

## B · TEXTS

1 *Fragments ascribed to Herophilus' 'On Anatomy' II-IV*

6oa Galenus, *De anatomicis administrationibus* 6.8 (ii, pp. 570-2K)

6ob Oribasius, *Collectiones medicae* 24.25.1-6 (CMG VI.2.1 = vol. III, pp. 36-7 Raeder) (Excerpted from Galen)

οὐ μὴν οὐδ' αὐτοῖς τοῖς ἀνθρώποις δμοίως ὅπασιν ἔχει κατά τε μέγεθος καὶ πλῆθος λοβῶν (sc. τοῦ ἡπατος). ἀκριβέστατα γοῦν ὑπὲρ αὐτοῦ γράφων Ἡρόφιλος αὐτοῖς ὄνόμασι τάδε φησὶν “ἔστι δ' εὔμεγεθες τὸ τοῦ ἀνθρώπου ἡπαρ, καὶ μεῖζον τοῦ ἐν τισιν 5 ἔτεροις ψάροις ἴσοπολέσιν ἀνθρώπῳ. καὶ καθ' ὃ μὲν ταῖς φρεσὶ προσψαύει, κεκύρτωται καὶ λείōν ἔστι· καθ' ὃ δὲ τῇ κοιλίᾳ καὶ τῷ κυρτῷ τῆς κοιλίας προσψαύει, ἔνσιμον καὶ ἀνώμαλον. ἀφωμοίωται δὲ κατὰ τοῦτο διασφάγι τινί, καθ' ὃ καὶ τοῖς ἐμβρύοις ἡ ἐκ τοῦ δμφαλοῦ φλέψι εἰς αὐτὸ ἐμπέφυκεν.

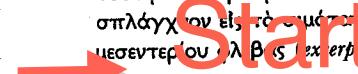
10 “οὐχ ὅμοιον δ' ἔστιν ἐν ἀπασιν, ἀλλὰ καὶ πλάτει καὶ μήκει καὶ πάχει καὶ ψει καὶ λοβῶν πλήθει καὶ ἀνώμαλίᾳ τῇ ἐκ τοῦ ἐμπροσθεν, καθ' ὃ παχύτατόν ἔστι, καὶ τοῖς ἀκροῖς τοῖς κύκλῳ κατὰ τὴν λεπτότητα, ἀλλοις ἀλλοῖον. λοβοὺς γάρ τισι μὲν οὐδ' ἔχει, ἀλλ' ἔστιν ὅλον στρογγύλον καὶ ἀναρθρον, τοῖς δὲ δύο, τοῖς 15 δὲ καὶ πλειόνις, καὶ πολλοῖς καὶ τέσσαρας ἔχει.”

τοῦτ' οὖν δρθῶς εἴπεν δ' Ἡρόφιλος, ἔτι τε καὶ πρὸς τούτοις, δλίγων μὲν ἐπ' ἀνθρώπων, οὐκ δλίγων δ' ἐπ' ἀλλων ψώων ἐπιλαμβάνειν αὐτό τι τῶν ἀριστερῶν μερῶν δληθῶς ἔγραψεν ἐν τῷ αὐτῷ βιβλίῳ τῷ δευτέρῳ τῶν ἀνατομικῶν, αὐτὸς μὲν μόνου 20 τοῦ λαγωοῦ μνημονεύσας, ἡμῖν δὲ καταλιπὼν ἐπισκέψασθαι καὶ περὶ τῶν ἀλλων ψώων, ὑπὲρ δν ἐπὶ τῇ προηκούσῃ πραγματείᾳ διελθεῖν ἔγνωκα· . . . οὐκ δλίγων ἀναγκάζομαι διαφορῶν διαμημονεύειν, ὥσπερ ὁμέλει καὶ νῦν ἐπὶ τοῦ ἡπατος, οὐ πλείστη μὲν ἐπὶ τοῖς δεξιοῖς ἔστι μοῖρα κατὰ πάντα τὰ ψώα, προσεπιλαμβά- 25 νει δὲ τι καὶ τῶν ἀριστερῶν οὐκ ἴσον ἐν ἀπασιν, ἀλλ', ὥσπερ δ μὲν Ἡρόφιλος ἔγραψεν, ἐπὶ λαγωοῦ πλεῖστον . . .

1-2 οὐχ ἀπασιν ἀνθρώποις δμοίως ἔχει τὸ ἡπαρ κατά τε μέγεθος  
Oribasius 4 μεῖζον Oribasius: μέγα Kühn 5 ἐντέροις Oribasius P  
5 ἀνθρώποις Orib. 6 κεκύρτωται Orib.: κύρτωται Kühn 6-7 καὶ τῷ  
κυρτῷ τῆς κοιλίας om. Orib. fort. recte 7 προσψαύσει σιμὸν Kühn

ἀφομοιοῦται Kühn 8 διασφαγῇ Orib. ἡ ante φλέψ transp.  
Orib. 11 τῇ Kühn: τοῦ Orib. 12 post ἐμπροσθεν add. καὶ δγκω τοῦ ἐκ  
τοῦ ἐμπροσθεν Orib. 13 λόγους Orib. P 14 ἀναρθρον Singer:  
ἄνορθον Orib., Kühn 15 καὶ πολλοῖς Kühn: πολλοῖς δὲ Orib.  
16 ταῦτα τε οὖν Orib. δ om. Orib. καὶ om. Orib. 17 δλίγον Orib.  
utroque loco 8 ἐπ' ἀλλων Gal.: δὲ πολλῶν Orib. P 3ων Orib.  
P 18 τι om. Orib. 18-19 ἐν τῷ αὐτῷ βιβλίῳ Singer u.v.: ἐν αὐτῷ  
τούτῳ τῷ βιβλίῳ Kühn: ἐν τῷ αὐτῷ sqq. om. Orib. qui habet τοῦτο τὸ  
σπλάγχνον εἰς τὸ συμέτρον ἐκατού μέρος διηκούσας ἔχει τὰς ἐκ τοῦ  
μεσεντέρου λαβεις experim e Galeni De anal. admin. 6.11 (ii, p. 575K))

Start



6oa-b Not even in human beings is the liver similar in all with respect to its size and the number of its lobes. Herophilus writes very accurately about it, saying the following, in so many words: ‘The liver of humans is of a good size, larger than in certain other animals which match humans [sc. in size]. And where it touches against the diaphragm, it is convex and smooth, but where it touches against the abdominal cavity and against its lump, it is concave and uneven. Here it may be likened to a certain fissure by which in embryos, too, the vein from the navel naturally extends into it.

‘The liver is not similar in all, but different in different creatures, in breadth, length, thickness, height, number of lobes, and in the irregularity both at the front – where it is thickest – and at the circular parts at the top, where it is thin. In some, it does not even have lobes, but is completely round and unarticulated, whereas in others it has two lobes, in still others more, and in many also four lobes.’

This Herophilus said correctly. Furthermore, in the same Book II of his *Anatomica* he wrote correctly that in the case of [only] a few human beings but not a few other animals, the liver occupies some of the left parts. But he mentioned only the hare, and left it to us to examine the other animals as well, the details about which I have determined to go through as my treatise proceeds . . . I am compelled to make mention of not a few differences [between various animals], as, to be sure, now too in the case of the liver: its largest part is on the right in all animals, but in addition it occupies some of the left, though not equally in all creatures but, as Herophilus wrote, most of all in the case of a hare.

61 Galenus, *De semine* 2.1 (iv, pp. 596-8K)

‘Ἡρόφιλος δὲ οὐκ οἶδ' ὅπως ἐκτὸς ἐκχεῖσθαι φησι τὸ τῶν θηλειῶν

σπέρμα, καίτοι γε περὶ τῶν ὅρχεων ἀκριβῶς ἔγραψε τῶν κατ' αὐτὰς ἐν τῷ τρίτῳ τῆς ἀνατομῆς, ἐν ἀρχῇ μὲν ὅδε πως εἰπών· “ἐπιπεφύκασι δὲ τῇ μήτρᾳ καὶ δίδυμοι ἐκ τῶν πλαγίων, ἔξ 5 ἑκατέρου μέρους, ἐπ' ὀλίγον διαφέροντες τῶν τοῦ ἄρρενος.” ἔπειτα ἐν τοῖς ἐφεξῆς οὐ μετά πάνυ πολλὰ κατὰ τήνδε τὴν ῥῆσιν· “δίδυμοι δὲ ταῖς θηλείαις ἐπιπεφύκασι πρὸς ἑκατέρῳ τῷ ὅμῳ τῆς μήτρας, δὲ μὲν ἐκ τοῦ δεξιοῦ, δὲ ἐκ τοῦ εὐωνύμου, οὐκέτι ἐνὶ δοχέω ἀμφότεροι, ἀλλ' ἑκάτεροι χωρίς, λεπτῷ τινι καὶ ὑμεοιδεῖ 10 ὑμένι περιεχόμενοι, μικροὶ καὶ ὑποπλατεῖς, ἀδέσιν ὅμοιοι, κατὰ μὲν τὸν ἐν κύκλῳ χιτῶνα νευρώδεις, τῇ δὲ σαρκὶ εὔθρυπποι, ὁσπερ καὶ οἱ τῶν ἄρρενων, ταῖς δὲ ἵπποις καὶ πάνυ εἰσὶν εὔμεγέθεις. προσπεφύκασι δὲ ὑμέσι τε οὐκ ὀλίγοις πρὸς τὴν μήτραν καὶ φλεβὶ καὶ ἀρτηρίᾳ, τῇ ἀπὸ τῆς μήτρας εἰς αὐτοὺς 15 ἐμπεφυκίᾳ. ἀπὸ γάρ τῆς φλεβός καὶ τῆς ἀρτηρίας τῆς εἰς ἑκάτερον τῶν διδύμων προσπέφυκε, φλέψι μὲν ἀπὸ τῆς φλεβός, ἀρτηρίᾳ δὲ ἀπὸ τῆς ἀρτηρίας.

“ὅ δὲ σπερματικὸς πόρος ἀφ' ἑκατέρου οὐ λίαν μὲν φαίνεται, προσφυής δὲ ἐστι τῇ μήτρᾳ ἐκ τοῦ ἑκτὸς μέρους, δὲ μὲν ἐκ τοῦ δεξιοῦ, δὲ ἐκ τοῦ εὐωνύμου. εἴλικται τε παραπλησίως τῷ τοῦ ἄρρενος κατὰ τὸ πρόσθιν αὐτοῦ μέρος, καὶ τὸ λοιπὸν κιρσοειδὲς σχεδὸν ἀπαν ἄχρι τοῦ πέρατος. καὶ ἐμπέφυκεν ἀφ' ἑκατέρου τοῦ διδύμου ὅμοιώς, ὁσπερ τῷ ἄρρενι, εἰς τὸ σαρκώδες τοῦ αὐχένος τῆς κύστεως, λεπτός τε ὃν καὶ σκολιός ἐν τῷ ἐμπροσθίῳ μέρει 20 καθ' ὃ τὰ τῶν ἰσχίων δστᾶ ψαύει, ἐν ὕπερ καὶ ἀπολήγει, ὡς τὸ αιδοῖον ἔξ ἑκατέρου τοῦ μέρους εἰς τὸ ἐντὸς διαπεφυκώς. παραστάτης δὲ ὁ κιρσοειδής οὐχ ἐώραται ἐν τῷ θήλει.”  
αὗτη μὲν ἡ τοῦ Ἡροφίλου ῥῆσις. ὅ δέ μοι θαυμάζειν παρίσταται μάλιστα, καὶ δὴ φράσω· καὶ θέσιν καὶ μέγεθος καὶ φύσιν 25 ἀκριβῶς γράψας τῶν ἐν τοῖς θήλεσι ωροῖς ὅρχεων, οὐ παραλιπὼν δὲ οὐδὲ περὶ τῆς ἐμβαλλούσης ἑκατέρωθεν φλεβός καὶ ἀρτηρίας οὐδέν, ἀλλ' ἀκριβώσας τὴν διήγησιν, εἴτα ἐξῆς ὑπὲρ τοῦ σπερματικοῦ πόρου τὸ μέν ὅτι προσφυής ἐστι ταῖς μήτραις ἔξωθεν, εἰς ἑκατέρωθεν, ἀληθῶς εἰπών, τὸ δ' ὅτι μὴ λίαν φαίνεται 30 ψευσάμενος (ἀξιόλογον γάρ ἐστι τὸ μέγεθος), ἐξῆς τούτου πολὺ μεῖζον ἐψεύσατο φάμενος εἰς τὸν αὐχένα τῆς κύστεως ἐμφύεσθαι τῷ τοῦ ἄρρενος ὅμοιως.

