῖστα ἐς τὸ ἔσω
μέρος, ἔστι δ' ὅτε ἐς τὸ ἔξω, ποτὲ δὲ καὶ ἐς τὴν
ἰγνύην. τούτων ἀπάντων αἱ ἐμβολαὶ οὐ χαλεπαί·
ἀλλὰ τὰ μὲν ἔξω καὶ ἔσω ὀλισθάνοντα, καθῆσθαι
μὲν χρὴ τὸν ἄνθρωπον χαμαὶ ἢ ἐπὶ χαμαιζήλου
30 τινός, τὸ δὲ σκέλος ἀνωτέρω ἔχειν, μὴ μὲν πολλῶ.
κατάτασις δὲ ὡς ἐπὶ τὸ πολὺ μετρίῃ ἀρκεῖ, τῇ
μὲν κατατείνειν τὴν κνήμην, τῇ δὲ ἀντιτείνειν τὸν
33 μηρόν.¹

XXXVIII. Τὰ δὲ κατὰ τὸν ἀγκῶνα ὀχλωδέ-
στερά ἐστι τῶν κατὰ τὸ γόνυ, καὶ δυσεμβολώ-
τερα καὶ διὰ τὴν φλεγμονὴν καὶ διὰ τὴν φύσιν,
ἣν μή τις αὐτίκα ἐμβάλη· ὀλισθάνει μὲν ἡσσον²
ἢ ἐκεῖνα, δυσεμβολώτερα δὲ καὶ δυσθετώτερα,
6 καὶ ἐπιφλεγμαίνει μᾶλλον καὶ ἐπιπωροῦται.³

XXXIX. Ἔστι δὲ καὶ τούτων πλεῖστα⁴
σμικραὶ ἐγκλίσεις, ἄλλοτε ἐς τὸ πρὸς τῶν πλευ-
ρέων μέρος, ἄλλοτε ἐς τὸ ἔξω, οὐ πᾶν δὲ τὸ ἄρθρον
μεταβεβηκός, ἀλλὰ μένον⁵ τὸ κατὰ τὸ κοῖλον

¹ End of Galen's Commentary as extant; but later fragments are preserved in Orib. XLVI.6, XLVII.5, etc.

² ἡσσον opposed to πολλάκις above; but not true. Some therefore take it to mean "to a less extent."

³ ἐπιποροῦται.

⁴ τὰ μὲν πλεῖστα.

⁵ μόνον B, μένοντι τὸ M, μένον τι V, μόνον Kw. The reading is important for the writer's account of elbow dislocations. If μένον, the chapter must refer to dislocation of the radius only and "inwards" would imply that the writer looked at the arm and hand as hanging back to front with the bend of the elbow turned inwards, the reverse of our position. Petrequin first noticed this, and showed that

the bones of the elbow. Owing to the way they are disposed the bones at the knee are often dislocated¹ but easily put in, and no great inflammation or fixation of the joint supervenes. Most dislocations are inwards,² but some outwards and some into the knee flexure. Reduction is not difficult in any of these cases: as to external and internal dislocations, the patient should be seated on the ground or something low, and have the leg raised, though not greatly. Moderate extension as a rule suffices; make extension on the leg and counter-extension on the thigh.

XXXVIII. Dislocations at the elbow are more troublesome than those at the knee, and harder to put in, both because of the inflammation and because of the conformation of the bones, unless one puts them in at once. It is true that they are more rarely³ dislocated than the above, but they are harder to put up, and inflammation and excessive formation of callus⁴ is more apt to supervene.

XXXIX. (Dislocation of radius.) The majority of these are small displacements sometimes inwards, towards the side and ribs, sometimes outwards (our "forwards" and "backwards"). The joint is not dislocated as a whole, but maintaining the con-

¹ A strange remark, perhaps includes displacement of the kneecap. Displacements of cartilages are not noticed.

² Of the thigh-bone.

³ Pq. says he treated ten times more elbow than knee dislocations.

⁴ Cf. Celsus VIII. 16, "callus circumdatur."

it explains much. *μόνον* or *μόριον* would imply a dislocation of the ulna only, and add another difficulty. It seems clear that the epitomist (M VII, J XVII) read *μέρον*; but these chapters have puzzled the scribes as well as the surgeons.

