

ΠΕΡΙ ΤΩΝ ΕΝ ΚΕΦΑΛΗΙ ΤΡΩΜΑΤΩΝ

Ι. Τῶν ἀνθρώπων αἱ κεφαλαὶ οὐδὲν ὁμοίως σφίσιν αὐταῖς, οὐδὲ αἱ ῥαφαὶ τῆς κεφαλῆς πάντων κατὰ ταῦτα πεφύκασιν. ἀλλ' ὅστις μὲν ἔχει ἐκ τοῦ ἔμπροσθεν τῆς κεφαλῆς προβολὴν—ἡ δὲ προβολὴ ἐστὶν αὐτοῦ τοῦ¹ ὀστέου ἔξεχον στρογγύλον παρὰ τὸ ἄλλο—τούτου εἰσὶν αἱ ῥαφαὶ πεφυκυῖαι ἐν τῇ κεφαλῇ ὡς² γράμμα τὸ ταῦ, Τ, γράφεται, τὴν μὲν γὰρ βραχυτέραν γραμμὴν ἔχει πρὸ τῆς προβολῆς ἐπικαρσίην πεφυκυῖαν· τὴν δὲ
10 ἑτέραν γραμμὴν ἔχει διὰ μέσης τῆς κεφαλῆς κατὰ μῆκος πεφυκυῖαν ἐς τὸν τραχήλον αἰεῖ. ὅστις δ' ὀπισθεν τῆς κεφαλῆς τὴν προβολὴν ἔχει, αἱ ῥαφαὶ τούτῳ πεφύκασιν τὰναντία ἢ τῷ προτέρῳ· ἡ μὲν γὰρ βραχυτέρη γραμμὴ πρὸ τῆς προβολῆς πέφυκεν ἐπικαρσίη· ἡ δὲ μακροτέρα διὰ μέσης τῆς κεφαλῆς πέφυκε κατὰ μῆκος ἐς τὸ μέτωπον αἰεῖ. ὅστις δὲ καὶ³ ἀμφοτέρωθεν τῆς κεφαλῆς προβολὴν ἔχει, ἐκ τε τοῦ ἔμπροσθεν καὶ ἐκ τοῦ ὀπισθεν, τούτῳ αἱ ῥαφαὶ εἰσὶν ὁμοίως πεφυκυῖαι
20 ὡς γράμμα τὸ ἦτα, Η, γράφεται· πέφυκασιν δὲ τῶν γραμμέων αἱ μὲν μακραὶ πρὸ τῆς προβολῆς ἑκατέρης ἐπικάρσιαι πεφυκυῖαι· ἡ δὲ βραχεῖη διὰ μέσης τῆς κεφαλῆς κατὰ μῆκος πρὸς ἑκατέραν τελευτώσα τὴν μακρὴν γραμμὴν.⁴ ὅστις δὲ μηδὲ

ON WOUNDS IN THE HEAD

I. MEN's heads are not alike nor are the sutures of the head disposed the same way in all. When a man has a prominence in the front of his head—the prominence is a rounded outstanding projection of the bone itself—his sutures are disposed in the head as the letter *tau*, T, is written; for he has the shorter line disposed transversely at the base of the prominence; while he has the other line longitudinally disposed through the middle of the head right to the neck. But when a man has the prominence at the back of his head, the sutures in his case have a disposition the reverse of the former, for while the short line is disposed transversely at the prominence, the longer is disposed through the middle of the head longitudinally right to the forehead. He who has a prominence at each end of his head, both front and back, has the sutures disposed in the way the letter *eta*, H, is written, for the long lines have a transverse disposition at either prominence and the short goes through the middle of the head longitudinally, ending each way at the long lines. He who has no

¹ So B. Kw. for τὸ τοῦ Πγ. The older MSS. BV omit the letters THX.

² ὡσπερ.

³ Omit καί.

⁴ τῇσι μακρῇσι γραμμῇσιν.

ἐτέρωθι μηδεμίην προβολὴν ἔχει, οὗτος ἔχει τὰς ῥαφὰς τῆς κεφαλῆς ὡς γράμμα τὸ χῖ, X, γράφεται· πέφυκασι δὲ αἱ γραμμαὶ ἢ μὲν ἐτέρῃ ἐπικαρσίῃ πρὸς τὸν κρόταφον ἀφήκουσα· ἢ δὲ ἐτέρῃ κατὰ μῆκος διὰ μέσης τῆς κεφαλῆς.

- 30 Δίπλοον δ' ἐστὶ τὸ ὀστέον κατὰ μέσῃν τὴν κεφαλὴν· σκληρότατον δὲ καὶ πυκνότατον αὐτοῦ πέφυκεν τό τε ἀνωτάτου ἢ¹ ἡ ὁμοχροίῃ τοῦ ὀστέου ἢ ὑπὸ τῇ σαρκὶ καὶ τὸ κατώτατον τὸ πρὸς τῇ μῆνιγγι ἢ¹ ἡ ὁμοχροίῃ τοῦ ὀστέου ἢ κάτω· ἀποχωρεόν δὲ ἀπὸ τοῦ ἀνωτάτου ὀστέου καὶ τοῦ κατωτάτου, ἀπὸ τῶν σκληροτάτων καὶ πυκνοτάτων ἐπὶ τὸ μαλθακώτερον καὶ ἥσσον πυκνὸν καὶ ἐπικοιλότερον ἐς τὴν διπλὴν αἰεὶ. ἢ δὲ διπλὴ κοιλότατον καὶ μαλθακώτατον καὶ μάλιστα
- 40 σηραγγῶδές ἐστιν· ἔστι δὲ καὶ πᾶν τὸ ὀστέον τῆς κεφαλῆς, πλὴν κάρτα ὀλίγου τοῦ τε ἀνωτάτου καὶ τοῦ κατωτάτου σπόγγω ὅμοιον· καὶ ἔχει τὸ ὀστέον ἐν ἐωυτῷ ὅμοια σαρκία πολλὰ καὶ ὑγρά, καὶ εἴ τις αὐτὰ διατρίβοι τοῖσι δακτύλοισι αἷμα ἂν διαγίνοιτο ἐξ αὐτῶν· ἔνεστι δ' ἐν τῷ ὀστέῳ καὶ
- 46 φλέβια λεπτότερα καὶ κοιλότερα αἵματος πλέα.

II. Σκληρότητος μὲν οὖν καὶ μαλθακότητος καὶ κοιλότητος² ὧδε ἔχει. παχύτητι δὲ καὶ λεπτότητι, οὕτως·³ συμπάσης τῆς κεφαλῆς τὸ ὀστέον λεπτότατόν ἐστι καὶ ἀσθενέστατον τὸ κατὰ βρέγμα, καὶ σάρκα ὀλιγίστην καὶ λεπτοτάτην ἔχει ἐφ' ἐωυτῷ ταύτῃ τῆς κεφαλῆς τὸ ὀστέον, καὶ ὁ ἐγκέφαλος κατὰ τοῦτο τῆς κεφαλῆς πλείστος ὑπεστίν. καὶ δὴ ὅτι οὕτω ταῦτα ἔχει, τῶν τε

¹ Kw. omits. ² So BV. Kw. Pq. has dative throughout.

³ Kw. omits.

ON WOUNDS IN THE HEAD, I.-II.

prominence at either end has the sutures of his head as the letter *chi*, X, is written : the lines are disposed one transversely coming down to the temple, the other longitudinally through the middle of the head.

The skull is double along the middle of the head, and the hardest and most dense part of it is disposed both uppermost where the smooth surface of the skull comes under the scalp, and lowest where the smooth surface below is towards the membrane.¹ Passing from the uppermost and lowest layers, the hardest and most dense parts, the bone is softer, less dense and more cavernous right into the diploe. The diploe is very cavernous and soft and particularly porous. In fact, the whole bone of the head except a very little of the uppermost and lowest is like sponge, and the bone contains numerous moist fleshy particles like one another and one can get blood out of them by rubbing them with the fingers. There are also rather thin hollow vessels full of blood contained within the bone.

II. Such then is the state of hardness, softness and porosity, but in thickness and thinness of the skull generally, the bone is thinnest and weakest at the bregma,¹ and has the least and thinnest covering of flesh in this part of the head, and there is most underlying brain at this part of the head. It follows from such a state of things that when a man is wounded

¹ Dura mater.

² The bregma comprises the front part of the top of the head, where the skull remains longest open.

- τρωσίων καὶ τῶν βελέων ἴσων τε ἐόντων κατὰ
 10 μέγεθος καὶ ἐλασσόνων, καὶ ὁμοίως τε τρωθεὶς
 καὶ ἥσσον, τὸ ὁστέον ταύτῃ τῆς κεφαλῆς φλᾶται
 τε μᾶλλον καὶ ῥήγνυται καὶ ἔσω ἐσφλᾶται, καὶ
 θανασιμώτερά ἐστι καὶ χαλεπώτερα ἰητρεύεσθαί τε
 καὶ ἐκφυγγάνειν τὸν θάνατον ταύτῃ ἢ που ἄλλοθι
 τῆς κεφαλῆς· ἐξίσων τε ἐόντων τῶν τρωμάτων
 καὶ ὁμοίως τε τρωθεὶς καὶ ἥσσον, ἀποθνήσκει ὁ
 ἄνθρωπος, ὅποταν καὶ ἄλλως μέλλῃ ἀποθανεῖσθαι
 ἐκ τοῦ τρώματος, ἐν ἐλάσσονι χρόνῳ ὁ ταύτῃ ἔχων
 τὸ τρώμα τῆς κεφαλῆς ἢ που ἄλλοθι. ὁ γὰρ
 20 ἐγκέφαλος τάχιστα τε καὶ μάλιστα κατὰ τὸ
 βρέγμα αἰσθάνεται τῶν κακῶν τῶν γινομένων ἐν
 τε τῇ σαρκὶ καὶ τῷ ὁστέῳ· ὑπὸ λεπτοτάτῳ γὰρ
 ὁστέῳ ἐστὶ ταύτῃ ὁ ἐγκέφαλος καὶ ὀλιγίστη σαρκί,
 καὶ ὁ πλείστος ἐγκέφαλος ὑπὸ τῷ βρέγματι
 κείται. τῶν δὲ ἄλλων τὸ κατὰ τοὺς κροτάφους
 ἀσθενέστατόν ἐστιν· συμβολή τε γὰρ τῆς κάτω
 γνάθου πρὸς τὸ κρανίον, καὶ κίνησις ἔνεστιν ἐν
 τῷ κροτάφῳ ἄνω καὶ κάτω ὥσπερ ἄρθρον· καὶ ἡ
 ἀκοὴ πλησίον γίνεται αὐτοῦ, καὶ φλέψ διὰ τοῦ
 30 κροτάφου τέταται κοίλῃ τε καὶ ἰσχυρή. ἰσχυ-
 ρότερον δ' ἐστὶ τῆς κεφαλῆς τὸ ὁστέον ἅπαν τὸ
 ὀπισθεν τῆς κορυφῆς καὶ τῶν οὐάτων ἢ ἅπαν
 τὸ πρόσθεν, καὶ σάρκα πλέονα καὶ βαθυτέραν
 ἐφ' ἐωυτῷ ἔχει τοῦτο τὸ ὁστέον. καὶ δὴ τούτων
 οὕτως ἐχόντων, ὑπὸ τε τῶν τρωσίων καὶ τῶν
 βελέων ἴσων ἐόντων,¹ καὶ ὁμοίων καὶ μεζόνων καὶ
 ὁμοίως τιτρωσκόμενος καὶ μᾶλλον, ταύτῃ τῆς
 κεφαλῆς τὸ ὁστέον ἥσσον ῥήγνυται καὶ φλᾶται
 ἔσω, κἢν μέλλῃ ὄνθρωπος ἀποθνήσκειν καὶ ἄλλως
 40 ἐκ τοῦ τρώματος, ἐν τῷ ὀπισθεν τῆς κεφαλῆς

ON WOUNDS IN THE HEAD, II.

equally or less, the wounding and weapons being equal or smaller, the bone in this part of the head is more contused or fractured, and fractured and contused with depression, the lesions are more mortal, medical treatment and escape from death more difficult here than in any part of the head. When wounded equally or less, the wounds being alike, the patient, if he is going to die in any case from the wound, dies sooner when he has it in this part of the head than anywhere else; for it is at the bregma that the brain is most quickly and especially sensitive to evils that arise in scalp or skull, since the brain is covered here by thinnest bone and least flesh, and the greatest part of the brain lies under the bregma. Of the other parts, that at the temples is weakest, for the junction of the lower jaw with the cranium is at the temple, and there is an up-and-down movement there as in a joint. Near it is the organ of hearing, and a large and thick blood vessel extends through the temporal region. The whole skull behind the vertex and the ears is stronger than any part in front, and this bone has a fuller and thicker covering of flesh. It follows from such a state of things that when a man is stricken equally or more severely by woundings or weapons which are equal and similar or larger in this part of the head, the bone is less fractured, or contused with depression; and if the man is going to die in any case from the wound, he takes

ἔχων τὸ τρῶμα ἐν πλείονι χρόνῳ ἀποθανεῖται· ἐν πλείονι γὰρ χρόνῳ τὸ ὀστέον ἐμπυῖσκεται τε καὶ διαπυῖσκεται κάτω ἐπὶ τὸν ἐγκέφαλον διὰ τὴν παχύτητα τοῦ ὀστέου, καὶ ἐλάσσων ταύτῃ τῆς κεφαλῆς ὁ ἐγκέφαλος ὕπescτι, καὶ πλέονες ἐκ φυγγάνουσι τὸν θάνατον τῶν ὀπισθεν τιτρωσκομένων τῆς κεφαλῆς ὡς ἐπὶ τὸ πολὺ ἢ τῶν ἔμπροσθεν. καὶ ἐν χειμῶνι πλείονα χρόνον ζῇ ὠνθρωπος ἢ ἐν θέρει, ὅστις καὶ ἄλλως μέλλει¹
 50 ἀποθανεῖσθαι ἐκ τοῦ τρώματος ὅπου ἂν τῆς
 51 κεφαλῆς ἔχων² τὸ τρῶμα.