<sup>2</sup> περὶ Ald: πως P      <sup>2-3</sup> τῶν κατ' αὐτὰς P: τῆς κατ' αὐτοὺς Ald  
<sup>5</sup> ὀλίγον P: ὀλίγον Ald      <sup>6</sup> τήνδε τὴν Ald: τὴν δ P      <sup>7</sup> ἑκατέρῳ τῷ

ώμῳ Ald: ἑκατέρων τῶν ὅμων P      <sup>9</sup> δοχέω Ald: χωρίω P      ἑκάτεροι Ald: ἑκάτερος P      <sup>10</sup> περιεχόμενοι Ald: περιεχόμενος P      ὑποπλατεῖς Ald: ὑπὸ πλαταῖς P      <sup>11</sup> ἐν κύκλῳ Ald: κύκλον P      νευρώδεις Ald: νευρώδη P<sup>r</sup> (ν- ex λ-?)      εὐθρυπποι P: ὁθρυπποι Ald      <sup>13</sup> τε P: om. Ald: ὀλίγοις P: ὀλίγον Ald      <sup>15</sup> ἐμπεφυκία Charterius: ἐμπεφυκεία P(u.v.): ἐπεφυκίας Ald Bas      <sup>16</sup> ἑκάτερον Ald: ἑκαστον P      <sup>18</sup> ἀφ' P: ἀφ' Ald.      <sup>20</sup> δεξιοῦ... εὐωνύμου Ald: εὐωνύμου... δεξιοῦ P εἴλικται Ald Bas: corr. Charterius: ἡλεκται P      τε Ald: δὲ P      τῷ Ald: τὸ P      <sup>21</sup> κατὰ P: καὶ Ald: πρόσθιν Ald: πρὸς P      κιρσοειδές Ald: κιρσοειδὲς P      <sup>22</sup> σχεδὸν ἀπαν Ald: ἀπαν σχεδὸν P      <sup>22</sup> πέρατος Ald: σπέρματος P      ἐμπέφυκεν Ald: ἐκπέφυκεν P (-εν e corr.)      <sup>23</sup> τῷ ἄρρενι Ald: τὸ ἄρρεν P      <sup>25</sup> καθ' ὃ Ald: καθ' ἦν P      ίσχίων Ald: ίσχύων P      ψαύει Ald: συμψαθει P (voluitne συμψαύει?)      <sup>26</sup> διαπεφυκός Ald: διαπέφυκε P      <sup>27</sup> κιρσοειδής Ald: κιρσοειδής P      <sup>31</sup> ἑκατέρωθεν Ald: ἑκατέρου P      <sup>33</sup> δτι Ald: δταν P      <sup>34</sup> εἰς De Lacy (unus Nicolaus): εἰς P Ald Bas      <sup>36</sup> μεῖζον P: μᾶλλον Ald.      <sup>37</sup> τῷ Ald: τὸ P

61 Herophilus, however, says that the seed of females is somehow discharged to the outside, even though he wrote with accuracy about the ‘testicles’ [ovaries] in females in Book III of his *Anatomy*, saying this at the outset:

“Two “testicles” (*didymoi* [ovaries]) are also attached to the uterus on the sides, one on either part, and they differ only a little from the testicles of the male.’ Then in what follows, not much later, these are his words:

“In females the two “testicles” [ovaries] are attached to each of the two shoulders of the uterus, one on the right, the other on the left, not both in a single scrotum but each of the two separate, enclosed in a thin, membranous skin. They are small and rather flat, like glands, sinewy at their surrounding covering but easily damageable in their flesh, just like the testicles of males. In mares they are also quite sizable. And they are attached to the uterus with no small number of membranes and with a vein and an artery implanted from the uterus into these “testicles”. You see, the attachment is from the vein and the artery that go to each of the two “testicles”, a vein from the vein and an artery from the artery.

“The spermatic duct from each “testicle” is not very apparent, but it is attached to the uterus from the outside, one duct from the right, the other from the left. Like the seminal duct of the male, its anterior part is also convoluted, and almost all the rest up to its end looks varicose. And the spermatic duct from each testicle grows into

the fleshy part of the neck of the bladder, just like the male duct, being thin and winding in its anterior part where it touches the hip-bones. Here [sc. at the neck of the bladder] it also terminates, like the pudendum penetrating to the interior from either side. But the "varix-like assistant" (*parastatēs kirsoeidēs*) is not observed in the female.'

This is Herophilus' statement. I will mention what especially causes me astonishment: he described position, size, and nature of the 'testicles' in female creatures accurately, not omitting anything, not even about the vein and artery which are attached to them on either side, but rather providing an accurate account of them. But afterwards, although he did mention correctly that the seminal duct is attached to the uterus externally, one on either side, he was mistaken to say it is not very apparent. It is, after all, of quite a considerable size. Subsequently he was much more mistaken than in this matter, when he said that the seminal duct of the female is implanted into the neck of the bladder in a manner similar to the seminal passage of the male. (Cf. also T<sub>105</sub>-T<sub>114</sub> *infra*; Chapter VII, T<sub>193</sub>-T<sub>202</sub>; Chapter VIII, T<sub>247</sub>.)

**Stop**



- 62 Galenus, *In Hippocratis Epidemiarum 2.4.1 Commentarius 4* (ad Hippocratis v. 120 sq. L). (From Hunain's Arabic translation of the lost original; CMG v. 10.1, p. 318 Pfaff.)

... The veins turn towards the vertebrae and the ribs, the one on the left close to the collar-bone, the one on the right a bit lower, since it is bent toward the back... What Hippocrates says about this vein which is a bit lower on the right than on the left, Herophilus, too, already said in Book IV of his treatise *On Anatomy*. Herophilus, you see, first explained that two veins branch off from the thick vein where it reaches the collar-bone, and that one then proceeds to the left side, the other to the right, and that each of these two then is divided again, branching out after four of the ribs of the chest. In this book he then says:

'The vein which proceeds to the right side lies a bit lower than the vein which proceeds to the left.'

What Herophilus says here is in agreement with what appears in dissection and with what Hippocrates said.

## 2 Dissection and vivisection

- 63a A. Cornelius Celsus, *Medicina I* (*Artes 6*), *prohoem.* 23-6  
(CML I, p. 21 Marx)

ergo necessarium esse (sc. putant medici rationales) incidere corpora mortuorum eorumque viscera atque intestina scrutari; longeque optime fecisse Herophilum et Erasistratum, qui nocentes homines a regibus ex carcere acceptos vivos inciderint,  
5 considerarintque etiamnum spiritu remanente ea, quae natura ante clausisset, eorumque positum, colorem, figuram, magnitudinem, ordinem, duritatem, mollitatem, levorem, contactum, processus deinde singulorum et recessus, et sive quid inseritur alteri, sive quid partem alterius in se recipit... neque esse  
10 crudele, sicut plerique proponunt, hominum nocentium et horum quoque paucorum suppliciis remedia populis innocentibus saeculorum omnium quaeri.

1 necessarium ergo J 4 a regibus ex FV: quia regibus J  
5 etiamnum FV<sup>2</sup>: etiam non V: etiam J manente J 6 eorumque  
VJ: eorum F posituram J 7 laevorem Egnatius: livorem vulg.

63a [According to the 'rationalist' physicians] it is therefore necessary to dissect the bodies of the dead and to examine their viscera and intestines. Herophilus and Erasistratus, they say, did this in the best way by far when they cut open men who were alive, criminals out of prison, received from kings. And while breath still remained in these criminals, they inspected those parts which nature previously had concealed, also their position, colour, shape, size, arrangement, hardness, softness, smoothness, connection, and the projections and depressions of each, and whether anything is inserted into another thing or whether anything receives a part of another into itself... Nor is it cruel, as most people maintain, that remedies for innocent people of all times should be sought in the sacrifice of people guilty of crimes, and of only a few such people at that.

you should not entrust this task to your fingers alone, without a surgical lancet, as we do whenever we flay an animal. For the membrane of the bodies lying underneath it is loosened by 'flaying' (*darsis*), as Herophilus named it. He derived this noun from the verb 'I flay' (*dero*), the noun being common both to the activity and to the 'being acted upon', just as the noun 'incision', which arose from 'I incise', on the one hand signifies the activity of the human being making the incision, and on the other the 'being acted upon' of the body which is cut.

- 73 Galenus, *De anatomicis administrationibus* 12.2 (II, p. 103 Simon; translated from Hunain's Arabic translation of the lost original by Duckworth, p. 112)

But if you detach and remove from it [sc. the uterus] the membrane enveloping it from all sides, there show themselves to you two cavities, of which the one allows itself to be separated from the other with the minimum of effort without the knife, by means of the process which Herophilus calls 'flaying, excoriating', in the way in which the skin that envelops the whole body comes to be separated from that which lies beneath it. For the bodies which one frees from one another by means of 'flaying, excoriating', are bound together only by means of arachnoid-like ligaments.

- 74 Galenus, *In Hippocratis Epidemiarum 2. commentarius* 4 (ad Hippocratis v.120 sq. L) (From Hunain's Arabic translation of the lost original; *CMG* v.10.1, p. 322 Pfaff)

By saying that the attachment of the diaphragm to the liver is an attachment in which separation is not easy, Hippocrates has shown that he uses the designation 'attachment' of those organs of which, ever since Herophilus, we say that their separation is achieved through 'skinning' and 'flaying', like the separation of the skin from what lies underneath it. This, too, is after all a kind of attachment, even if it is only weak. For this attachment consists of thin strands, similar to the threads of a spider's web.

## Start

- 75 Vindicianus, *Gynaecia* 3 (Karl Sudhoff, *AGM* 8 (1915), p. 418; pp. 430–1 Rose; pp. 13–14 Schipperges)
- caput nostrum commissuras habet quinque angulosas, alterum se continent, femina vero in circuiti tantum, sicut scripsit Synanchus et Erophilus anathomici, calvaria id est galea supposita est, quam Greci mecanen appellabant, que coheret  
 5 membrano, cui superposita est cutis, que habet capillos, non causa decoris, sed ut ab estu et frigore cerebrum nostrum custodiat; hinc ergo calvaria subiacent tempora, que continentur spiritualibus venis cerebri, quibus superposita sunt supercilia, pilis vestita, ut si copiosus sudor venerit opposita pilorum  
 10 stacione contineatur, donec abstergatur, ne oculis obesse possit.

<sup>3</sup> Erophilus anathomici *L*: summus auctor Erophilus *F*: summus anathomicus Herophilus *B*: anathomicus filius *C*: Erophilus *om. M.*

<sup>4</sup> mecanen *conieci*: mechan *L*: mechanem *D*: mecani *C*: merhanon *B*: non vadena *G*: metanem *F*: micharin *P*      <sup>7</sup> tempora *coni*. Sudhoff: tipora codd.

- 75 Our head has five angular sutures, one bordering on the next; and only in the female is it, in fact, all the way around, as the anatomists Synanchus and Herophilus wrote. The skull, i.e., the 'helmet', which the Greeks used to call 'crane' [*mēchanē?*], is placed underneath and it coheres with a membrane, on which is placed the skin. The skin has hair, not for the sake of ornament, but to protect our brain against heat and cold. The temples then lie below the skull and are adjacent to the pneumatic veins of the brain. And above them the eyebrows are placed, adorned with hair, so that if copious perspiration came [down], it would be contained by this 'checkpoint' of hair placed in its way until it is wiped off, so that it could not obstruct the eyes.

- 76 Theophilus Protospatharius, *De corporis humani fabrica* 4.5.4–5 (p. 135 Greenhill)

μήνιγγες δὲ αἱ περιέχουσαι τὸν ἔγκεφαλον, ὡστερ τινὰ ἐνδύματα ἢ σκεπάσματα αὐτοῦ, εἰσὶ δύο, ἢ μὲν ἔκτος τοῦ κρανίου, ἢ δὲ ἐντός, ἔκτος δὲ τῆς ἐτέρας μήνιγγος, σκληρὰ καὶ παχεῖα

ούσα κατὰ τὴν σύστασιν παχυτέρα δὲ γίνεται κατὰ τὴν μέσην  
 5 ράφην καὶ κατὰ τὴν λαβδοειδῆ παρὰ τὸ ἄλλο αὐτῆς μέρος ὃσον  
 τετραπλάσιον, ὡστε τῇ ἐπαναδιπλώσει αὐτῆς τῇ κατὰ τὰς  
 ράφας γινομένη σωλῆνη τινὶ ἐοικέναι. τοῦτον τὸν σωλῆνα  
 ὡνόμασαν οἱ περὶ τὸν Ἡρόφιλον πύελόν τε καὶ χώνη<sup>1</sup> ὡς ἡ μὲν  
 10 ὑποδεχομένη τοὺς πόρους κοιλότης ἀπὸ τοῦ σχήματος πύελος  
 δυνομάζεται, ἀπὸ δὲ τῆς χρείας χώνη, τέτρηται γάρ εἰς τὸ  
 κάταντες αἰσθητῷ πόρῳ ὡς χώνην μιμεῖσθαι.

<sup>1</sup> δέ EC: δέ εἰσιν vulg. post τινὰ add. οὖσαι τούτου vulg.: om. E ἢ E:  
 καὶ cett. 2 αὐτοῦ EC: om. cett. εἴσι C: εἴσι δέ cett. ἢ δὲ ἐντὸς om.  
 E 3 ἔκτὸς . . . μήνιγγος E: om. cett. 5 παρὰ E: περὶ vulg.

6 κατὰ vulg.: περὶ F 7 σωλῆνα (pr.) τινὰ E 8 χώνη vulg.: χοάνην  
 (δυνομάζουσιν) Galeni De usu partium 9.3 (π. p. 8.14 Helmreich)

76. There are two membranes which envelop the brain like garments or coverings, one outside the skull, the other inside the skull. And the one which is outside the other membrane is hard and thick in its composition. But it becomes as much as four times thicker compared to its other parts at the middle of the suture of the skull, i.e. at the Λ-shaped suture. Consequently its double fold, which occurs at the sutures, resembles a 'channel'. This channel the followers of Herophilus called 'tub' as well as 'funnel' [*infundibulum cerebri*]. As the cavity which receives the [nerve] passages, it is called 'tub' on the basis of its shape, but 'funnel' on the basis of its function; for it is pierced downward by a perceptible passage, and consequently represents a funnel.