- τοῦ ὀστέου τοῦ βραχίονος, ἢ τὸ τοῦ πήχεος ὀστέον τὸ ὑπερέχον ἔχει.¹ τὰ μὲν οὖν τοιαῦτα, καὶ τῇ ἢ τῇ ὀλίσθῃ, ῥήϊδιον ἐμβάλλειν, καὶ ἀποχρῆ ἢ κατάτασις ἢ ἐς τὸ ἰθὺ γινομένη κατ' ἰθυωρίην τοῦ βραχίονος, τὸν μὲν κατὰ τὸν καρπὸν
 10 τῆς χειρὸς τείνειν, τὸν δὲ κατὰ τὴν μασχάλην περιβάλλοντα, τὸν δὲ τῇ ἐτέρῃ πρὸς τὸ ἐξεστέδος ἄρθρον τὸ θέναρ προσβάλλοντα ὠθεῖν, τῇ δὲ
 13 ἐτέρῃ ἀντωθεῖν προσβάλλοντα² ἐγγὺς τῷ ἄρθρῳ.

- XL. Ἐνακούει δὲ οὐ βραδέως ἐμβαλλόμενα τὰ τοιαῦτα ὀλισθήματα, ἣν πρὶν φλεγμῆν ἐμβάλλῃ τις. ὀλισθάνει δὲ ὡς ἐπὶ τὸ πολὺ μᾶλλον ἐς τὸ ἔσω μέρος, ὀλισθάνει δὲ καὶ ἐς τὸ ἔξω, εὐδηλα δὲ τῷ σχήματι. καὶ πολλάκις ἐμπίπτει τὰ τοιαῦτα, καὶ ἄνευ ἰσχυρῆς κατατάσιος· χρῆ δὲ τῶν ἔσω ὀλισθανόντων, τὸ μὲν ἄρθρον ἀπωθεῖν ἐς τὴν φύσιν, τὸν δὲ πῆχυν ἐς τὸ καταπρηνὲς μᾶλλον ρέποντα³ περιάγειν. τὰ μὲν
 10 πλεῖστα ἀγκῶνος τοιαῦτα ὀλισθήματα.

XLII. Ἡν δὲ ὑπερβῇ τὸ ἄρθρον ἢ ἔνθα ἢ ἔνθα ὑπὲρ τὸ ὀστέον τοῦ πήχεος τὸ ἐξέχον ἐς τὸ κοῖλον τοῦ βραχίονος—γίνεται μὲν οὖν ὀλιγάκις τοῦτο, ἣν δὲ γίνηται—οὐκ ἔτι ὁμοίως ἢ κατάτασις ἢ ἐς τὴν ἰθυωρίην γινομένη ἐπιτηδείῃ τῶν τοιούτων ὀλισθημάτων· κωλύει γὰρ ἐν τῇ τοιαύτῃ κατατάσει τὸ ἀπὸ τοῦ πήχεος ὑπερέχον ὀστέον τὴν ὑπέρβασιν τοῦ βραχίονος. χρῆ τοίνυν τοῖσιν

¹ ἐξέσχευ B, Kw., etc. ² πρὸς τοῦ πήχεος B, Kw. insert.

³ Pq. omits.

nexion with the cavity of the humerus, where the projecting part of the ulna sticks out. Such cases, then, whether dislocation is to one side or the other, are easy to reduce, and direct extension in the line of the upper arm is quite enough, one person may make traction on the wrist, another does so by clasping the arm at the axilla, while a third presses with the palm of one hand on the projecting part and with the other makes counter-pressure near the joint.

XL. Such dislocations yield readily to reduction if one reduces them before they are inflamed; the dislocation is usually rather inwards (forwards), but may also be outwards, and is easily recognised by the shape. And they are often reduced even without vigorous extension. In the case of internal dislocations one should push the joint back into its natural place, and turn the forearm rather towards the prone position. Most dislocations of the elbow are of this kind.¹

XLI. (Complete dislocation of the elbow backwards and forwards). If the articular end of the humerus passes either this way or that² over the part of the ulna which projects into its cavity (the latter³ indeed occurs rarely, if it does occur), extension in the line of the limb is no longer equally suitable, for the projecting part of the ulna prevents the passage of the humerus. In patients with these

¹ Adams agrees that XXXIX is "dislocation of the radius," but has to call XL "incomplete lateral dislocation of the forearm" since the radius alone cannot be dislocated "inwards." The nature of these lesions is discussed on p. 411 ff.