III. Αἱ δὲ ἔδραι τῶν βελέων τῶν ὀξέων κακουφοτέρων, αὐταὶ ἐπὶ σφῶν αὐτέων γινόμενα· ἐν τῷ ὀστέῳ ἄνευ ῥωγμῆς τε καὶ φλάσιος καὶ ἔσω ἐσφλάσιος—αὐταὶ δὲ γίνονται ὁμοίως ἐν τε τῷ ἔμπροσθεν τῆς κεφαλῆς καὶ ἐν τῷ ὀπισθεν—ἐκ τούτων ὁ θάνατος οὐ γίνεται κατὰ γε δίκην, οὐδ' ἦν γένηται. ῥαφή δὲ ἐν ἔλκει φανείσα, ὀστέου ψιλωθέντος, πανταχοῦ τῆς κεφαλῆς τοῦ ἔλκεος γενομένου, ἀσθενέστατον γίνεται τῇ τρώσει
 10 καὶ τῷ βέλει ἀντέχειν, εἰ τύχοι τὸ βέλος ἐς αὐτὴν τὴν ῥαφήν στηριχθέν—πάντων δὲ μάλιστα, ἦν τὸ βέλος³ ἐν τῷ βρέγματι γενομένον κατὰ τὸ ἀσθενέστατον τῆς κεφαλῆς—καὶ αἱ ῥαφαὶ εἰ τύχοιεν εἶναι περὶ τὸ ἔλκος καὶ τὸ βέλος
 15 αὐτέων τύχοι τῶν ῥαφῶν.

IV. Τιτρώσκεται δὲ ὀστέον τὸ ἐν τῇ κεφαλῇ τοσοῦσδε τρόπους· τῶν δὲ τρόπων ἐκάστου πλείονες ιδέαι γίνονται τοῦ κατήγματος ἐν τῇ τρώσει. ὀστέον ῥήγνυται τιτρωσκόμενον καὶ τῇ ῥωγμῇ⁴ ἐν τῷ περιέχοντι ὀστέῳ τὴν ῥωγμὴν, ἀνάγκη φλάσιν προσγενέσθαι, ἢνπερ ῥαγῇ· τῶν

longer time dying when he has it in the back of the head. For suppuration of the bone takes longer to come on and penetrate down to the brain because of the thickness of the skull; also there is less brain in this part of the head, and, as a rule, more of those wounded in the hinder part of the head escape death than of those wounded in front. In winter, too, a man lives longer than in summer, if he is going to die from the wound in any case, in whatever part of the head he may have the wound.

III. *Hedrae*¹ of sharp and light weapons, occurring by themselves in the skull without fissure, contusion or contused depression (these happen alike in front and at the back of the head) do not, at any rate by rights, cause death even if it occurs. If a suture appears in the wound when the bone is denuded, wherever the wound may be, the bone makes very weak resistance to lesion or weapon [if the weapon happens to get stuck in the suture itself]²—most of all if the weapon gets in the bregma, the weakest part of the head—and if, when the sutures happen to be in the region of the wound, the weapon also happens to strike the sutures themselves.

IV. The bone of the head is injured in the following number of modes, and for each mode several forms of fracture occur in the lesion. The bone is fractured when wounded, and the fracture is necessarily complicated by contusion of the bone about it, if it was really fractured. For the very

¹ See Introduction.

² This seems a superfluous gloss.

¹ ὅστις ἂν ἄλλως μέλλῃ.

² ἔχῃ Kw.'s conjecture.

³ ἔλκος Pq. Erm. βέλος Kw. codd.

⁴ τῆς ῥωγμῆς Pq.; V omits.

- γὰρ βελέων ὅ τι περ ρήγνυσσι τὸ ὀστέον, τὸ αὐτὸ τοῦτο καὶ φλᾶ τὸ ὀστέον ἢ μᾶλλον ἢ ἥσσον, αὐτό τε ἐν ὧπερ καὶ ρήγνυσσι τὴν ῥωγμὴν καὶ τὰ
 10 περιέχοντα ὀστέα τὴν ῥωγμὴν· εἰς οὗτος τρόπος. ἰδέαι δὲ ῥωγμέων παντοῖαι γίνονται· καὶ γὰρ λεπτότεραί τε καὶ λεπταὶ πάνυ, ὥστε οὐ καταφανέες γίνονται, ἔστιν αὖ τῶν ῥωγμέων,¹ οὔτε αὐτίκα μετὰ τὴν τρώσιν, οὔτ' ἐν τῇσιν ἡμέρησιν ἐν ἧσιν ἂν καὶ πόνων ὄφελος γένοιτο τοῦ θανάτου τῷ ἀνθρώπῳ.² αἱ δ' αὖ παχύτεραί τε καὶ εὐρύτεραι ρήγνυνται τῶν ῥωγμέων, ἔνιαι δὲ καὶ πάνυ εὐρέαι. ἔστι δὲ αὐτέων καὶ αἱ μὲν ἐπὶ μακρότερον ρήγνυνται, αἱ δὲ ἐπὶ βραχύτερον· καὶ
 20 αἱ μὲν ἰθύτεραι, αἱ δὲ ἰθεῖαι πάνυ, αἱ δὲ καμπυλώτεραι τε καὶ καμπύλαι· καὶ βαθύτεραί τε ἐς τὸ κάτω καὶ διὰ παντὸς τοῦ ὀστέου [καὶ ἥσσον
 23 βαθεῖαι καὶ οὐ διὰ παντὸς τοῦ ὀστέου].³

V. Φλασθείη δ' ἂν τὸ ὀστέον μένον ἐν τῇ ἑωυτοῦ φύσει, καὶ ῥωγμὴ τῇ φλάσει οὐκ ἂν προσγένοιτο ἐν τῷ ὀστέῳ οὐδεμία· δεύτερος οὗτος τρόπος. ἰδέαι δὲ τῆς φλάσιος πλείους γίνονται· καὶ γὰρ μᾶλλον τε καὶ ἥσσον φλᾶται καὶ ἐς βαθύτερόν τε καὶ διὰ παντὸς τοῦ ὀστέου, καὶ ἥσσον ἐς βαθὺ καὶ οὐ διὰ παντὸς τοῦ ὀστέου, καὶ ἐπὶ πλέον τε καὶ ἔλασσον μήκεός τε καὶ πλατύτητος. ἀλλὰ οὐ⁴ τούτων τῶν ἰδεῶν
 10 οὐδεμίαν ἔστιν ἰδόντα τοῖσιν ὀφθαλμοῖς γινῶναι ὁποίη τις ἔστιν τὴν ἰδέην καὶ ὁπόση τις τὸ μέγεθος· οὐδὲ γὰρ εἰ πέφλασται ἑόντων τε πεφλασμένων καὶ τοῦ κακοῦ γεγενημένου γίνεται τοῖσιν ὀφθαλμοῖσιν καταφανὲς ἰδεῖν αὐτίκα μετὰ

¹ ἔστι δ' αἴτιον ῥωγμέων Ρη., V.

same part of the weapon which breaks the bone also contuses it more or less; and this happens just at the place where it makes the fracture, and in the bones containing the fracture. This is one mode.¹ As to forms of fracture, all kinds occur, for some are rather small and very small, so as to be not noticeable either immediately after the lesion or in the days during which the patient might be helped in his sufferings and saved from death. Again, some of the fractures are larger and wider, and some very broad. Some are longer, some shorter, rather straight or quite straight, rather curved or bent, going rather deep and right through the bone [and not so deep and not through the bone].²

V. The bone may be contused and keep in its place, and the contusion may not be complicated by any fracture of the bone. This is a second mode.³ There are many forms of contusion; for the bone is more contused or less, to a greater depth, going right through, or less deeply, not going through the bone, and to a greater or smaller extent in length and breadth. Now none of these forms can be distinguished by the eye as to its precise shape and size, for it is not even clear to the eye immediately after the injury whether contusion has taken place, even if the parts are contused and the damage done;

¹ "Fissure fracture."

² Littré's insertion.

³ "Contusion."

² Obscure passage: "help for sufferings may be also help against death." Littré suggests *καὶ τοῦ θανάτου*.

³ Added by Littré.

⁴ οὐ Kw.; Pq. omits.

τὴν τρώσιν, ὥσπερ οὐδὲ τῶν ῥωγμέων ἔναι ἐκάς¹
 16 εἰσαί τε καὶ ἔρρωγός τοῦ ὀστέου.

VI. Ἐσφλᾶται τὸ ὀστέον ἐκ τῆς φύσιος τῆς
 ἑωυτοῦ ἔσω σὺν ῥωγμῇσιν· ἄλλως γὰρ οὐκ ἂν
 ἐσφλασθείη· τὸ γὰρ ἐσφλώμενον, ἀπορρηγνύ-
 μενόν τε καὶ καταγνύμενον, ἐσφλᾶται ἔσω ἀπὸ
 τοῦ ἄλλου ὀστέου μένοντος ἐν φύσει τῇ ἑωυτοῦ·
 καὶ δὴ οὕτω ῥωγμὴ ἂν προσεῖη τῇ ἐσφλάσει·
 τρίτος οὗτος τρόπος· ἐσφλᾶται δὲ τὸ ὀστέον
 πολλὰς ιδέας· καὶ γὰρ ἐπὶ πλεον τοῦ ὀστέου καὶ
 ἐπ' ἔλασσον, καὶ μᾶλλον τε καὶ ἐς βαθύτερον
 10 κάτω, καὶ ἥσσον καὶ ἐπιπολαιότερον.

VII. Καὶ ἔδρης γενομένης ἐν τῷ ὀστέῳ βέλεος
 προσγένοιτο ἂν ῥωγμὴ τῇ ἔδρῃ, τῇ δὲ ῥωγμῇ
 καὶ φλάσιν προσγενέσθαι ἀναγκαῖόν ἐστι ἢ
 μᾶλλον ἢ ἥσσον, ἥνπερ καὶ ῥωγμὴ προσγένηται
 ἔνθαπερ καὶ ἔδρη ἐγένετο καὶ ἡ ῥωγμὴ, ἐν τῷ
 ὀστέῳ περιέχοντι τὴν τε ἔδρην καὶ τὴν ῥωγμὴν·
 τέταρτος οὗτος τρόπος· καὶ ἔδρη μὲν ἂν γένοιτο
 φλάσιν ἔχουσα τοῦ ὀστέου περὶ αὐτήν, ῥωγμὴ δὲ
 οὐκ ἂν προσγένοιτο τῇ ἔδρῃ καὶ τῇ φλάσει ὑπὸ
 10 τοῦ βέλεος· [πέμπτος οὗτος τρόπος] [καὶ ἔδρη
 δὲ τοῦ βελέος γίνεται ἐν τῷ ὀστέῳ· ἔδρη δὲ καλεῖ-
 ται, ὅταν μένον τὸ ὀστέον ἐν τῇ ἑωυτοῦ φύσει τὸ
 βέλος στήριξαν ἐς τὸ ὀστέον δῆλον ποιήσῃ ὅπου
 ἐστήριξεν²] ἐν δὲ τῷ τρόπῳ ἐκάστῳ πλείονες ιδέαι
 γίνονται καὶ περὶ μὲν φλάσιός τε καὶ ῥωγμῆς,
 ἣν ἄμφω ταῦτα προσγένηται τῇ ἔδρῃ, καὶ ἣν
 φλάσις μούνη γένηται, ἥδη πέφρασται ὅτι πολλὰ

¹ ἐλάσσους Kw.'s suggestion in Hermes XX., but he does not print it.

² Kw. puts this passage first, as is done in the translation.

just as some fractures are not visible, being far from the wound,¹ though the bone be broken.

VI. The bone is contused and depressed inwards from its natural position with fractures, for otherwise it would not be depressed. For the depressed bone, broken off and fractured, is crushed inwards away from the rest of the bone, which keeps its place; and of course there will thus be a fracture as well as a contused depression. This is a third mode. Contused depressed fracture has many forms, for it extends over more or less of the skull, is more depressed and deeper, or less so and more superficial.