77a Galenus, *De usu partium* 8.11 (I, pp. 482-3 Helmreich)

ἀλλ' ἔπει πάντα τὰ κατὰ τὸ σῶμα νεῦρα τὰ κάτω τῆς κεφαλῆς ἢ  
 5 ἐκ τῆς παρεγκεφαλίδος ἢ ἐκ τοῦ νωτιαίου πέφυκεν, ἔχρην καὶ τὴν  
 ταύτης κοιλίαν ἀξιόλογόν τ' εἶναι τὸ μέγεθος καὶ τὸ προκατειρ-  
 γασμένον ἐν ταῖς προσθίοις ψυχικὸν πνεῦμα μεταλαμβάνειν.  
 10 ὥστ' ὀνταγκαῖον ἦν γενέσθαι τινὰ πόρουν ἐξ ἐκείνων εἰς ταύτην,  
 ἀπάρ οὖν καὶ φαίνεται μεγάλη μὲν αὔτη, μέγιστος δὲ καὶ ὁ ἀπὸ  
 τῶν ἐμπροσθεν κοιλιῶν εἰς αὔτην ἐμβάλλων πόρος. καὶ κατὰ  
 τοῦτόν γε μόνον ἡ σύμφυσις ἐστι τῇ παρεγκεφαλίδι πρὸς τὸν  
 ἔγκεφαλον. οὐτων γάρ ἐκατέρων τὴν μοίραν αὐτοῦ καλεῖν ἔθος  
 15 ἐστὶ τοῖς περὶ τὸν Ἡρόφιλον, τὴν μὲν ἐμπροσθεν τῷ τοῦ παντὸς

δύναματι διὰ τὸ μέγεθος ὃντος γάρ αὐτοῦ διφυοῦς, ὡς εἴρηται,  
 τῶν μορίων ἐκάπερον πολὺ μεῖζόν ἐστιν δλης τῆς παρεγκεφαλί-  
 δος· τὴν δ' ὅπισθεν, διτι τῆς πρόσθεν φθασάστης τὸ τοῦ παντὸς  
 15 ὄνομα σφετερίσασθαι δικαιότερον οὐκέτ' ἦν εὑρεῖν ἔτερον ὄνομα  
 τῇ παρεγκεφαλίδι τοῦ νῦν ὃντος . . . διειργόμενος οὖν ἀπὸ τῆς  
 παρεγκεφαλίδος ὁ ἔγκεφαλος, ὡς καὶ πρόσθεν εἴρηται, τῇ τῆς  
 παχείας μήνιγγος διπλώσει, δέδμενος δὲ καν καθ' ἐν τι συναφθῆ-  
 ναι μέρος ἐνεκα τῆς τοῦ προειρημένου πόρου γενέσεως, εἰς μίαν  
 πρότερον χώραν τάς κοιλίας ἀμφοτέρας ἐπεράτωσεν, ἦν δὴ  
 20 τετάρτην ἔνιοι τῶν ὀντατομικῶν ἀριθμοῦσι τοῦ παντὸς ἔγκεφά-  
 λου κοιλίαν.

1 ἔπει BL: οὐ D 2 πεφυκέναι χρὴ D 2-3 τὴν ταύτης κοιλίαν BLU:  
 τὴν ταύτην κοιλίαν D 3 τ' om. D 4 ταῖς προσθίοις DU: τοῖς  
 προσθίοις BL 5 γενέσθαι L: γενέσθαι cett. τινὰ L: τὸν cett. 7 εἰς  
 αὐτὴν ἐμβάλλων L: ἐμβάλλων εἰς αὐτὴν cett. 8 σύμφυσις L: ἐμφυσις  
 cett. 9 ἔκατέρω ἀν BU 13 πρόσθεν BLU: πρώτης D 15 οὖν  
 codd.: vñ Charterius 17 δὲ L: om. cett. 17 συναρχήναι Oribasius

77a Now since all the nerves of the body below the head grow either from the cerebellum (*parenkephalis*) or from the spinal marrow, the ventricle of the cerebellum had to be of quite a considerable size and had to get a share of the psychic pneuma which was previously prepared in the front ventricles [sc. lateral ventricles of the brain]. Consequently there must be a passage from those ventricles into the ventricle of the cerebellum. The latter [ventricle], then, also appears large, and the passage entering into it from the anterior ventricles is very large indeed; by it alone does a connection between the 'cerebellum' (*parenkephalis*) and 'cerebrum' (*enkephalos*) exist. These, you see, are the names Herophilus and his followers are in the habit of giving its two parts. The anterior part was called by this name of the whole [sc. *enkephalos*, 'brain'] on account of its size. For, although it is double in nature, as was mentioned, each of its two parts is much bigger than the entire cerebellum. The posterior part [sc. cerebel-  
 lum], by contrast, got its name because the anterior part had been the first to expropriate the name of the whole [sc. *enkephalos*] for itself, and therefore it was no longer possible to find a different, more just name for the cerebellum (*par-enkephalis* ('para-brain')) than it now has . . . Since, then, the cerebrum is separated from the cerebellum by the fold of the thick membrane [*tentorium cerebelli*], as was also said

previously, but needs to be attached – even if only at one part – for the sake of forming the aforementioned passage, the cerebrum has caused both its ventricles [sc. laterals] to terminate first in one space, which some anatomists count as a fourth ventricle of the entire brain.

**77b** Oribasius, *Collectiones medicae* 24.1.18–20 (CMG vi.2.1; vol. III, p. 6 Raeder). Excerpted from Galen, *De usu partium* 8.11

μία δ' (sc. κοιλία) ἡ ἐν τῇ παρεγκεφαλίδι, τὸ κατειργασμένον ἐν ταῖς προσθίοις ψυχικὸν πνεῦμα μεταλαμβάνουσα· διὸ καὶ ἀναγκαῖον ἦν γενέσθαι τινὰ πόρον ἐξ ἑκείνων εἰς ταύτην. ἀτάρ  
 5. οὖν καὶ φαίνεται μέγιστος δ ὀπὸ τῶν ἔμπροσθεν κοιλιῶν εἰς αὐτὴν ἐμβάλλων πόρος, καὶ κατὰ τοῦτο γε μόνον ἡ σύμφυσίς  
 ἔστι τῇ παρεγκεφαλίδι πρὸς τὸν ἐγκέφαλον· οὕτως γάρ ἐκάτεραν αὐτοῦ τὴν μοῖραν ἔθος ἔστι καλεῖν τοῖς περὶ τὸν  
 'Ηρόφιλον, τὴν δ' ὅπισθεν παρεγκεφαλίδα. διειργόμενος οὖν  
 ἀπὸ τῆς παρεγκεφαλίδος, ὡς καὶ πρόσθεν εἴρηται, τῇ τῆς  
 10 παχείας μήνιγγος διπλώσει . . .

1 κατεργασμένον *E*    6 οὔτω *L*, *C e corr.*    ἐκατέρων *AE*    10 *post*  
 διπλώσει, δεδμενός *et sqq. ut in Galeni De usu partium libro usque ad ἐγκεφάλου*  
*κοιλίαν (vid. Herophili T77a)*

**77b** And there is one ventricle in the cerebellum (*parenkephalis*) which gets a share of the psychic pneuma which has been prepared in the front [sc. lateral] ventricles. There must, therefore, be a passage from these front ventricles into the ventricle of the cerebellum. The passage from the anterior ventricles into it accordingly also appears to be very large indeed, and by it alone is there a connection between cerebellum (*parenkephalis*) and cerebrum (*enkephalos*). For these are the names Herophilus and his followers are in the habit of giving its two parts, and the posterior one [they called] *parenkephalis*. Since, then, it [sc. the cerebrum] is separated from the cerebellum, as was mentioned previously, by the fold of the thick membrane . . .\*

**Stop**

\* The text that follows is identical with the Galenic text in T77a, from which it was excerpted by Oribasius.

**78** Galenus, *De usu partium* 8.11 (I, p. 484 Helmreich)

καὶ οἵς γε τετάρτη τις αὐτῇ κοιλία (sc. τὸ ὑπὲρ τὴν κοινὴν κοιλότητα μόριον ἐγκεφάλου ἢ καμάριον) νενόμισται, κυριωτάτην εἶναι φασιν αὐτὴν ἀπασῶν τῶν καθ' ὅλον τὸν ἐγκέφαλον.  
 'Ηρόφιλος μήν οὐ ταύτην, ἀλλὰ τὴν ἐν τῇ παρεγκεφαλίδι  
 5 κυριωτέραν ἔοικεν ὑπολαμβάνειν.

4 μήν *L<sup>2</sup>U*: μὲν *cell.*

78 Those who hold the view that this cavity [sc. the fornix] is a fourth ventricle, say that, of all the ventricles in the entire brain, it exercises most control. Herophilus, however, seems to assume that not this ventricle, but the one in the cerebellum (*parenkephalis*), exercises more control.

→ **Start**

**79** Galenus, *De anatomicis administrationibus* 9.5 (II, p. 731K)

εἶτα πρόσεχε τὸν νοῦν, ὅπως ἀνακλωμένου μὲν αὐτοῦ (sc. τοῦ πέρατος σκωληκοειδοῦς) πρόσω γυμνοῦσθαι συμβαίνει τὴν δόπισω κοιλίαν τὴν τετάρτην (sc. τοῦ ἐγκεφάλου), ἔμπαλιν δὲ κινουμένου κατακαλύπτεσθαι μὲν αὐτῆς τὸ πλεῖστον μέρος,  
 5 ἐκεῖνο δὲ φαίνεσθαι μόνον, ὅπερ 'Ηρόφιλος εἴκαζεν ἀναγλυφῇ καλάμου, φ διαγράφομεν. ὄντως γάρ ἔστι τοιοῦτον, ἐν μὲν τῷ μέσῳ κοιλότητά τινα κεκτημένον οἷον τομήν, ἐκατέρωθεν δ' αὐτῆς τοσοῦτον εἰς ὑψος ἀνατεινόμενον ἐκάτερον τῶν πλαγίων μερῶν, ὅσον ἐν τοῖς καλάμοις ὀπὸ τῆς μέσης ὑψοῦται γραμμῆς.  
 10 καὶ μάλιστά γε κατὰ τὴν Ἀλεξάνδρειαν οὔτω γλύφουσι τοὺς καλάμους οἵς γράφομεν, ἔνθα διατρίβοντα τὸν 'Ηρόφιλον ἥνικ' ἀνέτεμνεν εἰκὸς δήπου τῇ τῇ εἰκόνος διοιότητι προσαχθέντα τοῦνομα θέσθαι.

79 Next pay attention to how, when it [the veriform process, sc. the woodworm-shaped process lying on the *aqueductus cerebri*] is bent forward, the result is that the posterior ventricle [of the brain], the fourth, is exposed, and, when it is moved backwards, that the larger part of the ventricle is covered and only that part is visible which Herophilus likened to the carved out groove of a pen [*kalamos*] with which we write. You see, it really is like a pen, since it has a hollow,

like an incision [*posterior median sulcus*], in the middle, and on either side of this each of the two lateral parts [*eminentia facialis*] extends up to as great a height as they rise in pens from the line in the middle. Particularly in Alexandria they carve out the pens with which we write in this way, and since Herophilus lived there, it is likely that, when he was dissecting, he applied this name [sc. 'pen', *kalamos*], being induced to do so by the similarity of the image.

# Stop



**80** Galenus, *De locis affectis* 3.14 (viii, p. 212K)

ἐπιστάμενος οὖν τις ἔξ ἀνατομῆς ἀρχὰς τῶν εἰς ἔκαστον μόριον ἀφικνουμένων νεύρων, ἀμεινον ίάσεται τὰς ἀναισθησίας καὶ ἀκινησίας ἐκάστου μέρους. ὀδιόριστον δὲ τοῦτο καταλειφθὲν ὑφ' Ἡροφίλου τε καὶ Εὐδήμου, τῶν πρώτων μεθ' Ἰπποκράτην 5 νεύρων ἀνατομὴν ἐπιμελῶς γραψάντων, οὐ συικράν ψήσιν παρέσχε τοῖς Ιατροῖς, ὅπως ἔνιαι μὲν τῶν παραλύσεων αἰσθησίν μόνην, ἔνιαι δὲ τὴν προαιρετικὴν κίνησιν, ἔνιαι δὲ ἀμφοτέρας διαφείρουσι.

80 If, therefore, on the basis of dissection a person has gained knowledge of the beginnings of the nerves that reach each part, he will more successfully treat the loss of sensation and movement in each part. Since this [sc. the beginning of each nerve?] was left undefined by Herophilus and Eudemus, the first persons after Hippocrates to record carefully their dissection of the nerves, it provided physicians with no small investigation into why some paralyses destroy only sensation, while others destroy voluntary motion, and others again destroy both.