² "to either side," Adams.

³ Refers to "backwards," which can hardly occur without fracture.

- οὕτως ἐκβεβληκόσι τὴν κατάτασιν ποιείσθαι
 10 τοιαύτην, οἷη περ πρόσθεν γέγραπται, ἐπὴν τις
 ὁστέα βραχίονος κατεηγότα ἐπιδέη, ἀπὸ μὲν τῆς
 μασχάλης ἐς τὸ ἄνω τείνεσθαι, ἀπὸ δὲ τοῦ
 ἀγκῶνος αὐτοῦ ἐς τὸ κάτω ἀναγκάζειν· οὕτω γὰρ
 ἂν μάλιστα ὁ βραχίων ὑπεραιωρηθείη ὑπὲρ τῆς
 ἑωυτοῦ βαθμίδος, ἣν δὲ ὑπεραιωρηθῇ, ῥήϊδίη ἢ
 κατάστασις, τοῖσι θέναρσι τῶν χειρῶν τὸ μὲν
 ἐξεστεὸς¹ τοῦ βραχίονος ἐμβάλλοντα ὠθεῖν, τὸ
 δὲ ἐς τὸ τοῦ πήχεος ὁστέον τὸ παρὰ τὸ ἄρθρον
 ἐμβάλλοντα ἀντωθεῖν, τὸν αὐτὸν τρόπον ἄμφω·
 20 ἥσσον μέντοι² ἢ τοιαύτην κατάτασις τοῦ τοιούτου
 ὀλισθήματος δικαιοτάτη· ἐμβληθείη δ' ἂν καὶ
 22 ἀπὸ τῆς ἐς ἰθὺ κατατάσιος, ἥσσον δὲ ἢ οὕτω.

XLII. Ἦν δὲ ἐς τοῦμπροσθεν ὀλίσθη ὁ βρα-
 χίων, ἐλαχιστάκις μὲν τοῦτο γίνεται, ἀλλὰ τί ἂν
 ἐξαπίνης³ ἐκπάλησις οὐκ ἐμβάλλοι; πολλὰ
 γὰρ καὶ παρὰ τὴν οἰκείην⁴ φύσιν ἐκπίπτει, καὶ
 ἦν μέγα τι ἢ τὸ κωλύον· ταύτῃ δὲ τῇ ἐκπαλήσει
 μέγα τι τὸ ὑπερβαινόμενον τὸ ὑπὲρ τὸ παχύτερον
 τῶν ὁστέων, καὶ τῶν νεύρων συχνὴν κατάτασις·
 ὅμως δὲ δὴ τισιν ἐξεπάλησεν. σημεῖον δὲ τοῖσιν
 οὕτως ἐκπαλήσασιν· οὐδὲν γὰρ χρῆμα τοῦ
 10 ἀγκῶνος κάμψαι δύνανται, εὐδελον⁵ δὲ καὶ
 τὸ ἄρθρον ψαυόμενον. ἦν μὲν οὖν μὴ αὐτίκα
 ἐμβληθῇ, ἰσχυραὶ καὶ βίαιαι φλεγμοναὶ καὶ
 πυρετώδεις γίνονται· ἦν δὲ δὴ αὐτίκα τις
 παρατύχη εὐέμβολον, [χρὴ δὲ ὀθόνιον σκληρόν]⁶

¹ ἐς τὸ ἐξεστεός.

² Kw. ἄμφω, ἥσσον μέντοι . . . He supposes a hiatus.

³ ἐξυπιναίη.

⁴ εὐκυῖαν.

⁵ ἐνδελον.

⁶ Kw. omits.