VII. Again, a weapon *hedra* occurs in the skull. It is called "*hedra*" when, the bone keeping its natural position, the weapon sticks into it and makes a mark where it stuck.² When a weapon *hedra* occurs in the skull, there may be a fracture as well as the *hedra*; and the fracture must necessarily be accompanied by more or less contusion (if a fracture also occurs) where the *hedra* and fracture happened, in the bone containing the *hedra* and fracture. This is a fourth mode. And a *hedra* may occur with contusion of the bone about it, without being accompanied by a fracture in addition to contusion by the weapon. [This is a fifth mode.³] Of each mode there are many forms; and as regards contusion and fracture (whether both of them accompany the *hedra*, or contusion only), it has already been declared that there are many forms,

¹ Or, "rather small," Kw.

² *Vestigium telii*, "scratch fracture." This passage is obviously out of place in the Greek text.

³ Pq. omits.

ιδέαι γίνονται καὶ τῆς φλίσσιος καὶ τῆς ῥωγμῆς.
 ἡ δὲ ἔδρη αὐτὴ ἐφ' ἐωυτῆς γίνεται μακροτέρη καὶ
 20 βραχυτέρη ἐοῦσα, καὶ καμπυλωτέρη, καὶ ἰθυτέρη,
 καὶ κυκλοτερής· καὶ πολλαὶ ἄλλαι ιδέαι τοῦ
 τοιούτου τρόπου, ὅποῖον ἂν τι καὶ τὸ σχῆμα¹ τοῦ
 βέλεος ᾗ· αἱ δὲ αὐταὶ καὶ βαθύτεραι τὸ κάτω καὶ
 μᾶλλον καὶ ἥσσον, καὶ στενότεραί τε καὶ ἥσσον
 στεναὶ καὶ εὐρύτεραι, καὶ πάνυ εὐρέαι, ᾗ δια-
 κεκόφεται· διακοπὴ δὲ ὁποσητισοῦν γινομένη
 μήκεός τε καὶ εὐρύτητος ἐν τῷ ὀστέῳ, ἔδρη ἐστίν,
 ἣν τὰ ἄλλα ὀστέα τὰ περιέχοντα τὴν διακοπὴν
 μένη ἐν τῇ φύσει τῇ ἐωυτῶν, καὶ μὴ συνεσφλᾶται
 30 τῇ διακοπῇ ἔσω ἐκ τῆς φύσιος τῆς ἐωυτῶν· οὕτω
 31 δὲ ἔσφλασις ἂν εἴη καὶ οὐκ ἔτι ἔδρη.

VIII. Ὅστέον τιτρώσκεται ἄλλη τῆς κεφαλῆς
 ἢ ἢ τὸ ἔλκος ἔχει ὠνθρωπος καὶ τὸ ὀστέον
 ἐψιλώθη τῆς σαρκός· πέμπτος² οὗτος τρόπος.
 καὶ ταύτην τὴν συμφορὴν, ὁπόταν γένηται, οὐκ
 ἂν ἔχοις ὠφελῆσαι οὐδέν· οὐδὲ γάρ, εἰ πέπονθε
 τὸ κακὸν τοῦτο, οὐκ ἔστιν ὅπως χρὴ αὐτὸν
 ἐξελέγξαντα εἰδέναι, εἰ πέπονθε τὸ κακὸν τοῦτο
 8 ὠνθρωπος, οὐδὲ ὅπη³ τῆς κεφαλῆς.

IX. Τούτων τῶν τρόπων τῆς κατῆξις ἐς πρίσιν
 ἀφήκει ἢ τε φλίσσις ἢ ἀφανὴς ἰδεῖν καὶ ἦν πως
 τύχη φανερὴ γενομένη καὶ ἢ ῥωγμὴ ἦν ἀφανὴς
 ἰδεῖν καὶ ἦν φανερὴ ᾗ· καὶ ἦν, ἔδρης γενομένης
 τοῦ βέλεος ἐν τῷ ὀστέῳ, προσγένηται ῥωγμὴ καὶ
 φλίσσις τῇ ἔδρῃ, καὶ ἦν φλίσσις μούνη προσγένη-
 ται ἄνευ ῥωγμῆς τῇ ἔδρῃ, καὶ αὕτη ἐς πρίσιν
 ἀφήκει· τὸ δὲ ἔσω ἐσφλώμενον ὀστέον ἐκ τῆς
 φυσίος τῆς ἐωυτοῦ ὀλίγα τῶν πολλῶν πρίσιος
 10 προσδεῖται· καὶ τὰ μάλιστα ἐσφλασθέντα καὶ
 18

both of the contusion and of the fracture. The *hedra* taken by itself is long or short, rather bent, or straighter, or rounded; and there are many other forms of this mode, according to the shape of the weapon. These same *hedrae* vary in depth and narrowness, and may be rather broad or very broad where there is a cleft; for a cleft in the bone of any size whatsoever as to length and breadth is a *hedra* if the rest of the bone round the cleft keeps its natural place and is not crushed in by the cleft; for this would be a contused depressed fracture, and no longer a *hedra*.

VIII. The skull is wounded in a part of the head other than that in which the patient has the lesion and the bone is denuded of flesh. This is a fifth mode.¹ When this accident occurs, you can do nothing to help; for if the man has suffered this injury, there is no possible way of examining him to make sure that he has suffered it, or whereabouts in the head it is.

IX. Of these modes of "fracture,"² contusion, whether invisible or somehow becoming manifest, is a case for trephining, also fissure-fracture, whether invisible or manifest; and if, when there is a weapon *hedra* in the bone, the *hedra* is accompanied by fracture and contusion, or if contusion alone accompanies the *hedra* without fracture, this also is a case for trephining. But as for contused depressed fractures, only a small proportion of them require trephining; and the more the bones are contused,

¹ Seventh Kw., our "contrecoup."

² Evidently taken as = injury.

¹ στόμα.

² ἑβδομος.

³ ὅπου ἔρμ.

μάλιστα καταρραγέοντα, ταῦτα πρίσιος ἤκιστα
 κέχρηται· οὐδὲ ἔδρη αὐτὴ ἐφ' ἐωυτῆς γενομένη
 ἄτερ ῥωγμῆς καὶ φλάσιος, οὐδὲ αὕτη πρίσιος
 δεῖται.¹ οὐδ' ἡ διακοπὴ ἦν² μεγάλη καὶ εὐρεία ἦ,
 15 οὐδ' αὕτη· διακοπὴ γὰρ καὶ ἔδρη τωυτόν ἐστιν.

Χ. Πρῶτον δὲ χρὴ τὸν τραυματὴν σκοπεῖσθαι,
 ὅπῃ ἔχει τὸ τρῶμα τῆς κεφαλῆς, εἴτ' ἐν τοῖσιν ἰσχυ-
 ροτέροισιν εἴτ' ἐν τοῖσιν ἀσθειεστέροισι, καὶ τὰς
 τρίχας καταμαίνεσθαι τὰς περὶ τὸ ἔλκος, εἰ διακε-
 κόφεται ὑπὸ τοῦ βέλεος, καὶ εἰ ἔσω ἦσαν³ ἐς τὸ
 τρῶμα, καὶ ἦν τοῦτο ἦ, φάναι κινδυνεύειν τὸ
 ὀστέον ψιλὸν εἶναι τῆς σαρκὸς καὶ ἔχειν τι σῖνος
 τὸ ὀστέον ὑπὸ τοῦ βέλεος.⁴ ταῦτα μὲν οὖν χρὴ
 ἀπόπροσθεν σκεψάμενον λέξαι, μὴ ἀπτόμενον τοῦ
 10 ἀνθρώπου· ἀπτόμενον δ' ἤδη πειρᾶσθαι εἰδέναι
 σάφα εἰ ἐστὶ ψιλὸν τὸ ὀστέον τῆς σαρκὸς ἢ οὐ·
 καὶ ἦν μὲν καταφανὲς ἦ τοῖσι ὀφθαλμοῖσι τὸ
 ὀστέον, ψιλόν· εἰ δὲ μή, τῇ μήλῃ σκέπτεσθαι.
 καὶ ἦν μὲν εὖρης ψιλὸν ἐὼν τὸ ὀστέον τῆς σαρκὸς
 καὶ μὴ ὑγιὲς ἀπὸ τοῦ τρώματος, χρὴ τοῦ ἐν τῷ
 ὀστέῳ ἐόντος τὴν διάγνωσιν πρῶτα ποιεῖσθαι,
 ὁρῶντα ὅπόσον τέ ἐστὶ τὸ κακὸν καὶ τίνος δεῖται
 ἔργου. χρὴ δὲ καὶ ἐρωτᾶν τὸν τετρωμένον ὅπως
 ἔπαθε καὶ τίνα τρόπον. ἦν δὲ μὴ καταφανὲς ἦ
 20 τὸ ὀστέον, εἰ ἔχει τι κακὸν⁵ ἢ μὴ ἔχει, πολλῶ ἔτι
 χρὴ μᾶλλον τὴν ἐρώτησιν ποιεῖσθαι, ψιλοῦ τε
 ἐόντος τοῦ ὀστέου, τὸ τρῶμα ὅπως ἐγένετο καὶ
 ὄντινα τρόπον· τὰς γὰρ φλάσιος καὶ τὰς ῥωγμὰς
 τὰς οὐ φαινομένας ἐν τῷ ὀστέῳ, ἐνεούσας δέ, ἐκ
 τῆς ὑποκρίσιος⁶ τοῦ τετρωμένου πρῶτον διαγινώ-

¹ δεῖται—εὐρεία Κω. Β. ² οὐδ' ἦν διακοπή. ³ εἶσαν.

ON WOUNDS IN THE HEAD, IX.-X.

depressed and comminuted, the less they require trephining. Nor does a *hedra*, occurring by itself without fracture or contusion, require trephining, and even if the cleft is large and wide, not even then; for cleft and *hedra* are the same.

X. The first thing to look for in the wounded man is whereabouts in the head the wound is, whether in the stronger or weaker part, and to examine the hair about the lesion, whether it has been cut through by the weapon and gone into the wound. If this is so, declare that it is likely that the bone is denuded of flesh and injured in some way by the weapon. One should say this at first inspection, without touching the patient. It is while handling the patient that you should try to make sure whether the bone is denuded of flesh or not. If the bone is visible to the eye, it is bare; if not, examine with the probe. Should you find the bone bare of flesh and injured by the wound, you should first distinguish the nature of the osseous lesion, its extent, and the operation required. And you should also ask the wounded man how he suffered the injury, and of what kind it was. If the bone is not visible so as to show whether it is or is not affected,¹ it is far more necessary than when the bone is bare to make the interrogation as to the origin and nature of the wound. For, in the case of contusions and fractures which do not appear in the bone, though they are there, you should first try to

¹ Reading νόσημα.

⁴ I give Kw.'s order of these sentences.

⁵ νόσημα B. Kw.

⁶ ἀποκρίσιος.

- σκειν πειρᾶσθαι, εἴ τι πέπονθε τούτων τὸ ὀστέον ἢ οὐ πέπονθεν. ἔπειτα δὲ καὶ λόγῳ καὶ ἔργῳ ἐξελέγχειν, πλὴν μηλώσιος. μήλωσις γὰρ οὐκ ἐξελέγχει, εἰ πέπονθέ τι τούτων τῶν κακῶν τὸ
 30 ὀστέον, καὶ εἴ τι ἔχει ἐν ἑωυτῷ, ἢ οὐ πέπονθεν· ἀλλ' ἔδρην τε τοῦ βέλεος ἐξελέγχει μήλωσις, καὶ ἦν ἐμφλασθῇ τὸ ὀστέον ἐκ τῆς φύσιος τῆς ἑωυτοῦ, καὶ ἦν ἰσχυρῶς ῥαγῇ τὸ ὀστέον, ἅπερ καὶ τοῖσι
 34 ὀφθαλμοῖσι καταφανέα ἐστὶν ὁρῶντα γινώσκειν.¹

- XI. Ῥήγνυται δὲ τὸ ὀστέον τὰς τε ἀφανέας ῥωγμὰς καὶ τὰς φανεράς, καὶ φλᾶται τὰς ἀφανέας φλύσιας, καὶ ἐσφλᾶται ἔσω ἐκ τῆς φύσιος τῆς ἑωυτοῦ, μάλιστα ὁπότεν ἕτερος ὑφ' ἐτέρου τιτρώσκοντος ἐπίτηδες τρώσαι² βουλόμενος ἢ ὁπότεν ἀέκων—καὶ ὁπότεν ἐξ ὑψηλοτέρου γίνηται ἢ βολὴ ἢ ἡ πληγὴ, ὁποτέρη ἂν ᾖ, μᾶλλον ἢ ὁπότεν ἐξ ἰσοπέδου τοῦ χωρίου, καὶ ἦν περικρατῇ τῇ
 10 χεيرὶ τὸ βέλος, ἦν τε βάλλη ἦν τε τύπτῃ, καὶ ἰσχυρότερος ἐὼν ἀσθενέστερον τιτρώσκει. ὅποσοι δὲ πίπτοντες τιτρώσκονται πρὸς τε τὸ ὀστέον καὶ αὐτὸ τὸ ὀστέον, ὁ ἀπὸ ὑψηλοτάτου πίπτων καὶ ἐπὶ σκληρότατον καὶ ἀμβλύτατον, τούτῳ κίνδυνος τὸ ὀστέον ῥαγῆναί τε καὶ φλασθῆναι καὶ ἔσω ἐσφλασθῆναι ἐκ τῆς φύσιος τῆς ἑωυτοῦ· τῷ δὲ ἐξ ἰσοπέδου μᾶλλον χωρίου πίπτουσι καὶ ἐπὶ μαλακώτερον, ἥσσον ταῦτα πᾶσχει τὸ ὀστέον ἢ οὐκ ἂν πάθοι. ὅποσα δὲ ἐσπίπτοντα ἐς τὴν κεφαλὴν βέλεα τιτρώσκει πρὸς τὸ ὀστέον καὶ αὐτὸ τὸ
 20 ὀστέον, τὸ ἀπὸ ὑψηλοτάτου ἐμπεσὼν καὶ ἥκιστα ἐξ ἰσοπέδου, καὶ σκληρότατόν τε ἅμα καὶ ἀμβλύτατον καὶ βαρύτατον, καὶ ἥκιστα κοῦφον καὶ

¹ Lobeck considers the last two words superfluous, but they are in all MSS.