# Start

**81** Rufus Ephesius (?), *De anatomia partium hominis* 71–5 (pp. 184–5 Daremberg/Ruelle)

νεῦρόν ἔστιν ἀπλοῦν σῶμα καὶ πεπυκνωμένον, προαιρετικῆς κινήσεως αἴτιον, δυσαίσθητον κατὰ τὴν διαίρεσιν. κατὰ μὲν οὖν τὸν Ἐρασίστρατον καὶ Ἡρόφιλον αἰσθητικὰ νεῦρα ἔστιν κατὰ δὲ Ἀσκληπιάδην οὐδὲ ὄλως. κατὰ μὲν οὖν τὸν Ἐρασίστρατον 5 δισσῶν ὅντων τῶν νεύρων αἰσθητικῶν καὶ κινητικῶν, τῶν μὲν

αἰσθητικῶν ἀ κεκοίλανται ἀρχὰς εὔροις ἀν ἐν μήνιγξι, τῶν δὲ κινητικῶν ἐν ἔγκεφάλῳ καὶ παρεγκεφαλίδι. κατὰ δὲ τὸν Ἡρόφιλον ἀ μὲν ἔστι προαιρετικά, ἀ καὶ ἔχει τὴν ἔκφυσιν ἀπὸ τοῦ ἔγκεφάλου καὶ νωτιαίου μυελοῦ, καὶ ἀ μὲν ἀπὸ δύστοῦ εἰς δύστοῦ 10 ἐμφύεται, ἀ δὲ ἀπὸ μυὸς εἰς μῦν, ἀ καὶ συνδεῖ τὰ ἄρθρα . . .

2 αἴτιον om. A. καὶ add. ante κατὰ A 6 ἀ vulg.: οὐ A

81 Nerve (*neuron*) is a simple, solid body, the cause of voluntary motion, but difficult to perceive in dissection. According to Erasistratus and Herophilus there are nerves capable of sensation, but according to Asclepiades not at all. According to Erasistratus there are two kinds of nerves, sensory and motor nerves; the beginnings of the sensory nerves, which are hollow, you could find in the meninges [sc. of the brain], and those of the motor nerves in the cerebrum (*enkephalos*) and in the cerebellum (*parenkephalis*). According to Herophilus, on the other hand, the *neura* that make voluntary [motion] possible have their origin in the cerebrum (*enkephalos*) and the spinal marrow, and some grow from bone to bone, others from muscle to muscle, and some also bind together the joints.

**82** Galenus, *De anatomicis administrationibus* 9.9 (ii, pp. 8–9 Simon; translated by Duckworth, pp. 9–10, from Hunain's Arabic translation of the lost original)

After these pairs [sc. of cranial nerves, viz. optic, oculomotor, trigeminal and motor root of trigeminal] you find, following in succession, if you go backwards with your dissection, another pair of nerves of which each unit consists of two component parts. But as the origin of each nerve of the two components of that unit lies close to the place of origin of the others, Marinus came to reckon these four nerves as a single pair, although we clearly see that two nerves come to both sides of the head, the right and the left, opposite the ears, and enter into two foramina, one anterior, that is the auditory canal, and the other in the petrous bone. Of these two pairs the one which lies at the back is the auditory pair. But concerning the other [facial nerve], that one which enters into the blind foramen, it was believed previously that it did not reach through to the exterior. And the

same opinion was held of the foramen itself. Consequently Herophilus and his supporters named this foramen the 'blind' one . . . But for the present do you restrict yourself for your part to designating both these pairs [facial and auditory] as a fifth pair, in agreement with the method of nomenclature of the modern surgeons, counting both these pairs as one . . . For many surgeons do not know that in his work on the roots of the nerves Marinus has enumerated only those same roots which Herophilus specifies, but Marinus has concluded that there are seven pairs, whereas Herophilus says there are more than seven, regardless of the others.

# Stop



- 83 Galenus, *In Hippocratis Epidemiarum 2.4.2 commentarius 4* (ad Hippocratis v. 124 sq. L). (From Hunain's Arabic translation of the lost original; CMG v. 10.1, p. 330 Pfaff)

. . . I say this nerve, of which Hippocrates speaks here [v, 124.9–11 L], branches off from the brain near the start of the spinal marrow. In addition to this pair of nerves only one other pair proceeds from the brain, running through the beginning of the spine . . . This is the pair which Marinus, after Hippocrates, designated the sixth pair of nerves proceeding from the brain. People believe that Marinus and Herophilus disagreed on this. But I do not need to tell you anything about the disagreement here, since the discussion of this pair – i.e. whether one should count it as the sixth, seventh, eighth, ninth, or still another pair of the nerves proceeding from the brain – has to do\* with another road, which is long.

- 84 Galenus, *De libris propriis 3* (Scr. Min. II, p. 108 Mueller)

ἐν δὲ τῷ ἐνάτῳ καὶ δεκάτῳ (sc. τῶν τοῦ Μαρίνου βιβλίων ὀντατομικῶν εἴκοσι) περὶ τῶν ἀπ' ἔγκεφάλου πεφυκότων νεύρων καὶ περὶ ὁσφρήσεως καὶ πόθεν ἄρχεται τὸ αἰσθητήριον αὐτῆς

\* sich . . . beziehen Pfaff pro sich . . . bezieht (sc. die Erörterung darüber . . .) u.v.

καὶ περὶ τῶν ἐπὶ τοὺς ὀφθαλμοὺς νεύρων, ἃ καλοῦσιν Ἡρόφιλός  
5 τε καὶ Εὔδημος πόρους.

2 τῶν om. Ald spatio 3 litt. relichto  
edd.: corr. Mueller

3 περὶ τῶν φήσεων Q: περὶ τῶν φύσεων

84 In Book 19 [sc. of his twenty anatomical books, Marinus writes] about the nerves that grow from the brain [cerebrum?], about smell and from what source its perceptual organ begins, and about the nerves that go to the eyes, which Herophilus as well as Eudemus call 'passages' (*poroi*).

- 85 Galenus, *De symptomatum causis 1.2* (vii, pp. 88–9K)

δοκεῖ δέ μοι τὸ ἀπ' ἔγκεφάλου καταφερόμενον ἐπὶ τὸν ὀφθαλμὸν  
νεύρον, δὴ καὶ πόρον ὀνομάζουσιν οἱ περὶ τὸν Ἡρόφιλον, ὅτι  
τούτου μόνον φανερόν ἔστι τὸ τρῆμα, πνεύματος ὑπάρχειν ὁδὸς  
αἰσθητικοῦ. (Vid. *Herophili T140 infra*.)

3 τούτου Solmsen: τοῦτο Kühn

85 The nerve which proceeds down from the brain to the eye – which Herophilus and his followers in fact also call a 'passage' (*poros*), because its perforation [*lumen?*] alone [sc. unlike that of other nerves] is clearly visible – seems to me to exist as a pathway for sensory pneuma. (See also Chapter vii, *T140 infra*.)

- 86 Celsus, *In Platonis Timaeum comment. 246*, pp. 256.22–257.15  
Waszink (*Corpus Platonicum Medii Aevi: Plato Latinus IV*)

demonstranda igitur oculi natura est, de qua cum plerique alii  
tum Alcmaeo Crotoniensis, in physicis exercitatus quique  
primus exectionem aggredi est ausus, et Callisthenes, Aristotelis  
auditor, et Herophilus multa et praeclera in lucem protulerunt:  
5 duas esse angustas semitas quae a cerebri sede, in qua est sita  
potestas animae summa et principalis, ad oculorum cavernas  
meent naturalem spiritum continentis; quae cum ex uno initio  
eademque radice progressae aliquantis per coniunctae sint in  
frontis intimis, separatae bivii specie perveniant ad oculorum  
10 concavas sedes, qua superciliorum oblique tramites porrigen-

tur, sinuataeque illic tunicarum gremio naturalem humorem recipiente globos complent munitos tegmine palpebrarum, ex quo appellantur orbes.

porro quod ex una sede progrediantur luciferae semitae,  
15 docet quidem sectio principaliter, nihilo minus tamen intelligitur ex eo quoque, quod uterque oculus moveatur una nec alter sine altero moveri queat.

oculi porro ipsius continentiam in quattuor membranis seu tunicis notaverunt disparili soliditate; quarum differentiam  
20 proprietatemque si quis persequi velit, maiorem proposita materia suscipiet laborem.

<sup>2</sup> tum plurimi: tamen A Val (corr. Val<sup>2</sup>) Col Cam τ: tam Ba (corr. Ba<sup>2</sup>):  
tan N 5 duas dicunt Π 7 meant Ba (corr. Ba<sup>2</sup>) Reg<sup>1</sup>  
<sup>ii</sup> humorum Y (humores Ba, corr. Ba.<sup>2</sup>) La 19 disperili Λ (corr. Val<sup>2</sup>)  
Lu Ba (corr. Ba<sup>2</sup>) 20 persequi ΛΣΣΠ

86 The nature of the eye therefore must be demonstrated. About this very many others have brought many things to light very clearly, especially Alcmeon of Croton, who, well versed in natural philosophy, first dared to proceed to dissection [?execatio], and Callisthenes, Aristotle's pupil, and Herophilus: namely, that there are two narrow ducts containing natural pneuma (*spiritus naturalis (pneuma physikon)*) and that these ducts proceed from the seat of the brain, in which the highest, principal power of the soul is located, to the cavities of the eyes. And although these two ducts proceed for a while from a single starting-point and from the same root and are united in the deep internal part of the forehead, yet, when they reach the concave seats of the eyes where the slanting cross-ways of the eyebrows extend, they are separate, like two roads. There the two ducts curve and, where the 'lap' [sinus] of the tunics receives natural moisture, they fill [with pneuma?] the eyeballs, which are protected by the covering of the eyelids and therefore are called 'circles' (*orbes*).

Furthermore, dissection is, to be sure, the primary teacher of the fact that the light-bearing ducts proceed from one location, yet this fact is understood no less [by reason] from the fact that each eye moves together with [the other] and neither could move without the other.

They also recorded that the area adjacent to the eye itself consists of four membranes or tunics of unequal thickness. If someone wished to

pursue the differences and individual qualities of these tunics, he will undertake a labour greater than the subject-matter proposed here.



# Start

87 Rufus Ephesius (?), *De anatomia partium hominis* 12–13 (p. 171 Daremberg/Ruelle)

τὸ δὲ τετρημένον σῶμα (sc. τοῦ ὁφθαλμοῦ) λεῖον μέν ἔστιν ἔξωθεν, κατὰ δὲ προσπίπτει τῷ κερατοειδεῖ, δασὺ δὲ ἀπὸ τῶν ἀπεστραμμένων, ὡς φησιν Ἡρόφιλος, δορῆς ῥαγὸς σταφυλῆς ὅμοιον, καταπεπλεγμένον ἀγγείοις. καλεῖται δὲ δεύτερος (sc. χιτών) μὲν  
5 τῇ τάξει, τετρημένος δὲ ἀπὸ τῆς κατασκευῆς, καὶ ῥαγειδής ἀπὸ τῆς ἐμφερείας, καὶ χοριοειδής, ὡς ὁμοίως χορίῳ κατηγειωμένος.

3 ῥαγὸς σταφυλῆς δορῆς Clinch 3–4 ὅμοιος καταπεπλεγμένος A  
Clinch 4–5 δεύτερος usque ad κατασκευῆς codd.: οὗτος δεύτερος τῇ  
τάξει, καὶ τετρημένος τῇ κατασκευῇ Clinch 6 ὡς om. Clinch

87 The perforated body [sc. of the eye; *iris?*] is smooth on the outside where it meets with the horn-like [coat of the eye; *cornea?*], but rough on the side that is turned away, as Herophilus says, resembling the skin of a grape, being interwoven with blood-vessels. This coat [sc. pars iridica retinae?] is called the 'second' on account of its position, 'perforated' on the basis of its structure, 'grape-like' on the basis of the resemblance, and 'chorioid' on the ground that it is interlaced with blood-vessels like the foetal membrane (*chorion*).

88 A. Cornelius Celsus, *Medicina* 7 (Artes 12).7.13B (CML 1, p. 319 Marx)

hae duae tunicae cum interiora oculi cingant, rursus sub his (sc. ceratoidi et choriodi) coeunt, extenuataeque et in unum coactae <per> foramen, quod inter ossa est, ad membranam cerebri pervenient eique inhaerescunt. sub his autem, qua parte  
5 pupilla est, locus vacuus est; deinde infra rursus tenuissima tunica, quam Herophilus arachnoidem nominavit.

1 haec F sub his J: ubi FV<sup>1</sup>: sub ubi V<sup>2</sup> 3 per J: om. FV 3 ad  
J: et FV 4 eoque J sub F<sup>2</sup> J: sum FV 6 qua V hero pilus  
FV araconide J ad nominavit sqq. vid. Opfermann, 1925: 28–30

88 These two coats [sc. the 'ceratoid coat' – i.e. cornea and sclerotic coat – and the 'chorioid' coat] enclose the interior parts of the eye, but they coalesce again behind them; and after becoming thinned out and joined into one, they go to the membrane of the brain through the aperture which is between the bones, and stick to the membrane. Under these two coats, however, at the part where the pupil is, is an empty space. Then underneath this again is the thinnest coat, to which Herophilus gave the name 'cobweb-like' (*arachnoeides (retina)*).

- 89 Rufus Ephesius, *De nominatione partium hominis* 153 (p. 154 Daremberg/Ruelle)

· δὲ τρίτος (sc. χιτών τοῦ ὀφθαλμοῦ) περιέχει μὲν ὑαλοειδές ύγρον· καλεῖται δὲ ἀρχαῖον ὄνομα ἀραχνοειδής διὰ λεπτότητα. ἐπειδὴ δὲ Ἡρόφιλος εἰκάζει αὐτὸν ἀμφιβλήστρω· ἀνασπασμένῳ, ἔνιοι καὶ ἀμφιβληστροειδῆ καλοῦσιν· ὅλοι δὲ καὶ ὑαλοειδῆ ἀπὸ 5 τοῦ ύγρου.