ON FRACTURES, XLI.—XLII.

dislocations, extension should be made after the manner which has been described above for putting up a fractured humerus. Make traction upwards from the armpit, and apply pressure downwards at the elbow itself, for this is the most likely way to get the humerus lifted above its own socket, and if it is so raised, replacement by the palms of hands is easy, using pressure with one hand to put in the projecting part of the humerus, and making counter-pressure on the ulna at the joint to put it back. The same method suits both cases. This has, indeed, less claim to be called the most regular method of extension in such a dislocation and reduction would also be made by direct extension, but less easily.¹

XLII. (Internal lateral distortion of the forearm, *Petrequin's View*). Suppose the humerus to be dislocated forwards. This happens very rarely; but what might not be dislocated by a sudden violent jerk? For many other bones are displaced from their natural position,² though the opposing obstacle may be great. Now, there is a great obstacle to this jerking out, namely the passage over the thicker bone (radius) and the extensive stretching of the ligaments, but nevertheless it is jerked out in some cases. Symptoms in cases of such jerkings out. They cannot bend the elbow at all, and palpation of the joint makes it clear. If, then, it is not reduced at once, violent and grave inflammation occurs with fever, but if one happens to be on the spot it is easily put in. One should take

¹ "Evidently meant as a description of complete lateral dislocation," Adams.

² Kw. "beyond what seems natural."

- ὀθόνιον γὰρ σκληρὸν εἰλιγμένον ἀρκεῖ, μὴ μέγα
 —ἐνθέντα πλάγιον ἐς τὴν καμπὴν τοῦ ἀγκῶνος,
 ἑξαπίνης συγκάμψαι τὸν ἀγκῶνα καὶ προσ-
 αγαγεῖν ὡς μάλιστα τὴν χεῖρα πρὸς τὸν ὦμον.
 ἱκανὴ μὲν αὕτη ἢ ἐμβολὴ τοῖσιν οὕτως ἐκπαλή-
 20 σασιν.¹ ἀτὰρ καὶ ἢ ἐς τὸ ἰθὺ κατάτασις δύναται
 εὐθετίζειν τοῦτον τὸν τρόπον τῆς ἐμβολῆς· τοῖσι
 μέντοι θέναρσι τῶν χειρῶν χρή, τὸν μὲν ἐμβάλλ-
 λοντα ἐς τὸ τοῦ βραχίονος ἐξέχον τὸ παρὰ τὴν
 καμπὴν ὀπίσω ἀπωθεῖν, τὸν δέ τινα κάτωθεν ἐς
 τὸ τοῦ ἀγκῶνος ὀξὺ ἐμβάλλοντα ἀντωθεῖν ἐς τὴν
 ἰθυωρίην τοῦ πήχεος ρέποντα. δύναται δὲ ἐν
 τούτῳ τῷ τρόπῳ τῆς ὀλισθήσιος κακείνη ἢ
 κατάτασις ἢ πρόσθεν ἐγγεγραμμένη,² ὡς χρή
 κατατείνειν τὰ ὀστέα τοῦ βραχίονος κατεηγότα,
 30 ἐπὴν μέλλωσιν ἐπιδεῖσθαι· ἐπὴν δὲ καταταθῇ,
 οὕτω χρή τοῖσι θέναρσι τὰς προσβολὰς ποι-
 32 εῖσθαι, ὥσπερ καὶ πρόσθεν γέγραπται.

- XLIII. Ἦν δὲ ἐς τὸ ὀπίσω βραχίων ἐκπέση—
 ὀλιγάκις δὲ τοῦτο γίνεται, ἐπωδυνώτατόν τε τοῦτο
 πάντων καὶ πυρετωδέστατον, συνεχέων πυρετῶν
 καὶ ἀκρητοχόλων, θανατωδέων καὶ ὀλιγημέρων—
 οἱ τοιοῦτοι ἐκτανύειν οὐ δύνανται. ἦν δὲ μὲν οὖν
 αὐτίκα παρατύχης, βιάσασθαι³ χρή ἐκτανύσαντα
 τὸν ἀγκῶνα, καὶ αὐτομάτως ἐμπίπτει. ἦν δὲ σε
 φθάση πυρεταινήσας, οὐκ ἔτι χρή ἐμβάλλειν·
 κατακτείνειε γὰρ αὖ ἢ ὀδύνη ἀναγκαζομένου. ὡς
 10 δ' ἐν κεφαλαίῳ εἰρῆσθαι, οὐδ' ἄλλο χρή ἄρθρον
 11 πυρεταίνοντι ἐμβάλλειν, ἥκιστα δὲ ἀγκῶνα.

¹ τῷ τοιούτῳ.² πρόσθε γεγραμμ' νη.³ βιάζεσθαι.