ON WOUNDS IN THE HEAD, x.-xi.

distinguish by the patient's report whether the skull has or has not suffered in these ways. Then test the matter by reasoning and examination, avoiding the probe; for probing does not prove whether the bone has or has not suffered one of these evils, and what is the result. What probing proves is the existence of a *hedra* or weapon mark, or whether the skull has a contused fracture with depression, or is badly broken, things which are also clearly obvious to ocular inspection.

XI. The skull suffers invisible and visible fractures, invisible and visible contusions, and contused fracture with depression from its natural place, especially when one person is deliberately and wilfully wounded by another, rather than when the wound is unintentional; when the missile or the blow, whichever it be, comes from above rather than from level ground; when the weapon, whether used to throw or strike, is in full control,¹ and when a stronger man wounds a weaker. As to those who are wounded about the skull or in the skull itself by falling, he who falls from a very great height upon something very hard and blunt is likely to get his skull broken or contused, or to have a contused fracture with depression; while if a man falls from more level ground on to something rather soft, his skull suffers less in this way, or not at all. As to missile weapons which wound the parts about the skull or the skull itself, a thing will fracture or contuse the bone in proportion as it falls from a great height rather than the level, and is very hard as well as blunt, and

¹ Adams' "if the instrument be of a powerful nature" seems hardly correct.

² ἔτρωσεν; Pq. text obscure.

ἥκιστα ὁξὺ καὶ μαλθακόν, τοῦτο ἂν ῥήξειε τὸ ὀστέον καὶ φλάσειεν.

- Καὶ μάλιστα γὰρ ταῦτα πάσχειν τὸ ὀστέον κίνδυνος, ὁπότεν ταῦτά τε γίνηται καὶ ἐς ἰθὺ τρωθῇ καὶ κατ' ἀντίον γένηται τὸ ὀστέον τοῦ βέλεος, ἣν τε πληγῇ ἐκ χειρὸς ἣν τε βληθῇ ἣν τέ τι ἐμπέσῃ αὐτῷ καὶ ἣν αὐτὸς καταπεσὼν
- 30 τρωθῇ καὶ ὅπως οὖν τρωθεὶς κατ' ἀντίον γενομένου τοῦ ὀστέου τῷ βέλει. τὰ δ' ἐς πλάγιον τοῦ ὀστέου παρασύραντα βέλεα ἥσσον καὶ ῥήγνυσι τὸ ὀστέον καὶ φλᾶ καὶ ἔσω ἐσφλᾶ, κῆν ψιλωθῇ τὸ ὀστέον τῆς σαρκός· ἔνια γὰρ τῶν τρωμάτων τῶν οὕτω τρωθέντων οὐδὲ ψιλοῦται τὸ ὀστέον τῆς σαρκός. τῶν δὲ βέλεων ῥήγνυσι μάλιστα τὸ ὀστέον τὰς τε φανεράς ῥωγμὰς καὶ τὰς ἀφανέας καὶ φλᾶ τε καὶ ἐσφλᾶ ἔσω ἐκ τῆς φύσιος τῆς ἐωυτοῦ τὸ ὀστέον
- 40 τὰ στρογγύλα τε καὶ περιφερέα καὶ ἀρτίστομα, ἀμβλέα τε ἔοντα καὶ βαρέα καὶ σκληρά· καὶ τὴν σάρκα ταῦτα φλᾶ τε καὶ πέπειραν ποιεῖ καὶ κόπτει· καὶ τὰ ἔλκεα γίνεται ὑπὸ τῶν τοιούτων βελέων, ἐς τε πλάγιον καὶ ἐν κύκλῳ ὑπόκοιλα, καὶ διάπνυά τε μᾶλλον γίνεται καὶ ὑγρά ἐστίν καὶ ἐπὶ πλέονα χρόνον καθαίρεται· ἀνάγκη γὰρ τὰς σάρκας τὰς φλασθείσας καὶ κοπέισας πῦον γενομένας ἐκτακῆναι. τὰ δὲ βέλεα τὰ προμήκεα ἐπὶ πολὺ λεπτὰ ἔοντα καὶ ὀξέα καὶ κοῦφα, τὴν τε
- 50 σάρκα διατίμνει μᾶλλον ἢ φλᾶ καὶ τὸ ὀστέον ὡσαύτως· καὶ ἔδρην μὲν ἐμποιεῖ αὐτὸ καὶ διακόψαν¹—διακοπὴ γὰρ καὶ ἔδρη τωυτόν ἐστι—φλᾶ δὲ οὐ μάλα τὸ ὀστέον τὰ τοιαῦτα βέλεα οὐδὲ ῥήγνυσιν οὐδ' ἐκ τῆς φύσιος ἔσω ἐσφλᾶ.

heavy—in other words, the least light, sharp, and soft.

And the skull is especially likely to suffer this when the wound happens in those circumstances, and is perpendicular, the skull being directly opposed to the weapon, whether the agent be a blow or missile or something falling on the patient, or the patient falling himself, or being wounded in any way whatsoever, so long as the bone is at right angles to the weapon. When weapons graze the skull obliquely, they are less apt to cause fracture, or contusion, or contused fracture with depression, even if the bone is denuded; for in some wounds of this kind the bone is not even denuded of flesh. Those weapons which especially cause visible and invisible fractures, and contuse and crush in the bone out of its natural place, are rounded, smooth-surfaced, blunt, heavy and hard. These contuse the scalp, and pound it to a pulp. The wounds caused by such weapons become undermined both at the side and all round, and more likely to suppurate; they are moist and take long to cleanse, for the crushed and pounded tissue must necessarily become pus and slough away. Elongated weapons being usually slender, sharp and light, cut through the flesh rather than bruise it, and likewise the skull; they make a *hedra* in it and a cleaving¹ (for cleft is the same as *hedra*), but such weapons do not readily contuse the bone or break it, or crush it inwards out of its place.

¹ Or, "It leaves a *hedra* while cleaving."

¹ In these words αὐτὸ refers to ὀστέον, διακόψαν το βέλεα (βέλος). Erm.

Ἄλλὰ χρὴ πρὸς τῇ ὄψει τῇ ἑωυτοῦ, ὃ τι ἂν σοι φαίνεται ἐν τῷ ὀστέῳ, καὶ ἐρώτησιν ποιεῖσθαι πάντων τούτων. τοῦ γὰρ μᾶλλον τε καὶ ἥσσον τρωθέντος ταῦτά ἐστι σημεῖα, καὶ ἣν ὁ τρωθεὶς καρωθῇ καὶ σκότος περιχυθῇ καὶ ἣν
 60 δίνος ἔχη καὶ πέση.

XII. Ὅποτεν δὲ τύχη ψιλωθὲν τὸ ὀστέον τῆς σαρκὸς ὑπὸ τοῦ βέλεος, καὶ τύχη κατ' αὐτὰς τὰς ραφὰς γενόμενον τὸ ἔλκος, χαλεπὸν γίνεται καὶ τὴν ἑδρην τοῦ βέλεος φράσασθαι τὴν ἐν τῷ ἄλλῳ ὀστέῳ φανερὴν γενομένην, εἴτ' ἔνεστιν ἐν τῷ ὀστέῳ εἴτε μὴ ἔνεστιν, καὶ ἣν τύχη γενομένη ἢ ἑδρὴ ἐν αὐτῇσι τῇσι ραφῇσιν. συγκλέπτει¹ γὰρ αὐτὴ ἢ ραφὴ τρηχυτέρῃ ἐοῦσα τοῦ ἄλλου ὀστέου, καὶ οὐ διάδηλον ὃ τι τε αὐτοῦ ραφὴ ἐστὶ καὶ ὃ τι
 10 τοῦ βέλεος ἑδρὴ, ἣν μὴ κάρτα μεγάλη γένηται ἢ ἑδρὴ. προσγίνεται δὲ καὶ ῥῆξις τῇ ἑδρῃ ὡς ἐπὶ τὸ πολὺ τῇ ἐν τῇσι ραφῇσι γινομένην,² καὶ γίνεται καὶ αὐτὴ ἢ ῥῆξις χαλεπωτέρῃ φράσασθαι, ἐρρωγότος τοῦ ὀστέου, διὰ τοῦτο ὅτι κατ' αὐτὴν τὴν ραφὴν ἢ ῥῆξις γίνεται, ἣν ῥήγνυται, ὡς ἐπὶ τὸ πολὺ· ἑτοιμον γὰρ ταύτῃ ῥήγνυσθαι τὸ ὀστέον καὶ διαχαλᾶν διὰ τὴν ἀσθενείην τῆς φύσιος τοῦ ὀστέου ταύτῃ καὶ διὰ τὴν ἀραιότητα, καὶ δι' αἷτε τῆς ραφῆς ἐτοιμῆς ἐοῦσης ῥήγνυσθαι καὶ δια-
 20 χαλᾶν. τὰ δὲ ἄλλα ὀστέα τὰ περιέχοντα τὴν ραφὴν μένει ἀρραγέα, ὅτι ἰσχυρότερά ἐστι τῆς ραφῆς. ἢ δὲ ῥῆξις ἢ κατὰ τὴν ραφὴν γινομένη καὶ διαχάλασις ἐστὶ τῆς ραφῆς, καὶ φράσασθαι οὐκ εὐμαρὴς, οὔτε εἰ³ ἀπὸ ἑδρῆς τοῦ βέλεος γενομένης ἐν τῇ ραφῇ, ἐπειδὴν ραγῇ καὶ διαχαλάσῃ, οὔτε ἣν φλασθέντος τοῦ ὀστέου κατὰ τὰς
 26

ON WOUNDS IN THE HEAD, XI.—XII.

Now, besides your own inspection of what you may see in the bone, inquiry should be made into all these things, for they are indications of the greater or less gravity of the wound, also as to whether the patient was stupefied and plunged in darkness, or had vertigo and fell down.

XII. Whenever the skull happens to be laid bare of flesh by the weapon, and the wound happens to occur just at the sutures, it becomes difficult to make an assertion as to the presence or absence of a weapon *hedra* in the bone which would be obvious in another part, especially if the *hedra* happens to come in the sutures themselves. For the suture itself being more uneven than the rest of the skull is deceptive, and it is not very clear which part is suture and which *hedra*, unless the *hedra* is very large. As a rule, too, fracture accompanies the *hedra* when it occurs in the sutures, and the fracture itself is harder to make out—though the bone is broken—for this reason, viz. that when there is a break it comes, as a rule, just in the suture. For the skull here is readily fractured or comes apart owing to the natural weakness of the bone in this place, and because of its porosity. Besides, the suture as such is ready to rupture and come apart, but the bones containing it remain unbroken because they are stronger than the suture. Fracture occurring in a suture includes a giving way of the suture, and it is not easy to make out whether the breaking and coming apart follows a weapon *hedra* occurring in the suture, or whether it is after contusion of the

¹ Scaliger's emendation for συμβλέπει, confirmed by B. (συνκλεπτῇ).

² αὐτῇσιν . . . γιγνομένησι Pq.

³ ἤν.