3 ἀνεσπασμένῳ Clinch

4 καλοῦσιν ἀπὸ τοῦ ύγρου αὐτὸν, ὅλον καὶ ὑαλοειδῆ Clinch

89 The third [coat of the eye; retina?] encloses vitreous liquid. The ancient name by which it is called is 'cobweb-like', on account of its fineness. But since Herophilus likens it to a casting-net that is drawn up, some also call it 'net-like'. Others call it 'vitreous', too, on the basis of the liquid.

**Stop**



- 90 Galenus, *De anatomicis administrationibus* 14.5 (II, p. 183 Simon; translated from Hunain's Arabic translation of the lost original by Duckworth, p. 201)

I have already said previously that Herophilus calls the process of the skull which others call 'awl-pointed' or 'needle-pointed', and which is a slender cartilaginous process, 'styloid'. This is because many people in Alexandria, and many others besides them among the peoples inhabiting the regions of the Orient, who speak bad Greek, call the pens with which one writes upon waxed tablets 'styloï'.

- 91 Galenus, *De anatomicis administrationibus* 11.1 (II, pp. 61–2 Simon; translated from Hunain's Arabic translation by Duckworth, pp. 67–8)

After this flesh [sc. submandibular salivary gland], when it has been removed, and all the fascial coverings reflected which clothe and veil the entire laryngeal region, there appears the muscle of the mandible which one rightly calls 'tendinous', since its intermediate part is tendinous and fleshless [*M. digastricus?*] . . . The state of this muscle I have already demonstrated above. And here, in connection with it, I will explain this further point, that its root [origin] adjoins the root of that part of the skull which Herophilus calls the 'columnar' process [*processus styloideus*] and which we call 'awl-like' or 'needle-like'.

- 92 Galenus, *De anatomicis administrationibus* 10.7 (II, p. 51 Simon; translated from Hunain's Arabic translation of the lost original by Duckworth, p. 56)

But in regard to what lies outside the mouth, you find where the bone which is called 'that which resembles the letter Λ in the Greek script' (*lambdoid* (= *hyoid*)), there this bone stands in relation with the tongue through the muscles, and in many animals, as for instance in apes, with the skull also. In these [latter] animals on each of the two sides there runs up in the direction of the tongue a muscle which springs from the cranium near the process which Herophilus calls the 'pharoid' ('light-house-like', i.e., the styloid process). Cf. *Gal. xviiiB. 957–9K.*

- 93 Rufus Ephesius, *De nominatione partium hominis* 155 (p. 155 Daremberg/Ruelle)

τὸ δὲ ὑπὸ ταῖς ὀντιάσιν δστοῦν, τὸ περιειληφός τὴν κεφαλὴν τοῦ βρόγχου, οἱ μὲν ὑοειδὲς διὰ τὸ σχῆμα ὄνομάζουσιν, ὅτι ἔοικεν τῷ Υ γράμματι· Ἡρόφιλος δὲ παραστάτην καλεῖ, ὅτι παρέστηκε ταῖς ὀντιάσιν.

2 ὑψηλοειδὲς Clinch

93 Some people call the bone below the tonsils, surrounding the head of the windpipe, 'Y-shaped' (*hyo-eides* (hyoid bone)) on account of its shape, because it resembles the letter *Y*[psilon]. But Herophilus calls it 'assistant' (*parastatēs*), because it 'stands by' (*parestēke*) the tonsils. (*Os hyoideum; not larynx.*)

## Start

94 Pollux, *Onomasticon* 2.202 (*Lexicographi Graeci* ix.1, p. 145  
Bethe)

ταῖς γε μὴν ἀντιάσιν δστοῦν ὑπόκειται περιειληφὸς τὴν τοῦ βρόγχου κεφαλήν, καλούμενον ὑπ' ἐνίων ὑοειδές, δτι προσέοικε τῷ τοῦ γράμματος σχήματι. 'Ηρόφιλος δ' αὐτό, διὰ τὸ παρεστηκέναι ταῖς ἀντιάσι, παραστάτην ὡνόμαζεν.

2 καλούμενος A      υοειδές II      3 γράμματος plurimi: πράγματος A  
'Ηρόδοτος αὐτὸς C

94 A bone lies under the tonsils, surrounding the head of the windpipe, and some people call it 'Y-shaped', because it resembles the shape of the letter. But Herophilus gave it the name 'assistant' (*parastatēs*) on account of the fact that it 'stands by' (*parestēkenai*) the tonsils.

## 4 Abdominal cavity ('On Anatomy' II?)

95 Galenus, *De semine* 2.6 (iv p. 646K)

εἰς ἔντερα δὲ τά τ' ἐκ τῆς γαστρὸς ἥκει, καὶ τὸ χολῶδες ύγρὸν ἐξ ἥπατος, ἐξ ἀδένων τέ τινων ἐτέρων αὖ πάλιν ἐνταῦθα τεταγμένων ύγρὸν γλίσχρον ὅμοιον σιέλω, περὶ ὧν ἀδένων οὐ σμικρὰ γῆτησις γέγονε τοῖς ἀνατομικοῖς, ἀπὸ 'Ηρόφιλου τέ καὶ 5 Εὐδήμου τὴν ἀρχὴν λαβοῦσα.

2 τεταγμένων Ald: τετάγμενον P      3 σιάλω P      4 ἀπὸ Ald: ἐπ' P

95 The substances [secreted] from the stomach come into the intestines, and so does the bilious humour from the liver and a viscous fluid, similar to saliva, from some other glands which are located there. About these glands no small investigation arose among anatomists, an investigation that received its first impetus from Herophilus and Eudemus.

96 Galenus, *De venarum arteriarumque dissectione* I (ii, pp. 780–81K)

ἐντεῦθεν (sc. ἀπὸ τῶν τοῦ ἥπατος πυλῶν) γὰρ ἐκφυομένη μεγάλη τις φλὲψ ἀποτείνεται λοξὴ πρὸς τὰ κάτω καὶ ἄλλα τοῦ 3ώου μόρια, κατὰ μέσην πως μάλιστα τὴν δωδεκαδάκτυλον ὑπὸ 'Ηροφίλου καλουμένην ἐκφυσιν. ὀνομάζει δ' οὕτως 5 τὴν ἀρχὴν τοῦ ἔντερου, πρὶν εἰς Ἑλικας ἐλίττεοθαι.

96 From the portal veins of the liver a large vein grows out and extends obliquely both to the lower parts and to other parts of a living being, especially along the middle of the growth called 'twelve fingers long' [sc. *duodenum*] by Herophilus. And he gives this name to the beginning of the intestine, before it twists into convolutions.

97a Galenus, *De anatomicis administrationibus* 6.9 (ii, p. 572K)

97b Oribasius, *Collectiones medicae* 24.19.10 (CMG vi.2.1; vol. iii, p. 33 Raeder)

μετὰ δὲ ταύτην δωδεκαδάκτυλον οὔσαν τὸ μῆκος, ὡς 'Ηρόφιλος ἀληθῶς ἔφη, κατακάμπτεται πολυειδῶς εἰς Ἑλικας, ἀγγείων παμπόλλων πλῆθος ἔχουσαν, ὅπερ ὀνομάζουσι νῆστιν, δτι κενὸν δὲ τροφῆς εύρισκεται.

1 δωδεκαδάκτυλος οὔσα Orib.      2 Ἑλικα Kühn      3 ἔχουσα πλῆθος Orib.

97a–b After this [sc. first part of the intestine], which is twelve fingers long [sc. *duodenum*], as Herophilus said correctly, the intestine bends downward into convolutions in many folds with a host of very many bloodvessels. This part they call the 'fasting' intestine [sc. *jejunum*] because it is always found to be deprived of food.

## Stop

98a Galenus, *De locis affectis* 6.3 (viii, p. 396K)

ἔδειχθησαν δὲ καὶ οἱ νεφροὶ τὸ ὑδατῶδες ἐν αἷματι ἔλκειν, μὴ μέντοι τὴν κύστιν ἔλκειν ἐκ τῶν νεφρῶν, ὡσπερ μηδ' ἐκ τῆς κοιλίας τὰ ἔντερα· πέμπτειν δ' ἐκκρίνοντας, εἰς μὲν τὴν κύστιν τοὺς νεφροὺς διὰ τῶν οὐρητήρων, εἰς δὲ τὴν νῆστιν τὴν κοιλίαν 5 διὰ τῆς ἐκφύσεως, ἦν 'Ηρόφιλος ὡνόμασε δωδεκαδάκτυλον ἀπὸ τοῦ μήκους αὐτῇ τὴν ἐπωνυμίαν θέμενος.

98a It was also shown that the kidneys draw to themselves the watery substance in the blood, but not that the bladder draws it from the kidneys, just as the intestines do not draw it from the abdominal cavity. Rather, the kidneys secrete it and send it into the bladder through the urinal ducts (*urētēres*), while the abdominal cavity sends it to the 'fasting' intestine [sc. *jejunum*] through the process which Herophilus named 'twelve fingers long' [sc. *duodenum*], giving it its name from its length.

98b Theophilus Protaspatherius, *De corporis humani fabrica* 2.7.10  
(p. 68 Greenhill)

Ὕπέρκειται δὲ τῇ νήστει ἡ δωδεκαδάκτυλος ἔκφυσις, ἐντερον οὖσα καὶ αὐτὴ τῶν λεπτῶν, δώδεκα δακτύλων τὸ μέγεθος ἐπιτείνουσα· διὰ τοῦτο οὖν αὐτὴν Ἡρόφιλος ὠνόμασε δωδεκαδάκτυλον.

<sup>1</sup> τῇ νήστει E: τῆς νήστεως *vulg.*    <sup>2</sup> δώδεκα δακτύλων E:  
δωδεκαδάκτυλον *vulg.*    <sup>3</sup> ἐπιτείνουσα E: ἔχουσα *vulg.*

98b Above the 'fasting part' [sc. *jejunum*] lies the duodenal process, which is a part of the bowels, that is, it is itself part of the small intestines, extending for the size of twelve fingers. For this reason Herophilus gave it the name 'twelve fingers long'.

99 Galenus, *De anatomicis administrationibus* 13.1 (II, p. 126 Simon; translated from Hunain's Arabic translation of the lost original by Duckworth, p. 138)

All these structures are clad and ensheathed in a delicate covering [*lesser omentum*], as are other structures which come after them in the region of the organ known as the pancreas. There is also similarly covered the first outgrowth of the intestine for which there is no name at all. For that reason the anatomists have simply called it 'outgrowth', but some speak of it also as 'the outgrowth measuring twelve fingers' [*duodenum*], because Herophilus has said that this is its length.

100a Theo Smyrnaeus, *Expositio rerum mathematicarum ad legendum Platonem utilium* 46 (p. 172 Dupuis; p. 104 Hiller)

Ἡρόφιλος δὲ “τὸ τῶν ἀνθρώπων ἐντερον πτηχῶν”, εἶναι φησι, “κη”, ὃ ἐστι τέσσαρες ἑβδομάδες.

<sup>1</sup> Ἡρόφιλος: η in ras. A

100a And Herophilus says, 'The intestines of human beings are twenty-eight cubits long', i.e., four hebdomads.

100b Anatolius, *De decade* (p. 36 Heiberg)

Ἡρόφιλος δὲ “τὸ τοῦ ἀνθρώπου ἐντερον πτηχῶν” εἶναι φησι “κα”, ὅπερ εἰσὶ τρεῖς ἑβδομάδες.

100b And Herophilus says, 'The intestines of a human being are twenty-one cubits long', which is precisely three hebdomads.

## Start

5 *Reproductive organs ('On Anatomy' III?)*

101 Galenus, *De anatomicis administrationibus* 12.8 (II, p. 120 Simon; translated from Hunain's Arabic translation of the lost original by Duckworth, p. 131)

For the seminal vessels or ducts join this part [sc. sphincter muscle] of the neck of the bladder after they have dilated and enlarged themselves, in the same way in which the veins dilate on which the disease named *kirsos* breaks out, and from here [this resemblance] Herophilus has named them 'varix-like parastates'\* [*ampullae of vasa deferentia?*]. We give them the same name, as we follow old custom in the application of names. Herophilus, then, has named 'varix-like' both these two ducts or vessels. He gave them this name, deriving it from what happens to them, that is, the fact that near the place of their attachment and coalescence with the neck of the urinary bladder they dilate

\* Duckworth reads 'prostates', but see, for example, T102, which confirms that Herophilus' term was *para-statae* (plural *para-statai*); Simon's reads 'parastates'.

and enlarge themselves, just as the veins which are affected by the disease named *kirvos* [sc. enlargement of a vein; *varicocele*].

Bordering upon these two, two other ducts are found, one on each side, and these two ducts Herophilus has called the 'gland-like' – 'glands' being that 'spongy flesh' [*vesiculae seminales*]. He gave them that name simply because they originate from the spongy flesh which just at this place joins the neck of the urinary bladder at the very same point as that to which those two vessels or ducts are attached.

- 102 Galenus, *De usu partium* 14.11 (ii, p. 321 Helmreich)

καὶ τοὺς ἐκ τούτων τῶν σωμάτων (sc. τῶν ἀδενοειδῶν) δρυμωμένους πόρους οὐκ ὀκνοῦσιν (sc. οἱ πρότεροι) δύνομάζειν ὅγγεῖα σπερματικά, καὶ πρῶτος γε Ἡρόφιλος ἀδενοειδεῖς παραστάτας ἐκάλεσεν, ὅτι καὶ τὰ τῶν ὅρχεων ἐκφύμενα 5 κιρσοειδεῖς ἔφθανεν δύνομάζειν παραστάτας.