ON FRACTURES, XLII.—XLIII.

a hard bandage (a hard rolled bandage of no great size is sufficient) and put it crosswise in the bend of the elbow, suddenly flex the elbow, and bring the hand as close as possible to the shoulder. This mode of reduction is sufficient for such jerkings out. Direct extension, too, can accomplish this reduction. One must, however, use the palms, putting one on the projecting part of the humerus at the elbow and pushing backwards (our inwards), and with the other making counter-pressure below the point of the elbow, inclining the parts into the line of the ulna.¹ In this form of dislocation, the mode of extension described above as proper to be used in stretching the fractured humerus when it is going to be bandaged is also effective. And when extension is made, application of the palms should be made as described above.

XLIII. (External lateral dislocation of forearm).² If the humerus is dislocated backwards (our "inwards")—this occurs rarely, and is the most painful of all, most frequently causing continuous fever with vomiting of pure bile, and fatal in a few days—the patients cannot extend the arm. If you happen to be quickly on the spot, you ought to extend the elbow forcibly, and it goes in of its own accord. But if he is feverish when you arrive, do not reduce, for the pain of a violent operation would kill him. It is a general rule not to reduce any joint when the patient has fever, least of all the elbow.

¹ Adams. "Dislocation of ulna and radius backwards," II. 500, but II. 549, "It would seem to be dislocation of the forearm forwards."

² So Petrequin. It seems impossible that this should be dislocation of the forearm backwards, the commonest form, as Adams suggests.

XLIV. Ἔστι δὲ καὶ ἄλλα σίνεα κατ' ἀγκῶνα ὀχλώδεα· τοῦτο μὲν γάρ, τὸ παχύτερον ὁστέον ἔστιν ὅτε ἐκινήθη ἀπὸ τοῦ ἐτέρου, καὶ οὔτε συγκάμπτειν οὔτε κατατανύειν ὁμοίως δύνανται. δῆλον δὲ γίνεται ψαυόμενον κατὰ τὴν σύγκαμψιν τοῦ ἀγκῶνος παρὰ τὴν διασχίδα τῆς φλεβὸς τὴν ἄνωθεν τοῦ μυὸς τείνουσαν· οἷσι δὲ τὸ τοιοῦτον, οὐκ ἔτι ῥηϊδίον ἐς τὴν ἐωυτοῦ φύσιν ἀγαγεῖν· οὐδὲ γὰρ ἄλλην οὐδεμίην ῥηϊδίον συμφυάδα
 10 κοινὴν δύο ὁστέων κινηθεῖσαν ἐς τὴν ἀρχαίην φύσιν ἰδρυθῆναι, ἀλλ' ἀνάγκη ὅγκον ἴσχειν τὴν διάστασιν. ὥς δὲ ἐπιδεῖν χρὴ ἐν ἄρθρῳ, ἐν τῇ
 13 κατὰ σφυρὸν ἐπιδέσει εἴρηται.

XLV. Ἔστι δ' οἷσι κατάγνυται¹ τοῦ πήχεος τὸ ὁστέον τὸ ὑποτεταγμένον τῷ βραχίονι, ὅτε μὲν τὸ χονδρῶδες αὐτοῦ ἀφ' οὗ πέφυκεν ὁ τένων ὁ ὀπισθεν τοῦ βραχίονος <ὅτε δὲ τὰ πρόσω κατὰ τὴν ἀρχὴν τῆς ἐκφύσιος τοῦ προσθίου κορωνοῦ>² καί, ἐπὴν τοῦτο κινηθῇ, πυρετῶδες καὶ κακότηες γίνεται· τὸ μέντοι ἄρθρον μένει ἐν τῇ ἐωυτοῦ χώρῃ· πᾶσα γὰρ ἡ βία αὐτοῦ ταύτῃ ὑπερέχει.³ ὅταν⁴ δὲ ἀπαγῇ ταύτῃ ἢ ὑπερέχει ἢ κεφαλὴ τοῦ
 10 βραχίονος, πλανωδέστερον τὸ ἄρθρον γίνεται, ἣν παντάπασιν ἀποκαυλισθῇ. ἀσινέστερα δέ, ὥς ἐν κεφαλαίῳ εἰρῆσθαι, πάντα τὰ καταγνύμενα τῶν ὁστέων ἔστιν ἢ οἷσιν τὰ μὲν ὁστέα οὐ κατάγνυται, φλέβες δὲ καὶ νεῦρα ἐπικάιρα ἀμφιφλᾶται ἐν τούτοις τοῖσι χωρίοις· ἐγγυτέρω γὰρ θανάτῳ

¹ ἀπάγνυται.² Omit codd., vulg.; restored by Littré from Galen in Orib. XLVI. 6.³ ὑπέχει.⁴ ἦν.