- σάρκας, ραγῇ καὶ διαχάλασῃ· ἀλλ' ἔστι χαλεπώ-
 τερον φράσασθαι τὴν ἀπὸ τῆς φλάσιος ῥωγμῇν.
 συγκλέπτουσι γὰρ τὴν γνώμην καὶ τὴν ὄψιν τοῦ
 30 ἱητροῦ αὐταὶ αἱ ραφαὶ ῥωγμοειδέες φαινόμεναι
 καὶ τρηχύτεραι εἶναι τοῦ ἄλλου ὀστέου, ὅτι μὴ
 ἰσχυρῶς διεκόπη καὶ διεχάλασεν· διακοπὴ δὲ καὶ
 ἔδρη τῶντὸν ἐστίν. ἀλλὰ χρή, εἰ κατὰ τὰς ραφὰς
 τὸ τρῶμα γένοιτο καὶ πρὸς γε τὸ ὀστέον καὶ ἐς τὸ
 ὀστέον στηρίζει τὸ βέλος, προσέχοντα τὸν νόον
 ἀνευρίσκειν ὃ τι ἂν πεπόνθῃ τὸ ὀστέον. ἀπὸ γὰρ
 ἴσων τε βελέων τὸ μέγεθος καὶ ὁμοίων καὶ πολλῶ¹
 τε ἐλασσόνων, καὶ ὁμοίως τε τρωθεὶς καὶ πολλῶ²
 ἦσσον, πολλῶ μέζον ἐκτήσατο τὸ κακὸν ἐν τῷ
 40 ὀστέῳ ὃ ἐς τὰς ραφὰς δεξιόμενος τὸ βέλος ἢ ὃ μὴ
 ἐς τὰς ραφὰς δεξιόμενος. καὶ τούτων τὰ πολλὰ
 πρίεσθαι δεῖ· ἀλλ' οὐ χρή αὐτὰς τὰς ραφὰς
 πρίειν, ἀλλ' ἀποχωρήσαντα ἐν τῷ πλησίον ὀστέῳ
 44 τὴν πρίσιν ποιεῖσθαι, ἣν πρίης.

- XIII. Περὶ δὲ ἰήσιος τρωσίων τῶν ἐν τῇ κεφαλῇ
 καὶ ὅπως χρή ἐξελέγχειν τὰς πάθας τὰς ἐν τῷ
 ὀστέῳ γενομένας τὰς μὴ φανεράς, ὧδέ μοι δοκεῖ.
 ἔλκος ἐν τῇ κεφαλῇ οὐ χρή τέγγειν οὐδενί, οὐδέ οἶνω,
 ἄλλως ἥκιστα·³ οὐδὲ καταπλάσσειν, οὐδὲ μοτῶ
 τὴν ἰῆσιν ποιεῖσθαι, οὐδ' ἐπιδεῖν χρή ἔλκος ἐν τῇ
 κεφαλῇ, ἣν μὴ ἐν τῷ μετώπῳ ἢ τὸ ἔλκος, ἢ ἐν τῷ
 ψιλῷ τῶν τριχῶν, ἢ περὶ τὴν ὀφρὺν καὶ τὸν
 ὀφθαλμόν. ἐνταῦθα δὲ γινόμενα τὰ ἔλκεα κατα-
 10 πλάσιος καὶ ἐπιδέσιος μᾶλλον κέχρηται ἢ πού

¹ πολλόν.² πολύ.³ ἀλλ' ὡς ἥκιστα Pq., but with less support from MSS. or the context.

skull and flesh that it breaks and comes apart. Still, the fracture that follows contusion is harder to make out. For the sutures themselves, having a fracture-like appearance, and being more uneven than the rest of the skull, deceive the mind and eye of the physician, when not violently cleft or gaping—cleft and *hedra* are the same.¹ Now, if the wound is at the sutures, and the weapon penetrated the parts about the bone, and to the bone, you should devote your attention to finding out what injury the bone has suffered. For a person wounded by weapons of equal, similar or much less size to a similar or much less extent suffers far greater mischief in his skull if he receives the weapon at the sutures than when it is not so received, and the majority of these cases require trephining. You should not, however, trephine the sutures themselves, but, leaving an interval, operate on the adjacent part of the bone, if you do trephine.

XIII. The following is my view of the treatment of wounds in the head, and the way to discover affections of the skull which are not manifest. A lesion² in the head should not be moistened with anything, not even wine, much less anything else,³ nor should the treatment include plasters or plugging, nor ought one to bandage a lesion in the head, unless it is on the forehead or in the part devoid of hair, or about the eyebrow or eye. Wounds occurring here are more suited to plasters and bandaging than those

¹ Surely an insertion.

² ἑλκος is defined by Galen as "a lesion of continuity in the soft parts." The "wound," therefore, concerns the scalp only.

³ Or, reading ἀλλ' ὥς ἡκιστα "except the least possible," but the "correction" seems needless.

ἄλλοθι τῆς κεφαλῆς τῆς ἄλλης· περιέχει γὰρ ἢ κεφαλὴ ἢ ἄλλη τὸ μέτωπον πᾶν· ἐκ δὲ τῶν περιεχόντων τὰ ἔλκεα, καὶ ἐν ὧ ἂν ἢ τὰ ἔλκεα, φλεγμαίνει καὶ ἐπανοιδίσκεται δι' αἵματος ἐπιρροήν. χρὴ δὲ οὐδὲ τὰ ἐν τῷ μετώπῳ διὰ παντὸς τοῦ χρόνου καταπλάσσειν καὶ ἐπιδεῖν, ἀλλ' ἐπειδὴν παύσῃται φλεγμαίνοντα, καὶ τὸ οἶδημα καταστῇ παύσασθαι καταπλάσσουντα καὶ ἐπιδέοντα· ἐν δὲ τῇ ἄλλῃ κεφαλῇ ἔλκος οὔτε μοτοῦν
 20 χρὴ, οὔτε καταπλάσσειν οὔτ' ἐπιδεῖν, εἰ μὴ καὶ τομῆς δέοιτο.

Τάμνειν δὲ χρὴ τῶν ἐλκέων τῶν ἐν κεφαλῇ γενομένων, καὶ ἐν τῷ μετώπῳ, ὅπου ἂν τὸ μὲν ὀστέον ψιλὸν ἢ τῆς σαρκός, καὶ δοκῇ τι σίνος ἔχειν ὑπὸ τοῦ βέλεος, τὰ δὲ ἔλκεα μὴ ἱκανὰ τὸ μέγεθος τοῦ μήκος καὶ τῆς εὐρύτητος ἐς τὴν σκέψιν τοῦ ὀστέου, εἴ τι πέποιθεν ὑπὸ τοῦ βέλεος κακὸν καὶ ὁποῖόν τι πέπονθε, καὶ ὅποσον μὲν ἢ σὰρξ πέφλασται καὶ τὸ ὀστέον ἔχει τι σίνος, καὶ
 30 δ' αὐτε εἰ ἀσινές τέ ἐστι τὸ ὀστέον ὑπὸ τοῦ βέλεος καὶ μηδὲν πέπονθε κακόν, καὶ ἐς τὴν ἴησιν, ὁποίης τινὸς δεῖται τό τε ἔλκος ἢ τε σὰρξ καὶ ἡ πάθη τοῦ ὀστέου· τὰ δὲ τοιαῦτα τῶν ἐλκέων τομῆς δεῖται. καὶ ὅταν¹ μὲν τὸ ὀστέον ψιλωθῇ τῆς σαρκός, ὑπόκοιλα δὲ ἢ ἐς πλάγιον ἐπὶ πολὺ ἐπανατάμνειν τὸ κοῖλον, ὅπου μὴ εὐχερὲς τῷ φαρμάκῳ ἀφικέσθαι, ὁποῖῳ ἂν τινι χρὴ· καὶ τὰ κυκλοτερέα τῶν ἐλκέων καὶ ὑπόκοιλα ἐπὶ πολὺ καὶ τὰ τοιαῦτα ἐπανατάμνων τὸν κύκλον διχῇ
 40 κατὰ μῆκος, ὥς πέφυκεν ὄνθρωπος, μακρὸν ποιεῖν τὸ ἔλκος.

Τάμνοντι δὲ κεφαλὴν, τὰ μὲν ἄλλα τῆς

elsewhere in the head, for the rest of the head surrounds the whole forehead, and it is from the surrounding parts that lesions, wherever they may be, get inflamed and swollen by afflux of blood. Not even on the forehead should you use plasters and bandaging all the time, but when inflammation ceases and the swelling subsides, stop plasters and bandaging. On the rest of the head you should not plug, plaster, or bandage a wound unless incision is also required.

One should incise wounds occurring in the head and forehead where the bone is laid bare and seems to be in some way injured by the weapon, while the wounds are not long and broad enough for inspection of the bone, to see whether it has suffered any harm from the weapon, the nature of the injury and extent of the contusion of the flesh and any lesion of the bone, or, on the other hand, whether the bone is uninjured by the weapon, and has suffered no harm; also, as regards treatment to see what the wound requires, both as regards the flesh and the bone lesion. These are the kinds of wounds that require incision. When the skull is laid bare and there is considerable undermining on one side, open out by incision the hollow part where it is not easy for the suitable remedy to penetrate. In the case of circular wounds which are undermined to a considerable extent, open these out also by a double incision up and down as regards the patient ¹ so as to make the wound a long one.

Incisions may be safely made by the surgeon in

¹ *i.e.* at opposite sides of the wound above and below.

κεφαλῆς ἀσφαλείην ἔχει ταμνόμενα· ὁ δὲ κρότα-
 φος, καὶ ἄνωθεν ἔτι τοῦ κροτάφου, κατὰ τὴν
 φλέβα τὴν διὰ τοῦ κροτάφου φερομένην, τοῦτο
 δὲ τὸ χωρίον μὴ τάμνειν, σπασμὸς γὰρ ἐπιλαμ-
 βάνει τὸν τμηθέντα· καὶ ἦν μὲν ἐπ' ἀριστερὰ
 τμηθῇ κροτάφου,¹ τὰ ἐπὶ δεξιὰ ὁ σπασμὸς ἐπιλαμ-
 βάνει, ἦν δὲ ἐπὶ τὰ δεξιὰ τμηθῇ κροτάφου, τὰ
 50 ἐπ' ἀριστερὰ ὁ σπασμὸς ἐπιλαμβάνει.

XIV. "Οταν οὖν τάμνης ἕλκος ἐν κεφαλῇ
 ὁστέου εἵνεκα τῆς σαρκὸς ἐψιλωμένου, θέλων
 εἰδέναι εἴ τι ἔχει τὸ ὅστέον κακὸν ὑπὸ τοῦ βέλους
 ἢ καὶ οὐκ ἔχει, τάμνειν χρὴ τὸ μέγεθος τὴν
 ὠτειλήν,² ὅποση ἂν δοκῇ ἀποχρῆναι. τάμνοντα
 δὲ χρὴ ἀναστεῖλαι τὴν σάρκα ἀπὸ τοῦ ὁστέου ἢ
 πρὸς τῇ μήνιγγι καὶ πρὸς τῷ ὁστέῳ πέφυκεν,
 ἔπειτα διαμοτῶσαι τὸ ἕλκος πᾶν μοτῷ, ὅστις ἂν
 εὐρύτατον τὸ ἕλκος παρέξει ἐς τὴν ὑστεραίην σὺν
 10 ἐλαχίστῳ πόνῳ· μοτώσαντα δὲ καταπλάσματι
 χρῆσθαι ὅποσον ἂν περ χρόνον καὶ τῷ μοτῷ, μάξης
 ἐκ λεπτῶν ἀλφίτων, ἐν ὧξει δὲ μάσσειν, ἔψειν δὲ
 καὶ γλίσχρην ποιεῖν ὥς μάλιστα. τῇ δὲ ὑστε-
 ραίῃ ἡμέρῃ, ἐπειδὴν ἐξέλῃς τὸν μοτόν, κατιδὼν τὸ
 ὅστέον ὅ τι πέπονθεν, εἰ μὴ σοι καταφανῆς
 ἢ ἡ τρῶσις, ὁποῖα τίς ἐστὶν ἐν τῷ ὁστέῳ, μηδὲ
 διαγινώσκῃς εἴ τί τι ἔχει τὸ ὅστέον κακὸν ἐν
 ἑωυτῷ, ἢ καὶ οὐκ ἔχει, τὸ δὲ βέλος δοκῇ ἀφικέ-
 σθαι ἐς τὸ ὅστέον καὶ σίνασθαι, ἐπιξύειν χρὴ τῷ
 20 ξυστῆρι κατὰ βάθος καὶ κατὰ μῆκος τοῦ ἀνθρώ-
 που ὥς πέφυκε, καὶ αὖθις ἐπικάρσιον τὸ ὅστέον
 τῶν ῥηξίων εἵνεκα τῶν ἀφανέων ἰδεῖν καὶ τῆς

¹ ἐν τῷ . . . κροτάφῳ also below ἐν τῷ ἐπὶ δεξιὰ τμηθῇ
 κροτάφῳ, Kw.

any other part of the head, but he should not incise the temple, or the part above it in the region traversed by the temporal blood-vessel, for spasm seizes the patient. And if incision of the temple is made on the left, spasm seizes the parts on the right, while if the incision is on the right, spasm seizes the parts on the left.