3 ὅγγεῖα] αἵτια AU γε] τε ABLU 4 παραστάτας ABLU:  
προστάτας D ὅτι om. B καὶ τὰ] κατὰ D

- 102 Earlier authors do not hesitate to name the passages starting from these bodies [sc. 'the glandular bodies': seminal vesicles] 'seminal vessels'. Herophilus was in fact the first to call them 'glandular assistants' (*parastatai adenoeideis*), because he had also been the first to call the vessels that grow from the testicles 'varix-like assistants' (*parastatai kirsoeideis*).

Stop



- 103 Galenus, *De semine* 1.16 (iv, p. 582K)

καὶ τὸ κατὰ τὴν ἐπιδιδυμίδα περιεχόμενον (sc. ὑγρὸν) ἐκ τούτου (sc. τοῦ ὅρχεως) μετείληπται πρὸς αὐτήν, ὥσπερ ἐκ ταύτης εἰς τὸ σπερματικὸν ὅγγεῖον, οὐ παραστάτην κιρσοειδῆ τὸ πρὸς τῷ καυλῷ μέρος Ἡρόφιλος ὠνόμασεν. (Vid. T189 sqq.)

1 ἐπιδιδυμίδα P Ald: διδυμίδα M 3 κιρσοειδῆ MP Ald: corr. Kühn  
3-4 τὸ πρὸς τ.κ. μέρος P Ald: τῷ πρὸς τ.κ. μέρει M

- 103 And the seminal fluid contained in the epididymis is transferred from the testicle to the epididymis just as it is from there into the

seminal vessel. To the part of the seminal vessel bordering on the shaft [penis] Herophilus gave the name 'varicose assistant' (*parastataē kirsoeidēs*). (See Chapter VII, T189ff. *infra*.)

- 104 Vindicianus (?), *Fragmentum Bruxellense de semine* i, e codice Bruxellensi 1348–59, fol. 48r (Wellmann, 1901: 208; Werner Jaeger, *Diokles von Karystos* (Berlin, 1938; 2<sup>1963</sup>), pp. 191–2)

Erasistratus et Herophilus essentiam seminis dicunt sanguinem . . . primo igitur, ut Herophilus ait, abruptio corporum hoc testatur quam Graeci ἀνατομήν vocant. etenim seminalium vascorum interiora atque secretius remota sanguinulenta 5 videntur, sequentia vero sive secunda plurimum a praescriptis demutata sunt, inferiora ac proxima seminis colorem habent. (Vid. *Herophili T191 infra*.)

1–2 ero filus B (*utroque loco*) 2 abruptio B Neu Wellmann: apertio coni.  
Jaeger fort. recte 6 habentia B Neu: corr. Wellmann

- 104 Erasistratus and Herophilus say that the essence of seed is blood . . . First, then, as Herophilus says, tearing open bodies, which the Greeks called 'dissection' (*anatomē*), is a witness to this. For, the internal parts of those seminal vessels that are also at a more remote distance [sc. from the genitalia] appear full of blood, whereas the ones that follow next [sc. somewhat closer to the genitalia] are changed very much compared to the aforementioned ones, and the lower, more accessible ones have the colour of seed . . . (See Chapter VII, T191 *infra*.)

- 105 Rufus Ephesius, *De nominatione partium hominis* 184–6 (pp. 158–9 Daremberg/Ruelle)

τὰ δὲ σπερματικὰ ὅγγεῖα ἔστι μὲν τέσσαρα, δύο μὲν κιρσοειδῆ, δύο δὲ ἀδενοειδῆ· ἐκαλοῦντο δὲ καὶ γόνιμοι φλέβες. καὶ τῶν κιρσοειδῶν τὰ πρὸς τοῖς διδύμοις, παραστάται· ἐνίοις δὲ καὶ πάντα παραστάτας καλεῖν διαφέρει οὐδέν. σκεπτέον δὲ καὶ εἰ 5 τοῖς θήλεσι τὰ αὐτὰ πεποίηται, ὥσπερ καὶ τοῖς ἄρρεσιν· Ἡροφίλῳ μὲν γάρ οὐ δοκεῖ τὸ θῆλυ κιρσοειδεῖς ἔχειν παραστάτας. ἐν δὲ προβάτου ύστερά εἶδομεν ἐκ τῶν διδύμων πεφυκότα τὰ

ἀγγεῖα κεκιρσωμένα ἐκατέρωθεν. συνετέτρητο δὲ ταῦτα εἰς τὸ κοίλωμα τῆς ύστέρας, ἀπὸ ὧν ὑπόμυξον ὕγρὸν πιεζούντων  
10 ἀπεκρίνετο· καὶ ἡν πολλὴ δόκησις σπερματικὰ ταῦτα εἶναι, καὶ τοῦ γένους τῶν κιρσοειδῶν. τοῦτο μὲν δὴ οἶόν ἔστιν, αἱ ἀνατομαὶ τάχα δείξουσιν.

2 ἀδενοειδῆ plurimi: ἐλαειδῆ L 3 τοὺς διδύμους Clinch προστάται  
ἐνīοι L 4 ἄπλ. Clinch πιεζόντων Clinch 10-11 ἀπεκρίνετο . . . τοῦ  
γένους τῶν . . . I 2 τάχα codd.: δίχα Clinch

Start

105 The seminal vessels are four in number, two being varix-like [vasa deferentia], two glandular [seminal vesicles]. They also used to be called 'reproductive veins'. And the parts of the varicose ones that are adjacent to the testicles are [called] 'assistants' (*parastatai*). But to some people it makes no difference to call all the seminal vessels 'assistants'. One must examine whether in females, too, the same vessels have been constructed [by nature] as in males. For, while Herophilus thinks that the female does not have the 'varix-like assistants' (*kirsoeideis parastatai*), we have seen that vessels which have become varicose grow out of the 'testicles' [sc. ovaries] in the womb of a sheep, [one] on either side. These opened directly into the cavity of the uterus, and when they were compressed, a somewhat mucous liquid was excreted from them. And there was a widespread belief that these vessels are seminal, and belong to the varix-like kind. Dissections will perhaps show of what nature this is.

#### 106 Soranus, *Gynaecia* 1.12.2-3 (CMG iv, p. 9 Ilberg)

ὅ σπερματικὸς δὲ πόρος ἀπὸ τῆς ύστέρας δι' ἐκατέρου φέρεται διδύμου καὶ τοῖς πλευροῖς παραταθέις μέχρι τῆς κύστεως εἰς τὸν ταύτης ἐμφύεται τράχηλον. ἔνθεν δὲ δοκεῖ τὸ τοῦ θήλεος σπέρμα πρὸς ζωγογονίαν μὴ συλλαμβάνεσθαι τῷ εἰς τὸ ἔκτὸς  
5 ἔκχεισθαι, περὶ οὐδὲν διελάθομεν ἐν τῷ περὶ σπέρματος λόγῳ· ἔνιοι δέ, καθὼς βούλεται καὶ Ἡρόφιλος, καὶ ἀνὰ ἓνα κρεμαστῆρά φασιν αὐτοῖς ἐμπεφυκέναι, καὶ ἡμεῖς δὲ τοῦτο ἐπὶ τῆς αὐτοψίας ιστορήκαμεν ἐπὶ τίνος ἐντεροκηλικῆς γυναικός . . .

6 καὶ Ἡρόφιλος *coni*. Ilberg cf. Galeni *De semine* 2.1 (iv p. 596 K = Fr 61): καὶ δὸχος P: καὶ χῆρας Oribasius (qui Soranum excerpit), Coll. medic. 24.31.20 (CMG vi.2.1 = vol. iii p. 43 Raeder): καὶ Βακχεῖος Rose: ὁ Καλχηδόνιος

*conieci* ἀνὰ ἓνα κρεμαστῆρά Reinhold: ἀνακρεμαστῆρά Oribasius l.c.:  
ἀνακρεμαστῆρας P et u.v. archet. ANA 7 αὐτᾶς Oribasius Pal.  
ἐμπεφυκέναι Oribasius: ἐκπεφυκέναι P

106 The spermatic duct goes from the uterus through each of the two 'testicles' [ovaries] and, extending along the sides of the uterus up to the urinary bladder, it grows into its neck. The seed of the female, therefore, does not seem to contribute to reproduction, since it is excreted to the outside. With this I dealt separately in my treatise *On Seed*. And some people say, as Herophilus, too, would have it, that a suspender (*krēmāstēr* (cremasteric muscle?)) is attached to them, one to each. I, too, have observed this upon personal visual inspection in the case of a woman suffering from an intestinal hernia.

#### 107 Galenus, *De uteri dissectione* 9 (CMG v.2.1, pp. 48-50 Nickel)

καὶ μήν καὶ τὰ ἀποφυόμενα τῶν ὅρχεων (sc. θηλείων) ἀγγεῖα τὰ σπερματικὰ πάλιν δύμοις φάνεται περιέχοντα σπέρμα ὡς καὶ ἐπὶ τῶν ἀρρένων, ἐγγὺς μὲν αὐτῶν τῶν ὅρχεων εύρεα τε ὄντα καὶ αἰσθητὴν ἔχοντα τὴν κοιλότητα, στενότερα δὲ καὶ οἷον ἀκοίλια  
5 γινόμενα μικρὸν ἀπωτέρω, εἴτα πάλιν εύρυνόμενα παρὰ ταῖς κεραίαις, ἔνθα καὶ εἰς τὴν μήτραν καταφύονται. ταῦτα δὲ τὰς ἐμφύσεις οὔτε Ἀριστοτέλης οὔτε Ἡρόφιλος οὔτε Εύρυφῶν οἶδεν· ἐμνημόνευσα δὲ τούτων οὐχ ὡς μόνον οὐκ εἰδότων, ἀλλ' ὡς κάλλιστα ἀνατεμόντων . . . οὔτε γάρ καταγινώσκειν τούτων  
10 τολμῶ διὰ τὴν ἐν τοῖς ἀλλοις ἀκριβειαν, οὔτε μικρὰ οὔτως ἐστὶν ταῦτα τὰ ἀγγεῖα, ὥστε ἀν τινα λαθεῖν. ἀλλὰ περὶ μὲν τῶν εἰς τὸν τράχηλον τῆς κύστεως ἐμφυομένων ἀκριβῶς εἰρηται αὐτοῖς,  
ὅτι τε εἰς τὸν αὐτὸν τόπον ἐμβάλλει, εἰς δὲν καὶ ἐπὶ τῶν ἀρρένων,  
καὶ ὅτι ἀδενοειδῆ ἐστι τὰ ἀγγεῖα ταῦτα καὶ ὅτι ἀπὸ τῶν διδύμων  
15 ἐκτείνεται, τῇ μήτρᾳ παραφυόμενα. περὶ δὲ τῶν κατὰ τὰς κεραίας οὐδὲν εἰρήκασιν.

3 αὐτῶν om. Nicolaus 7 Εύρυφῶν codd.: eudimus (-amus Nic.) Nicolaus

107 And indeed the seminal vessels which grow from the [female] 'testicles' [ovaries] are observed to contain seed, again in a similar manner as in males: close to the 'testicles' [ovaries] themselves these vessels are wide and have a perceptible hollow, but a little further away [from the ovaries] they become narrower and, as it were, not

hollow; then they become wider again at the horn-like projections (*keraiai* (tubes)) where they also grow into the uterus. Of these insertions neither Aristotle nor Herophilus nor Euryphon knows. I mentioned these authors not only because they do not know them, but because they dissected most excellently . . . For neither do I dare condemn these authors, because of their accuracy in all other matters, nor are these vessels so small that they could escape one's notice. On the other hand, concerning the [vessels] which grow into the neck of the urinary bladder, they accurately said both that these enter into the same place as in males and that these vessels are gland-like and extend from the 'testicles' [sc. ovaries], growing along the uterus. But concerning the vessels at the horns they said nothing.

**Stop**



108a Galenus, *De uteri dissectione* 3 (CMG v.2.1, p. 38 Nickel)

108b Oribasius, *Collectiones medicae* 24.29.6–8 (CMG vi.2.1, vol. III, p. 40 Raeder) (Excerpted from Galen)

108c Aëtius Amidenus, *Libri medicinales* 16.1 (p. 2 Zervos) (Excerpted from Galen)

τὸ δὲ σχῆμα αὐτῆς (sc. τῆς μήτρας) τὸ μὲν ἄλλο πᾶν σῶμα καὶ μάλιστα ὁ πυθμὴν κύστει ἔοικεν· καθ' ὅσον δὲ ἐπὶ τῶν πλαγίων ἀποφύσεις ἔχει μαστοειδῆς, πρὸς τὰς λαγόνας διαναευούσας, ταύτη οὐκέτι ἔοικεν. αὐτῶν δὲ τούτων τὸ σχῆμα ὁ μὲν Ἡρόφιλος

5 ἡμιτόμῳ κύκλῳ ἔλικι εἰκάζει, Διοκλῆς δὲ κέρασι φυομένοις, διὰ ταῦτα καὶ ὠνόμασε κεραίας παρωνύμως ἀπὸ τοῦ κέρατος.

1–6 *Aetii excerptum valde mutilatum*      1 σῶμα non habet Oribasius      2 ἐπὶ<sup>1</sup>  
codd.: ἐκ F (Orib.); κατ P(Orib.)      3 ἐπιφύσεις Orib.      λαγόνας codd.:  
sempora Nic.      διανεζούσας V      4 ταύτην F (Orib.)      5 ἡμιτόμῳ  
ἡμιτόμου P<sup>2</sup>F (Orib.), semi inscisi Nic.      κύκλου ε κύκλῳ corr. V.  
Ἐληκον F (Orib.)      ἀπεικάζει Orib. plur.: ἀπεικάζεται F (Orib.)