ON FRACTURES, XLIV.—XLV.

XLIV. (Separation of radius). There are also other troublesome lesions of the elbow. Thus the thicker bone is sometimes separated from the other, and they can neither flex nor extend the joint as before. The lesion is made clear by palpation at the bend of the elbow about the bifurcation of the blood vessel¹ which passes upwards along the muscle.² In such cases it is not easy to bring the bone into its natural place, for no symphysis of two bones when displaced is permanently settled in its old position, but the diastasis (separation) necessarily remains as a swelling. How a joint ought to be bandaged was described in the case of the ankle.

XLV. (Fractures of olecranon). There are cases in which the bone of the forearm (ulna) is fractured where it is subjacent to the humerus, sometimes the cartilaginous part from which the tendon at the back of the arm arises, sometimes the part in front at the origin of the anterior coronoid process, and when this occurs it is complicated with fever and dangerous, though the joint (articular end of humerus) remains in its place, for its entire base comes above this bone.³ But when the fracture is in the place on which the articular head of the humerus rests, the joint becomes more mobile if it is a complete cabbage-stalk fracture (*i.e.* right across). Speaking generally, fractures are always less troublesome than cases where no bones are broken, but there is extensive contusion of blood vessels and important cords in these parts. For the latter

¹ Cephalic vein.

² Biceps.

³ ὑπερέχει, *supersedet*, "is above," the articular end of the humerus rests entirely on the olecranon, the arm being bent. "Protrudes at this point," Littré-Adams.

πελάζει ταῦτα ἢ ἐκεῖνα, ἣν ἐκπυρωθῇ συνεχεῖ πυρέτῳ· ὀλίγα γε μὴν τὰ τοιαῦτα κατήγματα
 18 γίνεται.

XLVI. Ἔστι δὲ ὅτε αὐτὴ ἡ κεφαλὴ τοῦ βραχίονος κατὰ τὴν ἐπίφυσιν κατάγνυται· τοῦτο δὲ δόκεον κακοσινώτατον εἶναι πολλῶ
 4 τινὶ ¹ εὐηθέστερον τῶν κατ' ἀγκῶνα σινέων ἐστίν.

XLVII. Ὡς μὲν οὖν ἕκαστα τῶν ὀλισθημάτων ἀρμόσσει ² [ἐμβάλλειν καὶ] ³ μάλιστα ἱητρεύειν, γέγραπται, καὶ ὅτι παραχρῆμα ἐμβάλλειν μάλιστα ἄρθρον συμφέρει διὰ τὸ τάχος τῆς φλεγμονῆς τῶν νεύρων. καὶ γὰρ ἣν ἐκπεσόντα αὐτίκα ἐμπέσῃ, ὅμως φιλεῖ τὰ νεῦρα σύντασιν ποιεῖσθαι, καὶ κωλύειν ἐπὶ ποσὸν χρόνον τὴν τε ἔκτασιν, ὅσῃν περ φιλεῖ ⁴ ποιήσασθαι, ⁵ τὴν τε σύγκαμψιν. ἱητρεύειν δὲ πάντα παραπλησίως τὰ τοιαῦτα
 10 συμφέρει καὶ ὅποσα ἀπάγνυται, καὶ ὅποσα διίσταται, καὶ ὅποσα ὀλισθάνει· πάντα γὰρ χρὴ ὀθονίοισι πολλοῖσι καὶ σπλήνεσι καὶ κηρωτῇ ἱητρεύειν, ὥσπερ καὶ τᾶλλα κατήγματα. τὸ δὲ σχῆμα τοῦ ἀγκῶνος ἐν τούτοις δὴ καὶ παντάπασιν χρὴ τοιοῦτον ποιεῖσθαι, οἷον περ οἷσι βραχίων ἐπεδείκτο καταγεῖς, καὶ πῆχυς· κοινότατον μὲν γὰρ πᾶσι τοῖσιν ὀλισθήμασι καὶ τοῖσι κινήμασι καὶ τοῖσι κατήγμασι τοῦτο τὸ σχῆμά ἐστιν· κοινότατον δὲ πρὸς τὴν ἔπειτα διάστασιν, ⁶
 20 καὶ τὸ ἐκτανύειν ἕκαστα καὶ συγκάμπτειν· ἐντεῦθεν γὰρ ὁδοὶ εἰς ἀμφοτέρω παραπλησίον· εὐοχώτατον καὶ εὐανάληπτον αὐτῷ τῷ κάμνοντι τοῦτο τὸ σχῆμα. ἔτι δὲ πρὸς τούτοις, εἰ ἄρα κρατηθεῖν ὑπὸ τοῦ πωρώματος, εἰ μὲν ἐκτετα-