XIV. When, therefore, you incise a head wound because the bone is denuded, and you want to know whether it has, or has not, suffered any injury from the weapon, the size of the open wound should be such as seems fully sufficient. When operating you should detach the scalp from the skull where it is adherent to the membrane¹ and to the bone. Then plug the whole wound with lint, so that next day it will present the widest possible lesion of continuity with least pain. When plugging use a plaster of dough from fine barley meal to be kept on as long as the lint. Knead it up with vinegar and boil, making it as glutinous as possible. Next day, when you take out the lint, if, on looking to see what the bone has suffered, the nature of the lesion is not clear, and you cannot even see whether the skull has anything wrong with it, yet the weapon seems to have reached and damaged the bone, you should scrape down into it with a raspatory, both up and down as regards the patient, and again transversely so as to get a view of latent fractures and contusion which

¹ Vidius suggests that this refers to the connections between pericranium and dura mater at the sutures. Celsus seems to translate "*membranula quae sub eute, calvariam cingit.*" VIII. 4.

² *τομήν*, K^w's conjecture.

φλάσιος εἵνεκα τῆς ἀφανέος τῆς οὐκ ἐσφλωμένης
 ἔσω ἐκ τῆς φύσιος τῆς κεφαλῆς τοῦ ἄλλου ὀστέου.
 ἐξελέγχει γὰρ ἡ ξύσις μάλα τὸ κακόν, ἣν μὴ καὶ
 ἄλλως καταφανέες ἔωσιν αὐται αἱ πάθαι αἱ ἐοῦσαι
 ἐν τῷ ὀστέῳ [τοῦ βέλεος].¹ καὶ ἦν ἔδρην ἰδῆς ἐν
 τῷ ὀστέῳ τοῦ βέλεος, ἐπιξύνει χρὴ αὐτὴν τε τὴν
 ἔδρην καὶ τὰ περιέχοντα αὐτὴν ὀστέα, μὴ πολ-
 30 λάκεις τῇ ἔδρῃ προσγένηται ῥῆξις καὶ φλάσις, ἡ
 μόνη φλάσις, ἔπειτα λανθάνῃ οὐ καταφανέα
 ἑόντα.

Ἐπειδὴν δὲ ξύσης τὸ ὀστέον τῷ ξυστήρι, ἦν
 μὲν δοκῇ ἐς πρίσιν ἀφήκειν ἡ τρώσις τοῦ ὀστέου,
 πρίειν χρὴ, καὶ τὰς τρεῖς ἡμέρας μὴ ὑπερβάλλειν
 ἀπρίωτον, ἀλλ' ἐν ταύτησι πρίειν, ἄλλως τε καὶ
 τῆς θερμῆς ὥρης, ἦν ἐξ ἀρχῆς λαμβάνῃς τὸ ἦμα.
 Ἦν δὲ ὑποπτεύῃς μὲν τὸ ὀστέον ἐρρωγέαι ἡ
 πεφλάσθαι, ἡ ἀμφότερα ταῦτα, τεκμαιρόμενος ὅτι
 40 ἰσχυρῶς τέτρωται ἐκ τῶν λόγων τοῦ τρωματίου,
 καὶ ὅτι ὑπὸ ἰσχυροτέρου τοῦ τρώσαντος, ἦν ἕτερος
 ὑφ' ἐτέρου τρωθῇ, καὶ τὸ βέλος ὅτῳ ἐτρώθη,
 ὅτι τῶν κακούργων βελέων ἦν, ἔπειτα τὸν
 ἄνθρωπον ὅτι δῖνός τε ἔλαβε καὶ σκότος, καὶ
 ἐκαρώθη καὶ κατέπεσεν· τούτων δὲ οὕτω γενομέ-
 νων, ἦν μὴ διαγινώσκῃς εἰ ἐρρωγε τὸ ὀστ' οὐν ἡ
 πέφλασται, ἡ καὶ ἀμφότερα ταῦτα, μήτε ἄλλως ²
 ὀρέων δύνῃ, δεῖ δὴ ἐπὶ τὸ ὀστέον τὸ τηκτὸν τὸ
 μελάντατον δεύσας,³ τῷ μέλανι φαρμάκῳ τῷ
 τηκομένῳ στείλαι ⁴ τὸ ἔλκος, ὑποτείνας ὀθόνιον
 50 ἐλαίῳ τέγξας.⁵ εἶτα καταπλάσας τῇ μάξῃ ἐπιδη-
 σαι. τῇ δὲ ὑστεραίῃ ἀπολύσας, ἐκκαθήρας τὸ ἔλκος
 ἐπιξῦσαι. καὶ ἦν μὴ ἡ ὑγιές, ἀλλ' ἐρρώγη καὶ

¹ Omit B. Kw.² ὅλως Pq.³ δεύσαντα.

is latent because the rest of the bone is not crushed in out of its natural position. For rasping shows up the mischief well, even if these lesions though existing in the bone are not otherwise manifest. And if you see a weapon *hedra* in the bone, you should scrape the *hedra* itself and the bone containing it, in case, as often happens, fissure with contusion or contusion alone accompanies the *hedra*, and not being well marked, is overlooked.

When you scrape the bone with the raspatory, if the skull lesion seems to be a case for trephining, you should operate and not leave the patient untrepined till after the three days, but trephine in this period, especially in the hot season, if you take on the treatment from the first.

Should you suspect the skull to be fractured or contused or both, judging from the patient's account that the blow was severe and inflicted by a stronger person—if he was struck by someone else—and that the instrument with which he was wounded was of a dangerous kind; further, that the man suffered vertigo and loss of sight, was stunned and fell down: in such circumstances if you cannot otherwise distinguish by inspection whether the skull is fractured or contused or even both, then you must drop on the bone the very black solution, anoint the wound with the dissolved black drug, putting linen on it and moisten with oil, and then apply the barley-meal plaster and bandage. Next day, having opened and cleansed the wound, scrape further, and, if it is not sound but fractured and contused,

⁴ Difficult text. στεῖλαι = *superlegere*, *inungere*.

⁵ τέγξαι.

πεφλασμένον ἤ, τὸ μὲν ἄλλο ἔσται ὀστέον λευκὸν ἐπιξυόμενον· ἡ δὲ ῥωγμὴ καὶ ἡ φλάσις, κατατακέντος τοῦ φαρμάκου, δεξαμένη τὸ φάρμακον ἐς ἐωυτὴν μέλαν ἐόν, ἔσται μέλαινα ἐν λευκῷ τῷ ὀστέῳ τῷ ἄλλῳ. ἀλλὰ χρὴ αὖθις τὴν ῥωγμὴν ταύτην φανείσαν μελαιναν ἐπιξύειν κατὰ βάθος· καὶ ἦν μὲν ἐπιξύων [τὴν ῥωγμὴν ταύτην φανείσαν μελαι-
 60 ναν]¹ ἐξέλης καὶ ἀφανέα ποιήσης, φλάσις μὲν γεγένηται τοῦ ὀστέου ἢ μᾶλλον ἢ ἥσσον, ἣτις περιέρρηξε καὶ τὴν ῥωγμὴν τὴν ἀφανισθείσαν ὑπὸ τοῦ ξυστήρος· ἥσσον δὲ φοβερόν καὶ ἥσσον ἂν πρήγμα ἀπ' αὐτῆς γένοιτο ἀφανισθείσης τῆς ῥωγμῆς. ἦν δὲ κατὰ βάθος ἢ καὶ μὴ ἐθέλῃ ἐξιέναι
 66 ἐπιξυομένη, ἀφήκει ἐς πρίσιν ἢ τοιαύτη συμφορῇ.

XV. Ἀλλὰ χρὴ πρίσαντα τὰ λοιπὰ ἰητρεῦειν τὸ ἔλκος. φυλάσσεσθαι δὲ χρὴ ὅπως μὴ τι κακὸν ἀπολαύσῃ τὸ ὀστέον ἀπὸ τῆς σαρκός, ἦν κακῶς ἰητρεύηται. ὀστέῳ γὰρ καὶ πεπρισμένῳ καὶ ἄλλως ἀπρίστῳ ἐψιλωμένῳ δέ, καὶ² ὑγιεῖ δὲ ἐόντι καὶ ἔχοντί τι σίνος ὑπὸ τοῦ βέλεος, δοκέοντι δὲ ὑγιεῖ εἶναι, κίνδυνός ἐστι μᾶλλον ὑπόπυον γενέσθαι, ἦν καὶ ἄλλως μὴ μέλλῃ, ἦν καὶ ἡ σὰρξ ἢ περιέχουσα τὸ ὀστέον κακῶς
 10 θεραπεύηται, καὶ φλεγμαίνῃ τε καὶ περισφίγγηται· πυρετῶδες γὰρ γίνεται καὶ πολλοῦ φλογμοῦ πλέον· καὶ δὴ τὸ ὀστέον ἐκ τῶν περιεχούσων σαρκῶν ἐς ἐωυτὸ θέρμην τε καὶ φλογμὸν καὶ ἄραδον ἐμποιεῖ καὶ σφυγμόν, καὶ ὅποσα περ ἡ σὰρξ ἔχει κακὰ ἐν ἐωυτῇ, καὶ ἐκ τούτων ὧδε³ ὑπόπυον γίνεται. κακὸν δὲ καὶ ὑγρὴν τε εἶναι τὴν σάρκα ἐν τῷ ἔλκει καὶ

¹ Probably a gloss: many codd. and editt. omit.

ON WOUNDS IN THE HEAD, XIV.—XV.

the rest of the bone will be white after scraping, but the fracture and contusion will have absorbed the dissolved drug and will be black in the white bone. You should again scrape down into this fracture which shows black, and if on further scraping [this fracture which shows black] you clear it away and make it invisible, there has been more or less contusion of the bone, which also produced the fracture now abolished by the raspatory, but it is less formidable and less danger will result from it now the fracture has disappeared. Should it go deep and refuse to disappear when scraped, such an accident is a case for trephining.

XV. After the operation you should use the other treatment requisite for the wound.¹ You should guard against any mischief spreading from the tissues to the skull owing to improper treatment. For when the bone is trephined or otherwise denuded without trephining—whether really sound, or injured in some way by the weapon though apparently sound—there is greater risk of suppuration, even if it would not otherwise occur, if the flesh about the bone receives improper treatment and gets inflamed and strangulated. For a sort of fever occurs in it, and it becomes full of burning heat, and finally the bone draws into itself heat and inflammation from the tissues about it, also irritation and throbbing, and everything bad which the flesh already contains, and so it becomes purulent. It is also bad for the tissues in the wound to be moist and

¹ Vidius: "cetera facienda sunt quae ulceris curatio postulat."

² ἀπρίστω δέ, καὶ B.Kw. ; the rest omit.

³ οὕτως.

- μυδῶσαν καὶ ἐπὶ πολλὸν χρόνον καθαίρεσθαι·
 ἀλλὰ χρὴ διάπνυν μὲν ποιῆσαι τὸ ἔλκος ὥς
 20 τάχιστα· οὕτω γὰρ ἂν ἤκιστα φλεγμαῖνοι τὰ
 περιέχοντα τὸ ἔλκος καὶ τάχιστ' ἂν καθαρὸν
 εἶη. ἀνάγκη γὰρ ἔχει τὰς σάρκας τὰς κοπείσας
 καὶ φλασθείσας ὑπὸ τοῦ βέλεος, ὑποπύους
 γενομένας, ἐκτακῆναι. ἐπειδὰν δὲ καθαρθῇ,
 ξηρότερον χρὴ γίνεσθαι τὸ ἔλκος· οὔτω γὰρ
 ἂν τάχιστα ὑγιὲς γένοιτο, ξηρῆς σαρκὸς βλασ-
 τούσης καὶ μὴ ὑγρῆς, καὶ οὕτως οὐκ ἂν
 ὑπερσαρκήσκει τὸ ἔλκος. ὁ δὲ αὐτὸς λόγος
 καὶ ὑπὲρ¹ τῆς μήνιγγος τῆς περὶ τὸν ἐγκέφαλον·
 30 ἦν γὰρ αὐτίκα ἐκπρίσας τὸ ὀστέον καὶ ἀφελὼν
 ἀπὸ τῆς μήνιγγος ψιλώσης αὐτήν, καθαρὴν χρὴ
 ποιῆσαι ὥς τάχιστα καὶ ξηρήν, ὥς μὴ ἐπὶ
 πολλὸν χρόνον ὑγρὴ εἴουσα μυδῇ τε καὶ ἐξαίρηται·²
 τούτων γὰρ οὕτω γινομένων σαπῆναι αὐτὴν
 35 κίνδυνος.