108a–c As far as the shape [sc. of the uterus] is concerned, its entire body, and particularly its base, resembles the urinary bladder. But in so far as it has breast-like offshoots on the sides which tilt upward towards the flanks, it no longer resembles the bladder. The shape of these very offshoots Herophilus likens to a half-circle of a circle, whereas Diocles likens them to horns that grow out, and on account of this also gave them the name 'horn-like [projections]' (*keraiai*), deriving it from 'horn' (*keras*).

109 Galenus, *De usu partium* 14.11 (II, p. 323 Helmreich)

εἰς δὲ τὰ παρὰ τῶν ίδίων ὅρχεων (sc. ἀγγεῖα?) αἱ κεραῖαι καὶ διά τοῦθ' ὡς πρὸς τὰς λαγόνας διαναευέκασιν ἄνω καὶ κατὰ βραχὺ γιγνόμεναι στενότεραι τελευτῶσιν εἰς ἀκριβῶς στενὰ πέρατα, συναπτόμενον ἐκάτερον αὐτῶν τῷ καθ' ἑαυτὰ διδύμῳ. καλεῖ γάρ 5 Ἡρόφιλος οὕτω τὸν ὅρχιν.

1 τὰ coni. *De Lacy*: τὸ codd.: τὸν Bas.      4 συναπτόμενον ἐκάτερον AL<sup>2</sup>U:  
συναπτομένων ἐκάτερων cett.: συναπτομένης ἐκατέρας Helmreich      ἑαυτὰ codd.: ἑαυτὴν Helmreich

109 The 'horn-like projections' [go] to the [ducts/vessels] that come from the [female's] own 'testicles' (*orcheis* (ovaries)), and for this reason they tilt upward toward the flanks and, gradually becoming narrower, terminate in extremely narrow ends [sc. in the ducts], each of which is attached to the 'twin' on its own side; for 'twin' (*didymos*) is what Herophilus calls the 'testicle' [ovary].

110 Galenus, *De uteri dissectione* 7 (CMG v.2.1, p. 46 Nickel)

εἰκάζει δὲ αὐτοῦ (sc. τοῦ τῆς μήτρας αὐχένος) τὴν φύσιν ὁ  
Ἡρόφιλος βρόγχου τῷ ἄκρῳ.

1 αὐτῆς V: corr. Corn. Kühn      2 βρόγχου τῷ ἄκρῳ codd.: bronchio duro  
Nic.

110 Herophilus likens the nature of the neck of the uterus [cervix?] to the upper part of the windpipe.

111a Soranus, *Gynaecia* 1.10.3 (CMG iv, p. 8 Ilberg)

111b Oribasius, *Collectiones medicae* 24.31.13 (CMG vi.2.1; vol. III, p. 43 Raeder; excerpted from Soranus)

κατὰ μέντοι τὴν φύσιν τρυφερὸν ἔστιν (sc. τὸ τοῦ γυναικείου αἰδοίου στόμιον) καὶ σαρκώδες ἐπὶ τῶν ὀδιακορεύτων, σομφότητι πνεύμονος ἢ τρυφερίᾳ γλώττης ἔοικός, ἐπὶ δὲ τῶν ἀποκεκυιῶν τυλωδέστερον γίνεται, κεφαλῇ πολύποδος ἢ

5 ἄκρῳ βρόγχῳ, καθώς φησιν Ἡρόφιλος, ὅμοιον, τυλούμενον τῇ παρόδῳ τῶν ἀποκρινομένων καὶ ἀποτικτομένων.

2-3 σοφότητι P 3 πλεύμονος *Oribasius* (*F exc.*) 4 κεφαλῇ P (*Orib.*): ὡς κεφαλὴ P: κεφαλὴ F (*Orib.*)

111a-b [The mouth of the female pudendum] by nature is delicate and fleshy in the case of undeflowered women, resembling the sponginess of the lung or the tenderness of the tongue, but in the case of women who have given birth it becomes more callous, similar to the head of an octopus or to the upper part of the windpipe, just as Herophilus says, since it is made callous by the passage of what is excreted and of what is brought to birth. (*Cf. Chapter vii, T201 infra.*)

### 112 Galenus, *De usu partium* 14.3 (II, p. 290 Helmreich)

μή τοίνυν ἔτι θαυμάζειν ἢ ἐν ταῖς τῶν ζῷων διαιρέσει θεώμενος ἢ παρ' Ἡροφίλῳ γεγραμμένον ἢ ἄλλῳ τινὶ τῶν ἀνατομικῶν εὑρίσκων, ὡς δὲ τῶν ὑστερῶν αὐχὴν διέστραπταί τε καὶ σκολιός ἔστι κατὰ τὸν λοιπὸν ἀπαντα χρόνον, ἐν δὲ μήτ' εἶσω φέρεται τὸ 5 σπέρμα μήτ' ἔξω τὸ ἐμβρύον· ἐπεται γάρ τοῦτο τῇ προειρημένῃ κατασκευῇ συμμέτρως ἔχούσῃ μαλακότητός τε καὶ σκληρότητος.

1 θαυμάζεις B: θαύμαζε Ch 5 τῇ plurimi: ἢ U: om. A

112 No longer be surprised, therefore, if you either see in dissections of animals or find in the writings of Herophilus or some other anatomist that the neck of uteri [i.e., the cervix?] is both twisted and crooked at all other times, i.e., when neither seed is passing to the inside nor the foetus to the outside. For this follows from the aforementioned construction [sc. of the 'neck' of the uterus], which has a due proportion of both softness and hardness.

### 113 Soranus, *Gynaecia* I.57.3-4 (CMG IV, p. 42 Ilberg)

καὶ αὐτὸ δὲ τὸ ἐμβρύον ἐμφύμενον εἰς σῶμα καλοῦμεν ὅμφαλόν. συγκέριται δὲ *〈ἐκ τεσσάρων〉* τὸν ἀριθμὸν ἀγγείων, δύο φλεβῶδῶν καὶ δύο ἀρτηριῶδῶν, δι' ὧν εἰς θρέψιν ὑλὴ αἱματικὴ καὶ πνευματικὴ παρακομίζεται τοῖς ἐμβρύοις . . . οἱ δὲ πολλοὶ

5 τὰς φλέβας μὲν εἰς τὸ ἤπαρ (sc. ἐμφύεσθαι) οἴονται, τὰς ἀρτηρίας δὲ εἰς τὴν καρδίαν. Ἡρόφιλος δὲ τὰς φλέβας μὲν εἰς τὴν κοίλην φλέβα, *〈τὰς〉* ἀρτηρίας δὲ εἰς τὴν παχεῖαν ἀρτηρίαν τὴν παρατείνουσαν τοῖς σπονδύλοις, πρὸ δὲ τῆς εἰς αὐτὴν ἐμφύσεως παρὰ τὴν κύστιν αὐτὰς πλαγιοφορεῖσθαι παρ' 10 ἑκατέρας πλευράς.

1 ἐμβρύων Ilberg: ἐμβρύον P: *〈τῷ〉* ἐμβρύῳ Ermerins εἰς Ilberg:  
ώς P 2 ἐκ τεττάρων add. Ermerins (τεσσάρων Ilberg) ἀγγεῖω P:  
corr. Dietz 3 ἀρτηριῶδῶν Schöne: ἀρτηρῶν P 5 ὁρῶνται P:  
corr. Ermerins 7 φλέβῃν P: τὰς add. Ermerins παχεῖαν Ermerins:  
τοῖς ὧν P 8 σφουστοῖς Rose

Start

113 That which grows into the body of foetuses is itself called umbilical cord (*omphalos*). For it is a combination of vessels, four in number, two of them being venous and two arterial. Through these vessels blood-like and pneumatic matter is conveyed to the foetuses for nourishment . . . Most people think the veins grow into the liver, and the arteries into the heart. Herophilus, however, thinks the veins enter the hollow vein [*vena cava*], while the arteries enter the thick artery [*aorta*] which extends along the vertebrae, but before they grow into it they move transversely across the urinary bladder along either side.

Stop

### 114 Galenus, *De uteri dissectione* 5 (CMG v.2.1, pp. 42-4 Nickel)

“Ἐτερα δὲ τέτταρα (sc. ἀγγεῖα) οὐκ ἐπὶ πασῶν γυναικῶν, ἀλλ' ἔστιν ἐφ' ὧν”, φησὶν Ἡρόφιλος, “τῶν ἐπὶ τοὺς νεφροὺς ίόντων ἀποφύσμενα εἰς τὴν μήτραν ἐμβάλλει”, ὅπερ ἐπὶ μὲν τῶν ἄλλων 5 3 πολλάκις εύρειν αὐτὰ ἐπὶ γυναικῶν τὸν Ἡρόφιλον· ίκανὸς γάρ ἦν τὰ τε ἄλλα τῆς τέχνης καὶ τῶν δι' ἀνατομῆς γινωσκομένων ἐπὶ τὸ ἀκριβέστατον ἥκων καὶ τὴν πλείστην ἐπίγνωσιν οὐκ ἐπὶ διάλογων 30 3 πολλάκις εύρειν αὐτὰ ἐπὶ γυναικῶν τὸν Ἡρόφιλον· ίκανὸς γάρ τον δινθρώπων πεποιημένος. οὕτως δὲ καὶ ὑμέσιν ἡμφιέσθαι τὰ 10 τρέφοντα τὴν μήτραν ἀγγεῖά φησιν, ὧν ἐλέγομεν ἔξηρτῆσθαι αὐτήν, καὶ γίνεσθαι τοὺς ὑμένας ἀεὶ παχυτέρους τε καὶ σκληροτέρους καὶ τυλωδεστέρους ταῖς πλείστα κυησάσαις.

3 διπερ codd.: que (sc. vasa) Nicolaus 5 πολλάκις om. Nicolaus 6 τῆς τέχνης om. Nicolaus 9 πεποιημένοι V: corr. C et sec. Nicolaum

(erophilum . . . facientem) *P<sup>2</sup>* οὔτως *codd.*: *iste Nicolaus*, οὔτος *P<sup>2</sup>*  
 ἡμφιέσθαι *codd.*: ἡμφύεσθαι *Kühn* 10 λέγομεν *V*: *sec. Nicolaum*  
 (dicebamus) *corr. Nickel* 11 αὐτήν *codd.*: *vesicam Nicolaus*: κύστιν  
*Kühn* 12 πλείονα *codd.*: πλειώ *Kühn*

114 'Not in the case of all women but in some', says Herophilus, 'four other vessels branch off from those that go to the kidneys, and enter the uterus.' This I did not find in other living beings, except occasionally in apes. I do not, however, disbelieve the fact that Herophilus often found them in women. For he was not only competent in other branches of the art [of medicine], but he attained the highest degree of accuracy in things which become known by dissection and he obtained the greater part of his new knowledge not, like the majority [of physicians], from irrational animals but from human beings themselves. Thus he also says that the vessels which nourish the uterus, and from which I said it is suspended, are clothed in membranes, and that these membranes again and again become thicker, harder, and more callous in women who have become pregnant several times.

#### 6 Vascular anatomy ('On Anatomy' IV?)

115 Galenus, *De placitis Hippocratis et Platonis* 6.5.22 (CMG v.4.1.2, p. 392 De Lacy)

ούδεις τῶν ἀνατομικῶν ἀνδρῶν ἐπὶ τὸ γράφειν ἀφικόμενος  
 ἀνατομὴν φλεβῶν ἔτεραν ἀρχὴν τῆς διδασκαλίας ἐπιτήδειον  
 ἥδυνήθη ποιήσασθαι παρελῶν τὸ ἡπαρ, ἀλλ' εἴτ' ἀπορεῖν ὑπὲρ  
 ἀρχῆς ἔφησεν, ως 'Ἡρόφιλος, εἴτ' εύπορεῖν, ως ἄλλοι πολλοὶ καὶ  
 5 ὁ ἡμέτερος Πέλοψ, ὅμως τὴν γε διδασκαλίαν ὀλίγου δεῖν  
 ἀπαντεῖς δφ' ἡπατος ἐποιήσαντο.

6 ἐφ' *H*: *corr. Kalbfleisch (1892)*

115 No anatomist, when he has come to record the anatomy of the veins, could pass over the liver and establish a different, but still appropriate, starting-point for his instruction. Rather, whether he said that he was at a loss concerning a starting-point, as did Herophilus, or that he had a clear resolution, as did many others, including my [teacher] Pelops, practically all of them nevertheless established their instruction, at least, starting from the liver.

116 Galenus, *De usu partium* 6.10 (I, p. 325 Helmreich)

ἐν μὲν γάρ τοις ἄλλοις ἀπασι μορίοις τῆς ίσης ἀρτηρίας τῇ  
 φλεβὶ, τὸ πάχος τῶν χιτώνων οὐκ ίσον, ἀλλ' εἰς τοσοῦτον ἄρα  
 διενήνοχεν, ωσθ' 'Ἡρόφιλος δρθῶς ἐστοχάσθαι δοκεῖ, τὴν  
 5 ἀρτηρίαν τῆς φλεβὸς ἐξαπλασίαν ἀποφηνάμενος εἶναι τῷ  
 πάχει.