¹ τψ.² ἀρμόσει.

ON FRACTURES, XLV.—XLVII.

lesions involve greater risk of death than do the former, if one is seized with continued fever. Still, fractures of this kind rarely occur.

XLVI. Sometimes the actual head of the humerus is fractured at the epiphysis, but this, though apparently a very grave lesion, is much milder than injuries of the elbow joint.

XLVII. How, then, each dislocation is most appropriately [reduced and] treated has been described; especially the value of immediate reduction owing to the rapid inflammation of the ligaments. For, even when parts that are put out are put in at once, the tendons are apt to become contracted and to hinder for a considerable time the natural amount of flexion and extension. All such lesions, whether avulsions, separations or dislocations, require similar treatment, for they should all be treated with a quantity of bandages, compresses and cerate, as with fractures. The position of the elbow should in these cases, too, be the same in all respects as in the bandaging of patients with fractured arm or forearm; for this position is most generally used¹ for all the dislocations, displacements and fractures, and is also most useful as regards the future condition, in respect both of extension and flexion in the several cases, since from it the way is equally open in both directions. This attitude is also most easily kept up or returned to by the patient himself. And besides this, if ankylosis should prevail, an arm ankylosed in the

¹ κοινότατον almost = "most useful."

³ Omit B, Kw.

⁵ ποιεῖσθαι.

⁴ πέφυκε.

⁶ διάτασιν K.

μένη ἢ χεὶρ κρατηθείη, κρέσσων ἂν εἴη μὴ προσεοῦσα, πολλῶ μὲν γὰρ κώλυμα εἴη, ὀφελείη δὲ ὀλίγω, εἰ δ' αὖ συγκεκαμμένη, μᾶλλον εὐχρηστος ἂν εἴη, πολλῶ δὲ εὐχρηστοτέρη, εἰ τὸ διὰ μέσον σχῆμα ἔχουσα πωρωθείη [κρέσσον].¹ τὰ
 30 μὲν περὶ τοῦ σχήματος τοιῖδε.

XLVIII. Ἐπιδεῖν δὲ χρὴ τήν τε ἀρχὴν τοῦ πρώτου ὀθονίου βαλλόμενον κατὰ τὸ βλαφθέν, ἣν τε καταγῇ, ἣν τε ἐκστῇ, ἣν τε διαστῇ, καὶ τὰς περιβολὰς τὰς πρώτας κατὰ τοῦτο ποιεῖσθαι, καὶ ἐρηρεῖσθω μάλιστα ταύτη, ἔνθεν δὲ καὶ ἔνθεν ἐπὶ ἥσσον. τὴν δὲ ἐπίδεσιν κοινὴν ποιεῖσθαι χρὴ τοῦ τε πήχεος καὶ τοῦ βραχίονος, καὶ ἐπὶ πολὺ πλεόν ἐκάτερον ἢ ὡς οἱ πλείστοι ποιέουσιν, ὅπως ἐξαρύηται² ὡς μάλιστα ἀπὸ τοῦ
 10 σίνεος τὸ οἶδημα ἔνθεν καὶ ἔνθεν. προσπεριβαλλέσθω δὲ καὶ τὸ ὄξυ τοῦ πήχεος, ἣν τὸ σίνος κατὰ τοῦτο ἦ, ἣν δὲ μή, ἵνα μὴ τὸ οἶδημα ἐνταῦθα περὶ αὐτὰ³ συλλέγηται. περιφεύγειν δὲ χρὴ ἐν τῇ ἐπίδεσει, ὅπως μὴ κατὰ τὴν καμπὴν πολλὸν τοῦ ὀθονίου ἠθροισμένον ἔσται ἐκ τῶν δυνατῶν· πεπιέχθαι δὲ κατὰ τὸ σίνος ὡς μάλιστα. καὶ τὰ ἄλλα καταλαβέτω αὐτὸν περὶ τῆς πιέξις καὶ τῆς χαλάσις ταῦτά, καὶ κατὰ τοὺς αὐτοὺς χρόνους ἕκαστα, ὥσπερ τῶν ὀστέων τῶν κατεηγό-
 20 των ἐν τῇ ἰητρείῃ πρόσθεν γέγραπται· καὶ αἱ μετεπιδέσιες διὰ τρίτης ἔστωσαν· χαλᾶν δὲ δοκείτω τῇ τρίτῃ, ὥσπερ καὶ τότε· καὶ νάρθηκας προσπεριβάλλειν ἐν τῷ ἱκνεομένῳ χρόνῳ—οὐδὲν γὰρ ἀπὸ τρόπου, καὶ τοῖσι τὰ ὀστέα κατεηγόσι, καὶ τοῖσι μή, ἣν μὴ πυρεταίνῃ—ὡς χαλαρωτάτους δέ,