- XVI. Ὅστέον δὲ ὃ τι δὴ ἀποστήναι δεῖ ἀπὸ
 τοῦ ἄλλου ὀστέου, ἔλκος ἐν κεφαλῇ γενομένου,
 ἔδρης τε εἰούσης τοῦ βέλεος ἐν τῷ ὀστέῳ, ἢ
 ἄλλως ἐπὶ πολὺ ψιλωθέντος τοῦ ὀστέου,
 ἀφίσταται ἐπὶ πολὺ ἔξαιμον γενόμενον. ἀναξη-
 ραίνεται γὰρ τὸ αἷμα ἐκ τοῦ ὀστέου ὑπὸ τε τοῦ
 χρόνου καὶ ὑπὸ φαρμάκων τῶν πλείστων. τά-
 χιστα δ' ἂν ἀποσταίῃ, εἴ τις τὸ ἔλκος ὥς τάχιστα
 καθήρας ξηραῖνοι τὸ λοιπὸν τό τε ἔλκος καὶ τὸ
 10 ὀστέον, καὶ τὸ μέζον καὶ τὸ ἥσσον. τὰ γὰρ
 τάχιστα ἀποξηρανθὲν καὶ ἀποστρακωθὲν τούτῳ
 μάλιστα ἀφίσταται ἀπὸ τοῦ ἄλλου ὀστέου τοῦ

¹ περί.

macerated, and to take a long time to clean up. You should rather make the wound suppurate as quickly as possible; for thus the parts about it will be least inflamed and it will be most rapidly cleansed; for the tissues that are pounded and contused by the weapon must necessarily become purulent and slough away. When the wound is cleansed it should get rather dry, for so it will soonest become healthy, the growing tissue¹ being dry and not moist, and thus the wound will have no exuberance of flesh. The same principle applies to the membrane covering the brain. For if you trephine at once and by taking away the bone denude this membrane, you should make it clean and dry as soon as possible, lest by being moist a long time it should fungate and swell up, for in such circumstances there is risk of its becoming putrid.

XVI. Any bone which is bound to separate from the rest, when a wound has occurred in the head and there is a weapon *hedra* in the skull, or when the bone is otherwise extensively denuded, usually separates after becoming bloodless, for the blood in the bone is dried up both by time and by most applications. The separation would occur most rapidly if, after cleansing the wound as soon as possible, one should next dry both the wound and the bone whether larger or smaller. For what is soonest dried up and made like a potsherd, thereby most readily separates from the rest of the bone which is full of blood and life, having

¹ Our "granulation tissue."

² ξξερῆται.

- ἐναίμου τε καὶ ζῶντος, αὐτὸ ἔξαιμόν τε γενόμενον
 14 καὶ ξηρὸν [τῷ ἐναίμῳ καὶ ζῶντι μάλα ἀφίσταται].¹

- XVII. Ὅσα δὲ τῶν ὀστέων ἐσφλᾶται ἔσω ἐκ
 τῆς φύσιος τῆς ἐώντων, καταρραγέντα ἢ καὶ
 διακοπέντα πάνυ εὐρέα, ἀκινδυνότερα τὰ τοιαῦτα
 γίνεται, ἐπὴν ἢ μῆνιγξ ὑγιὴς ᾗ· καὶ τὰ πλέοσι
 ῥωγμῇσιν ἐσκαταρραγέντα καὶ εὐρυτέρησιν ἔτι
 ἀκινδυνότερα καὶ εὐμαρέστερα ἐς τὴν ἀφαίρεσιν
 γίνεται. καὶ οὐ χρὴ πρίειν τῶν τοιούτων οὐδέν,
 οὐδὲ κινδυνεύειν τὰ ὀστέα πειρώμενον ἀφαιρεῖν
 πρὶν ἢ αὐτόματα ἐπανίη· εἰκὸς πρῶτον χαλά-
 10 σαντος.² ἐπανέρχεται δὲ τῆς σαρκὸς ὑποφυο-
 μένης· ὑποφύεται δὲ ἐκ τῆς διπλῆς τοῦ ὀστέου
 καὶ ἐκ τοῦ ὑγιέος, ἣν ἢ ἄνωθεν μοῖρη τοῦ ὀστέου
 μούνη σφακελίση. οὕτω δ' ἂν τάχιστα ἢ τε
 σὰρξ ὑποφύοιτο καὶ βλαστάνοι καὶ τὰ ὀστέα
 ἐπανίοι, εἴ τις τὸ ἔλκος ὥς τάχιστα διάπυον
 ποιήσας καθαρὸν ποιήσῃται.³ καὶ ἦν διὰ
 παντὸς τοῦ ὀστέου ἄμφω αἱ μοῖραι ἐσφλασθῶσιν
 ἔσω ἐς τὴν μῆνιγγα, ἢ τε ἄνω μοῖρη τοῦ ὀστέου
 καὶ ἢ κάτω, ἡτρεύνοντι ὡσαύτως τὸ ἔλκος ὑγιὲς
 20 τάχιστα ἔσται, καὶ τὰ ὀστέα τάχιστα ἐπάνεισι
 21 τὰ ἐσφλασθέντα ἔσω.

XVIII. Τῶν δὲ παιδιῶν τὰ ὀστέα καὶ λεπτό-
 τερά ἐστι καὶ μαλθακώτερα διὰ τοῦτο, ὅτι ἐναι-
 μότερά ἐστι, καὶ κοῖλα καὶ σηραγγώδεα καὶ
 οὔτε πυκνὰ οὔτε στερεά. καὶ ὑπὸ τῶν βελέων

¹ Following Kw.'s reading and punctuation of this much controverted passage. Scaliger and others omit the last words.

² "This passage is corrupt and depraved in all the examples." Foës.

ON WOUNDS IN THE HEAD, XVI.—XVIII.

become itself bloodless and dry [it readily comes away from the vascular and living part].

XVII. Cases of contused fracture of the bones with depression when they are broken up and even comminuted very widely, are less dangerous (than other injuries) if the covering of the brain is unharmed, and where the bones are broken in with many and rather wide fractures they are still less dangerous, and are more readily removed. In such cases you should do no trephining, nor run risk in trying to remove bone fragments before they come up of their own accord: they naturally come up when there is a loosening.¹ Now the fragments come up when the flesh grows from below, and it grows up from the diploë of the skull and its healthy part, if there is necrosis of the upper table of the skull only. Such upgrowth from below and burgeoning of the flesh will take place most rapidly if one brings the wound as soon as possible to suppuration and cleanses it. If the whole bone with both its "tables,"² both upper and lower, is contused inwards and depressed into the cerebral membrane, it is by the same treatment that the wound will heal soonest and the bone fragments that are crushed inwards come up most quickly.

XVIII. The (skull) bones of young children are thinner and softer because they contain more blood and are hollow and porous and neither dense nor hard. And when wounded by equal or weaker

¹ "Subsidence of the swelling," Adams, reading οἶδος for εἶκος as Littré.

² Literally "parts."

ἴσων τε ἔόντων καὶ ἀσθενεστέρων, καὶ τρωθέντων
 ὁμοίως τε καὶ ἤσσον, τὸ τοῦ νεωτέρου παιδίου
 καὶ μᾶλλον καὶ θᾶσσον ὑποπνίσκεται ἢ τὸ τοῦ
 πρεσβυτέρου, καὶ ἐν ἐλάσσονι χρόνῳ· καὶ ὅσα
 10 ἂν ἄλλως μέλλῃ ἀποθανεῖσθαι ἐκ τοῦ τρώματος,
 ὁ νεώτερος τοῦ πρεσβυτέρου θᾶσσον ἀπόλλυται.

Ἄλλὰ χρή, ἣν ψιλωθῇ τῆς σαρκὸς τὸ ὀστέον,
 προσέχοντα τὸν νόον, πειρῆσθαι διαγινώσκειν
 ὅ τι μὴ ἔστι τοῖσιν ὀφθαλμοῖσιν ἰδεῖν, καὶ
 γνῶναι εἰ ἔρρωγε τὸ ὀστέον καὶ εἰ πέφλασται,
 ἢ μούνον πέφλασται, καὶ εἰ, ἔδρης γενομένης
 τοῦ βέλεος, πρόσεστι φλάσις ἢ ῥωγμὴ ἢ ἄμφω
 ταῦτα. καὶ ἣν τι τούτων πέπονθε τὸ ὀστέον,
 ἀφεῖναι τοῦ αἵματος τρυπῶντα τὸ ὀστέον σμικρῶ
 τρυπάνῳ, φυλασσόμενον ἐπ' ὀλίγον· λεπτότερον
 20 γὰρ τὸ ὀστέον καὶ ἐπιπολαιότερον τῶν νέων ἢ
 21 τῶν πρεσβυτέρων.

XIX. Ὅστις δὲ μέλλει ἐκ τρωμάτων ἐν κεφαλῇ
 ἀποθνήσκειν, καὶ μὴ δυνατὸν αὐτὸν ὑγιᾶ γενέ-
 σθαι μηδὲ σωθῆναι, ἐκ τῶνδε τῶν σημείων χρή
 τὴν διάγνωσιν ποιεῖσθαι τοῦ μέλλοντος ἀποθνή-
 σκειν, καὶ προλέγειν τὸ μέλλον ἔσεσθαι. πᾶσχει
 γὰρ τάδε· ὁπόταν τις ὀστέον κατεηγὸς ἢ ἔρρωγὸς
 ἢ πεφλασμένον, ἢ ὅτῳ γοῦν τρόπῳ κατεηγὸς
 ἐννοήσας ἀμάρτη, καὶ μήτε ξύση μήτε πρίση
 μήτε δεόμενον, μήτε¹ δὲ ὡς ὑγιέος ὄντος τοῦ
 10 ὀστέου, πρὸ τῶν τεσσαρακαίδεκα ἡμερέων πυρετὸς
 ἐπιλήψεται, ὡς ἐπὶ πολὺ ἐν χειμῶνι, ἐν δὲ τῷ θερί
 μετὰ τὰς ἑπτὰ ἡμέρας ὁ πυρετὸς ἐπιλαμβάνει. καὶ
 ἐπειδὴν τοῦτο γένηται, τὸ ἔλκος ἄχροον γίνεται

¹ This fourth μήτε puzzles nearly all the translators. They leave it out. I follow Petrequin. μεθῇ δὲ Litt. Erm.

ON WOUNDS IN THE HEAD, XVIII.—XIX.

weapons to a similar or less extent the skull of the younger child suppurates more readily and rapidly than that of the elder and for a shorter period,¹ and when they are going to die in any case from the wound, the younger perishes sooner than the elder.

But if the bone is denuded of flesh you should devote your intelligence to trying to distinguish a thing which cannot be known by inspection—whether there is fracture and contusion of the skull or only contusion, and whether, if there is a weapon *hedra*, it is accompanied by contusion or fracture, or both of these. If the bone is injured in any of these ways, let blood by perforating with a small trepan, keeping a look-out at short intervals,² for in young subjects the skull is thinner and more on the surface³ than in older persons.

XIX. When anyonē is going to die from wounds in the head, and it is impossible to make him well or even save his life, the following are the signs from which one should make the diagnosis of approaching death and foretell what is going to happen. He has the following symptoms—when, after recognising that the skull is injured, either broken or contused, or injured in some way, one makes a mistake and neither scrapes nor trephines as though it were not required, yet the bone is not sound, fever as a rule will seize the patient within fourteen days in winter, and in summer just after seven days. When this occurs, the lesion

¹ So Petrequin, avoiding a tautology.

² Cf. θαμινὰ σκοπούμενος, XXI.

³ *i.e.* has less depth.

καὶ ἐξ αὐτοῦ ἰχώρ ῥεῖ σμικρός· καὶ τὸ φλεγμαῖ-
 νον ἐκτέθνηκεν ἐξ αὐτοῦ· καὶ βλιχῶδες¹ γίνεται
 καὶ φαίνεται ὥσπερ τάριχος, χροίην πυρρόν,
 ὑποπέλιον· καὶ τὸ ὀστέον σφακελίζειν τηνικαῦτα
 ἄρχεται, καὶ γίνεται περκνὸν λεῖον ὄν,² τελευ-
 ταῖον δὲ ἔπωχρον γενόμενον ἢ ἔκλεικον. ὅταν
 20 δ' ἤδη ὑπόπνουν ἦ, ἐπὶ τῇ γλώσση φλυκταῖναι
 γίνονται, καὶ παραφρονέων τελευτᾷ. καὶ σπασμὸς
 ἐπιλαμβάνει τοὺς πλείστους τὰ ἐπὶ θάτερα τοῦ
 σώματος· ἣν μὲν ἐν τῷ ἐπ' ἀρίστερα τῆς κεφαλῆς
 ἔχη τὸ ἔλκος, τὰ ἐπὶ δεξιὰ τοῦ σώματος ὁ
 σπασμὸς λαμβάνει· ἣν δ' ἐν τῷ ἐπὶ δεξιὰ τῆς
 κεφαλῆς ἔχη τὸ ἔλκος, τὰ ἐπ' ἀριστερὰ τοῦ
 σώματος ὁ σπασμὸς ἐπιλαμβάνει. εἰσὶ δ' οἱ
 καὶ ἀπόπληκτοι γίνονται, καὶ οὕτως ἀπόλλυνται
 πρὸ ἐπτὰ ἡμέρων ἐν θέρει ἢ τεσσάρων καὶ δέκα
 30 ἐν χειμῶνι· ὁμοίως δὲ τὰ σημεῖα ταῦτα σημαίνει,
 καὶ ἐν πρεσβυτέρῳ εἰσὶν τῷ τρώματι ἢ καὶ ἐν
 νεωτέρῳ.