¹ κρέσσον or κρέσσων codd. omnes; but many editors omit.

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extended position would be better away, for it would be a great hindrance and little use. If flexed, on the other hand, it would be more useful, and still more useful if the ankylosis occurred in an attitude of semiflexion.¹ So much concerning the attitude.

XLVIII. One should bandage by applying the head of the first roll to the place injured whether it be fractured, dislocated, or separated. The first turns should be made there and the firmest pressure, slackening off towards each side. The bandaging should include both fore and upper arm, and be carried much further each way than most practitioners do, that the oedema may be repelled as far as possible from the lesion to either side. Let the point of the elbow be also included in the bandage, whether the lesion be there or not, that the oedema may not be collected about this part. One should take special care in the dressing that, so far as possible, there shall be no great accumulation of bandage in the bend of the elbow, and that the firmest pressure be made at the lesion. For the rest, let him deal with the case as regards pressure and relaxation, in the same way, and according to the same respective periods, as was previously described in the treatment of fractured bones. Let the change of dressings take place every third day, and he should feel them relaxed on the third day, as in the former case. Apply the splints at the proper time—for their use is not unsuitable whether there is fracture or not, if there is no fever—but they should be applied as loosely as possible, those of

Omit κρέσσον.

² ἐξέλπηται Κω.

³ αὐτὸ.

τοὺς μὲν ἀπὸ βραχίονος κατατεταγμένους, τοὺς δὲ
 ἀπὸ τοῦ πήχεος ἀνειμένους· ἔστωσαν δὲ μὴ παχέες
 οἱ νάρθηκες· ἀναγκαῖον δὲ καὶ ἀνίσους αὐτοὺς
 εἶναι ἀλλήλοισι, παραλλάσσειν δὲ παρ' ἀλλήλους
 30 ἢ ἂν συμφέρη, τεκμαιρόμενον πρὸς τὴν σύγ-
 καμψιν. ἀτὰρ καὶ τῶν σπληνῶν τὴν πρόσθεσιν
 τοιαύτην χρὴ ποιεῖσθαι, ὥσπερ καὶ τῶν ναρθήκων
 εἴρηται, ὀγκηροτέρους δὲ ὀλίγω κατὰ τὸ σίνος
 προστιθέναι. τοὺς δὲ χρόνους τοὺς ἀπὸ τῆς
 φλεγμονῆς τεκμαίρεσθαι χρὴ καὶ ἀπὸ τῶν πρόσθεν
 36 γεγραμμένων.

¹ Reinhold's emendation, τοὺς μὲν κάτω τεταγμένους, τοὺς
 δὲ ἄνω κειμένους, seems to give the sense most clearly.

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the arm being under and those of the forearm on the top.¹ The splints should not be thick, and must be unequal in length in order to overlap one another where it is convenient, judging by the degree of flexion. So, too, as regards the application of compresses, one should follow the directions for the splints. They should be rather thicker at the point of lesion. The periods are to be estimated by the inflammation and the directions already given.

Hippocrates had no angular splints, and straight ones applied to the bent arm above and below the elbow had to be so arranged that one set overlapped the other at the sides.