Ἀλλὰ χρή, εἰ ἐννοίης τὸν πυρετὸν ἐπιλαμβά-
 νοντα καὶ τῶν ἄλλων τι σημεῖον τούτῳ προσγε-
 νόμενον, μὴ διατρίβειν, ἀλλὰ πρίσαντα τὸ ὀστέον
 πρὸς τὴν μήνιγγα ἢ καταξύσαντα τῷ ξυστήρι—
 εὐπριστον³ δὲ γίνεται καὶ εὐξυστον—ἔπειτα τὰ
 λοιπὰ οὕτως ἱητρεύειν ὅπως ἂν δοκῇ συμφέρειν,
 39 πρὸς τὸ γινόμενον ὁρῶν.

XX. Ὅταν δ' ἐπὶ τρώματι ἐν κεφαλῇ ἀνθρώ-
 που ἢ πεπριωμένου ἢ ἀπριώτου, ἐψιλωμένου δὲ
 τοῦ ὀστέου, οἰδήμα ἐπιγένηται ἐρυθρὸν καὶ ἐρυσι-
 πελατῶδες ἐν τῷ προσώπῳ καὶ ἐν τοῖσιν
 ὀφθαλμοῖσιν ἀμφοτέροισιν ἢ τῷ ἐτέρῳ, καὶ εἴ τις
 ἄπτοιτο τοῦ οἰδήματος, ὀδυνῶτο, καὶ πυρετὸς

gets a bad colour and a little ichor flows from it, the inflammation dies completely out of it, it gets macerated and looks like dried fish of a rather livid reddish colour. Necrosis of the bone then sets in, it gets dark coloured instead of white,¹ finally turning yellowish or dead white. When it has become purulent, blebs appear on the tongue and the patient dies delirious. Most cases have spasm of the parts on one side of the body; if the patient has the lesion on the left side of the head, spasm seizes the right side of the body; if he has the lesion on the right side of the head, spasm seizes the left side of the body. Some also become apoplectic and die in this state within seven days in summer and fourteen in winter. These symptoms have the same value both in an older and a younger patient.

If, then, you recognise that fever is seizing upon a patient and that any of these symptoms accompanies it, make no delay but, after trephining the bone down to the membrane, or scraping with the raspatory (for the bone becomes easy to saw or scrape), treat the case in future as may seem best in view of the circumstances.

XX. When in case of a wound in the head, whether the patient has been trephined or not, the bone being denuded, there supervenes a red erysipelatous oedema of the face and one or both eyes and the oedema is painful when touched,

¹ Reading λευκόν. λεῖον Pq. and codd. "without ceasing to be smooth" (?).

¹ So Kw. following Erotian and Archigenes. γλισχρῶδες Pq. codd.

² λευκὸν ἐόν Kw. etc.

³ καπυρόν.

ἐπιλαμβάνοι¹ καὶ ῥίγος, τὸ δὲ ἔλκος αὐτό τε²
 ἀπὸ τῆς σαρκὸς καλῶς ἔχοι ιδέσθαι καὶ τὰπὸ
 τοῦ ὀστέου, καὶ τὰ περιέχοντα τὸ ἔλκος ἔχοι
 10 καλῶς, πλὴν τοῦ οἰδήματος τοῦ ἐν προσώπῳ
 καὶ ἄλλην ἀμαρτίδα μηδεμίαν ἔχοι τὸ οἶδημα
 τῆς ἄλλης διαίτης, τούτου χρὴ τὴν κάτω κοιλίην
 ὑποκαθῆραι φαρμάκῳ ὃ τι χόλην ἄγει· καὶ οὕτω
 καταρθέντος, ὃ τε πυρετὸς ἀφίησι καὶ τὸ οἶδημα
 καθίσταται καὶ ὑγιὲς γίνεται. τὸ δὲ φάρμακον
 χρὴ διδόναι πρὸς τὴν δύναμιν τοῦ ἀνθρώπου ὁρῶν,
 17 ὥς ἂν ἔχη ἰσχύος.

XXI. Περὶ δὲ πρίσιος, ὅταν καταλάβῃ ἀνάγκη
 πρίσαι ἄνθρωπον, ὧδε γινώσκειν. ἦν ἐξ ἀρχῆς
 λαβὼν τὸ ἵημα πρίης, οὐ χρὴ ἐκπρίειν τὸ ὀστέον
 πρὸς τὴν μήνιγγα αὐτίκα· οὐ γὰρ συμφέρει τὴν
 μήνιγγα ψιλὴν εἶναι τοῦ ὀστέου ἐπὶ πολὺν
 χρόνον κακοπαθοῦσαν, ἀλλὰ τελευτῶσά πη καὶ
 διεμύδησεν.³ ἔστι δὲ καὶ ἕτερος κίνδυνος, ἦν
 αὐτίκα ἀφαιρῆς πρὸς τὴν μήνιγγα ἐκπρίσας τὸ
 ὀστέον, τρῶσαι ἐν τῷ ἔργῳ τῷ πρίονι τὴν
 10 μήνιγγα. ἀλλὰ χρὴ πρίοντα, ἐπειδὰν ὀλίγον⁴
 πάνυ δέῃ διαπεπρίσθαι, καὶ ἤδη κινῆται τὸ
 ὀστέον, παύσασθαι πρίοντα, καὶ εἰς ἐπὶ τὸ
 αὐτόματον ἀποστῆναι τὸ ὀστέον· ἐν γὰρ τῷ δια-
 πριωτῷ ὀστέῳ καὶ ἐπιλελειμμένῳ τῆς πρίσιος
 οὐκ ἐπιγένειτο κακὸν οὐδέν, λεπτὸν γὰρ τὸ
 λειπόμενον ἤδη γίνεται. τὰ δὲ λοιπὰ ἰῆσθαι χρή,
 ὥς ἂν δοκῇ συμφέρειν τῷ ἔλκει.

¹ ἐπιλαμβάνη.

² τά τε Reinhold.

³ σαπέῖσα διεμύδησεν Scaliger; but this is surgically the wrong order. Reinhold suggests διεμύδησε καὶ τελευτῶσα ἐσάπη.

and fever also seizes him with a rigor, but the lesion itself has a healthy appearance in the part affecting the scalp and skull, and the parts about the wound look healthy except for the oedema of the face, and the oedema is not further complicated by an error in regimen, in this case you should cleanse the bowel with a cholagogue. After such purging the fever departs, the oedema subsides and the patient gets well. In giving the drug you should have an eye to the patient's vigour, what strength he has.

XXI. As to trephining when it is necessary to trephine a patient, keep the following in mind. If you operate after taking on the treatment from the beginning, you should not, in trephining, remove the bone at once down to the membrane, for it is not good for the membrane to be denuded of bone and exposed to morbid influences for a long time, or it may end by becoming macerated.¹ There is also another danger that, if you immediately remove the bone by trephining down to the membrane, you may, in operating, wound the membrane with the trephine. You should rather stop the operation when there is very little left to be sawn through, and the bone is movable; and allow it to separate of its own accord. For no harm will supervene in the trephined bone, or in the part left unsawn, since what remains is thin enough. For the rest the treatment should be such as may seem beneficial to the lesion.

¹ "Becomes macerated, and finally putrefies." R.

Πρίοντα δὲ χρὴ πυκινὰ ἐξαιρεῖν τὸν πρίονα τῆς
 θερμασίης εἵνεκα τοῦ ὀστέου, καὶ ὕδατι ψυχρῷ
 20 ἐναποβάπτειν. θερμαίνόμενος γὰρ ὑπὸ τῆς
 περιόδου ὁ πρίων καὶ τὸ ὀστέον ἐκθερμαίνων
 καὶ ἀναξηραίνων κατακαίει, καὶ μέζον ποιεῖ
 ἀφίστασθαι τὸ ὀστέον τὸ περιέχον τὴν πρίσιν
 ἢ ὅσον μέλλει ἀφίστασθαι. καὶ ἣν αὐτίκα βούλη
 ἐκπρίσαι τὸ πρὸς τὴν μήνιγγα, ἔπειτα ἀφελεῖν
 τὸ ὀστέον, ὡσαύτως χρὴ πυκινὰ τε ἐξαιρεῖν τὸν
 πρίονα καὶ ἐναποβάπτειν τῷ ὕδατι τῷ ψυχρῷ.

Ἦν δὲ μὴ ἐξ ἀρχῆς λαμβάνης τὸ ἥμα, ἀλλὰ
 παρ' ἄλλου παραδέχῃ ὑστερίζων τῆς ἰήσιος,
 30 πρίονι χρὴ χαρακτῷ¹ ἐκπρίειν μὲν αὐτίκα τὸ
 ὀστέον πρὸς τὴν μήνιγγα, θαμινὰ δὲ ἐξαιρεῦντα
 τὸν πρίονα σκοπεῖσθαι καὶ ἄλλως καὶ τῇ μῆλῃ
 πέριξ κατὰ τὴν ὁδὸν τοῦ πρίονος· καὶ γὰρ πολὺ
 θάσσον διαπρίεται τὸ ὀστέον, ἣν ὑπόπνόν τε ἐὼν
 ἤδη καὶ διάπνουν πρίης, καὶ πολλάκις τυγχάνει
 ἐπιπόλαιον ἐὼν τὸ ὀστέον, ἄλλως τε καὶ ἣν
 ταύτῃ τῆς κεφαλῆς ἢ τὸ τρῶμα ἢ τυγχάνει
 λεπτότερον ἐὼν τὸ ὀστέον ἢ παχύτερον. ἀλλὰ
 φυλάσσεσθαι χρὴ ὥς μὴ λάθῃς προσβαλὼν τὸν
 40 πρίονα, ἀλλ' ὅπῃ δοκεῖ πᾶχιστον εἶναι τὸ ὀστέον,
 εἰς τοῦτο αἰεὶ ἐνστηρίζειν τὸν πρίονα, θαμινὰ
 σκοπούμενος, καὶ πειρᾶσθαι ἀνακινέων τὸ ὀστέον
 ἀναβάλλειν, ἀφελὼν δὲ τὰ λοιπὰ ἰητρεύειν ὡς ἂν
 δοκῇ συμφέρειν τῷ ἔλκει [πρὸς τὸ γινόμενον
 ὀρέων].²

Καὶ ἣν, ἐξ ἀρχῆς λαβὼν τὸ ἥμα, αὐτίκα βούλη
 ἐκπρίσας τὸ ὀστέον ἀφελεῖν ἀπὸ τῆς μήνιγγος,

¹ "Serra acutiori" Vidius. Cf. Galen's Lexicon.

² Pq. omits, but see Kw.'s note.

While trephining, you should frequently take out the saw and plunge it into cold water to avoid heating the bone, for the saw gets heated by rotation, and by heating and drying the bone cauterises it and makes more of the bone around the trephined part come away than was going to do. If you want to trephine down to the membrane at once, and then remove the bone, the trephine should in like manner be often taken out and plunged in cold water.¹

If you do not take on the cure from the beginning, but receive it from another, coming late to the treatment, trephine the bone at once down to the membrane with a sharp-toothed trephine, taking it out frequently for inspection, and also examining with a probe around the track of the saw. For the bone is much more quickly sawn through if you operate when it is already suppurating and full of pus; and the skull is often found to have no depth, especially if the wound happens to be in the part of the head where the bone inclines to be thin rather than thick. You must be careful not to be heedless in placing the trephine, but always to fix it where the bone seems thickest. Examine often, and try by to-and-fro movements to lift up the bone; and, after removing it, treat the rest as may seem beneficial to the lesion [having regard to what has happened].

If you take on the case from the beginning, and want to trephine the bone at once completely and remove it from the membrane, you should likewise

¹ As we learn from Celsus, VIII. 3, and Heliodorus in *Oribasius* XLVI. 11, the trephine was rotated by a bow and cord, not by a handle as in modern times.

ὡσαύτως χρὴ πυκινὰ τε σκοπεῖσθαι τῇ μήλῃ τὴν
 περίοδον τοῦ πρίονος, καὶ ἐς τὸ παχύτατον αἰεὶ
 50 τοῦ ὀστέου τὸν πρίονα ἐνστηρίζειν, καὶ ἀνακινέων
 βούλεσθαι ἀφελεῖν τὸ ὀστέον. ἣν δὲ τρυπάνω
 χρῆ, πρὸς τὴν μὲνιγγα μὴ ἀφικνεῖσθαι, ἣν ἐξ
 ἀρχῆς λαμβάνων τὸ ἵημα τρυπᾶς, ἀλλ' ἐπιλιπεῖν
 τοῦ ὀστέου λεπτόν, ὥσπερ καὶ ἐν τῇ πρίσει
 55 γέγραπται.

ON WOUNDS IN THE HEAD, XXI.

often examine the circular track of the saw with the probe, always fixing the trephine in the thickest part of the bone, and aim at getting it away by to-and-fro movements. If you use a perforating trepan, do not go down to the membrane, if you perforate on taking the case from the beginning; but leave a thin layer of bone, as was directed in trephining.