Start

2 αρά om. 1 → 3 ώστε P. U. sc. 1

116 In all the other parts [of the body, as opposed to the artery that goes to the lungs], when an artery is equal [in size] to a vein, the thickness of their coats is not equal. Rather, it is different to such a degree that Herophilus seems to have conjectured correctly when he stated that the artery is six times as thick as the vein.

117 Rufus Ephesius, *De nominatione partium hominis* 203–4 (p. 162 Daremberg/Ruelle)

'Ἡρόφιλος δὲ ἀρτηριώδη φλέβα τὴν παχυτάτην καὶ μεγίστην  
 τὴν ἀπὸ τῆς καρδίας καλεῖ φερομένην ἐπὶ τὸν πλεύμονα: ἔχει  
 γάρ ὑπεναντίως τῷ πλεύμονι πρὸς τὰ ἄλλα. αἱ μὲν φλέβες  
 ἐνταῦθα ἐρρωμέναι καὶ ἐγγυτάτω τὴν φύσιν ἀρτηριῶν, αἱ δὲ  
 5 ἀρτηρίαι ἀσθενεῖς καὶ ἐγγυτάτω τὴν φύσιν φλεβῶν.

2 τῶν ἀπὸ *L*

117 Herophilus calls the thickest and largest vein that proceeds from the heart to the lung 'artery-like' (sc. the pulmonary artery); for, in the lung the situation is the opposite of the other parts, inasmuch as the veins there are strong and very close in nature to arteries, whereas the arteries are weak and very close in nature to veins.

Stop



118 Scholium F in Oribasii *Collectionum medicarum librum incertum* 15.19 (xxii). (CMG vi.2.2, vol. iv, p. 105 Raeder)

(*Ad ἀρτηρίας δ' ἐξαπλάσιον ἢ κατὰ φλέβα πάχος ἔχούσης.*) τὸ  
 περὶ ἀρτηρίας τοῦτο ἐν τῷ *ισ'* κεφαλαίῳ ἐμνημόνευσεν (sc. ὁ  
 Γαληνὸς) ἐν τῷ περὶ χρείας μορίων, ἀποδεχόμενος τὸν 'Ἡρόφι-  
 λον δρθῶς περὶ τούτου, καὶ φησιν ὅτι κατὰ τὸν πνεύμονα μόνον,

5 διὰ τὸ ἀνάπταλιν ἡμῖν πρὸς ἀρτηρίας καὶ φλεβός, ἡ δὲ φλέψ  
ἀρτηρίας ἔχει πάχος· καὶ τούτου τὴν αἰτίαν ἐπεξέρχεται.

5 ή μὲν ἀρτηρία add. post καὶ Daremberg

118 [A scholiast's comment on 'the artery having a thickness six times as great as that of the vein'; from Galen, *De semine*, 1.13 (iv, p. 560K)]

Galen mentions this about the artery in Chapter 16 of his *On the Usefulness of the Parts*, correctly accepting Herophilus' view concerning this. He says that only in the lung, on account of the inverse relationship of the vein to our arteries there, the vein has the thickness of an artery. He gives a full account of the cause of this, too.

119 Galenus, *De placitis Hippocratis et Platonis* 1.10.3–4 (CMG

• v.4.1.2, p. 96 De Lacy)

ἔμοι μὲν δοκεῖ (sc. Ἀριστοτέλης) τὰς ὑπὸ Ἡρόφιλου νευρώδεις διαφύσεις ὀνομασμένας αὐτὸς οὐ νευρώδεις ἀλλ' ἄντικρυς εἰρηκέναι νεῦρα. πέρατα δ' ἐστὶ ταῦτα τῶν ἐπὶ τοῖς στόμασι τῆς καρδίας ὑμένων, ὑπὲρ ὧν Ἐρασίστρατος μὲν ἀκριβῶς ἔγραψεν,  
5 Ἡρόφιλος δὲ ἀμελῶς. (Cf. T54 supra.)

1 Ἡροφίλου C<sup>1</sup> (ο<sup>1</sup> ex ρ u.u.)      2 αὐτὰς C: corr. Herbst (1911): ταῦτας Schöne (vid. De Lacy p. 37, §4)

119 It seems to me that what Herophilus called 'nerve-like strands' Aristotle did not call 'nerve-like' but simply 'nerves'. These are the terminal points of the membranes [sc. valves] at the openings of the heart, about which Erasistratus wrote accurately, Herophilus, however, carelessly. (Cf. Chapter v, T54 supra.)

## Start

120 Galenus, *De anatomicis administrationibus* 7.11 (ii, pp. 624–5K)

εἰρήσεται δὲ καὶ ὅτι τὰ τῆς καρδίας ὡτα τῶν κοιλιῶν αὐτῆς ἔκτος ἐστιν. εἰ δέ τις αὐτὰ μέρη τοῦ σπλάγχνου θέμενος, ὥσπερ Ἡρόφιλος, ἐπὶ πλέον ἔξετειν τὸν ἀριθμὸν τῶν στομάτων, καὶ ταῦτη δόξει διαφωνεῖν Ἐρασίστράτῳ τε καὶ ἡμῖν εἰρηκόσι δ' τὰ  
5 πάντα εἶναι στόματα τῶν καρδίαν ἀγγείων τεττάρων.

120 It will also be explained that the auricles of the heart are outside its ventricles. But if anyone were to postulate that the auricles are

parts of the interior, as does Herophilus, and thus to increase the number of orifices, then in this, too, he will seem to differ both from Erasistratus and from myself, since we have said that the total number of orifices is four, for the four vessels of the heart.\*

121 Galenus, *De pulsuum usu* 2 (v, p. 155K; p. 200 Furley/Wilkie)

ἀλλὰ καὶ αὐτοῦ τούτου (sc. δαπανωμένου τοῦ ψυχικοῦ πνεύματος, ἐπεί τις μέχρι πολλοῦ καλῶς ἔτρεχε) τὸ δικτυοειδὲς πλέγμα πρὸς τῶν ὀμφὶ τὸν Ἡρόφιλον κληθὲν ἔδοκει τὴν αἰτίαν ἔχειν. ἐκεῖ γάρ αἱ ἐπὶ τὸν ἔγκεφαλον ὀνιοῦσαι καρωτίδες ἀρτηρίαι, πρὶν 5 διελθεῖν τὴν σκληρὰν μήνιγγα, σχίζονται πολυειδῶς ὑπ' αὐτῆς, περιπλεκόμεναι κατὰ πολλοὺς στίχους, ὡς εἰ νοήσαις ἀλλήλοις ἐπικείμενα δίκτυα πλείω, καὶ χώραν παμπόλλην ἦν καλοῦσιν ἔγκεφάλου βάσιν καταλαμβάνουσιν, ἐνὸν αὐταῖς εύθὺς μὲν διεκπεσεῖν τὰς μήνιγγας, ἐμφύναι δὲ εἰς τὸν ἔγκεφαλον, οὕτερον ἐξ 10 ἀρχῆς ιένται.

10 ιένται S Ald: ιέναι Kühn

121 But the 'net-like plexus' [*rete mirabile*], as it is called by those around Herophilus, seemed to be the cause of just this [sc. that the psychic pneuma becomes exhausted when someone runs hard and far]. For when the carotid arteries ascend toward the brain, this is where they are divided in many ways by the dura mater, before they go through it. They twist around in many rows, as they would if you were to conceive of several nets lying on each other, and they occupy a very great area, which they call the 'base' (*basis*) of the brain. They have the capacity to escape into the meninges right away, and to root themselves in the brain, to which, in fact, they are proceeding from the outset.

122a Galenus, *De anatomicis administrationibus* 9.1 (ii, p. 712K)

122b Oribasius, *Collectiones medicae* 24.1.7–8 (CMG vi.2.1, vol. III, pp. 4–5 Raeder; excerpted from Galen)

\* I.e., for pulmonary vein, vena cava, pulmonary artery, aorta.

ἐν αὐτῷ μὲν οὖν τῷ γυμνοῦσθαι τῶν περικειμένων ὁστῶν τὰς διπλόας τῆς μήνιγγος πολλάκις ἀπορρήγνυται τι καὶ διασπᾶται. καὶ τοῦτ' ὅρχή σοι γενήσεται τοῦ καθιέναι τι τῶν εἰρημένων ὀργάνων εἰς τὴν κοιλίαν τοῦ αἵματος. εἰ δὲ καὶ μὴ διασπασθείη, 5 τέμνων ὀξεῖα σμίλη τὴν πλευρὰν ἑκατέραν τῆς διπλῆς μήνιγγος ἐν τοῖς κάτω μέρεσιν, ἔνθα πρῶτον ἐμπίπτει τῷ κρανίῳ, κάπειτα καὶ ἔκει ἐμβαλὼν διὰ τῆς τομῆς τὴν σμίλην, ἀνω βιάζεσθαι πειρῶ μέχρι τῆς κορυφῆς, ἔνθα συμβάλλουσιν ἀλλήλαις αἱ δύο φλέβες, 10 ἥντινα χώραν Ἡρόφιλος ὀνομάζει ληνόν. ἔστι δ' αὐτῇ μὲν ἦν ἕκεινος οὔτως ὀνομάζει διὰ βάθους μᾶλλον, ἐπιπολῆς δ' ἔτέρα συμβολὴ φλεβῶν μικρῶν ἐπικειμένων τῇ ληνῷ κατὰ τὴν παχεῖαν ὀσαύτως μήνιγγα γεγενημένη.

1-8 ἐν αὐτῷ . . . κορυφῆς non habet Oribasius      8 ἔνθα δὲ Oribasius      9 δ  
 Ἡρόφιλος Oribasius      αὐτῇ Oribasii C      10 οὔτως om. Oribasius  
 11 ἐπικειμένη Oribasius

122a-b In the act itself of stripping the surrounding bones from the folds of the meninx, some part of the meninx often is torn and detached. This will be the place for you to insert one of the instruments mentioned [*dipyrēnon, smilē, spathomēlē*] into the cavity containing blood [*sinus*]. But if it is not detached, make an incision with a sharp scalpel on either side of the fold of the meninx in the lower parts where it first reaches the skull, and then, also inserting the scalpel there through the incision, try to force it up to the top where the two veins meet, the area which Herophilus calls a 'wine vat' [sc. *torcular Herophili*]. But while the area to which he gives this name lies a little deeper, there is on the top a different junction of small veins which lie on the 'torcular', having arisen in like manner at the thick meninx.

123 Galenus, *De usu partium* 9.6 (II, p. 19 Helmreich)

συμβάλλουσι δὲ κατὰ τὴν κορυφὴν τῆς κεφαλῆς αἱ παράγουσαι τὸ αἷμα διπλώσεις τῆς μήνιγγος εἰς χώραν τινὰ κοινὴν οἶον δεξαμενήν, ἦν δὴ καὶ δι' αὐτὸ τοῦτο προσαγορεύειν ἔθος ἔστιν Ἡροφίλῳ ληνόν· ἐντεῦθεν δ' οἶον ἐξ ἀκροπόλεως τίνος ἀπασι 5 τοῖς ὑποκειμένοις μορίοις ὀχετοὺς ἐπιπέμπουσιν.

1 συμβάλλουσαι BDL<sup>1</sup>U; -ουσι L<sup>2</sup>

2 κοινὴν codd.: κενὴν Ald Kühn

123 At the crown of the head the folds of the membrane [*sinus transversus*] that conduct the blood come together into a common space like a cistern, and for this very reason it was Herophilus' custom to call it 'wine vat' (*lēnos (torcular Herophili)*). From this point, as from some acropolis, they [sc. the sinuses] send forth canals to all the parts lying below them.

124 Galenus, *De anatomicis administrationibus* 9.3 (II, pp. 719-20K)

ὅψει δὲ καὶ τὰ καλούμενα χοροειδῆ πλέγματα κατὰ ταύτας (sc. κοιλίας τοῦ ἐγκεφάλου). ὀνομάζουσι δ' οἱ περὶ τὸν Ἡρόφιλον αὐτὰ χοροειδῆ συστρέμματα, παρονομάσαντες δηλονότι τῶν χορίων, δ. τοῖς κυουμένοις ἔξωθεν ἐν κύκλῳ περιβέβληται, 5 φλεβῶν δυντα καὶ ἀρτηριῶν πλέγματα, λεπτοῖς ὑμέσι συνεχομένων.

124 You will also see in the ventricles [of the brain] what is called the 'choroid plexuses'. Those around Herophilus call them 'choroid twisted clusters', obviously naming them after the membranes (*choria*) which are wrapped in a circle around the outside of foetuses, since these choroids are plexuses of veins and arteries held together by thin membranes.

Stop



125 Rufus Ephesius, *De nominatione partium hominis* 149-50 (p. 153 Daremberg/Ruelle)

δὲ καλύπτων τὰς κοιλίας ἔνδοθεν χιτῶν χοροειδής· Ἡρόφιλος δὲ καὶ μήνιγγα χοροειδῆ καλεῖ. τὰ δὲ ἀπὸ τοῦ ἐγκεφάλου βλαστήματα, νεῦρα αἰσθητικὰ καὶ προαιρετικὰ, διὰ δύο αἰσθησις καὶ προαιρετική κίνησις καὶ πᾶσα σώματος πρᾶξις συντελεῖται.

1 χοροειδής L Clinch

125 The tunic covering the ventricles [of the brain] on the inside is choroid. Herophilus also calls it 'choroid meninx'. And the offshoots from the brain [he calls? are?] the sensory and voluntary motor nerves, through which sensation and voluntary motion and all action of the body are accomplished.

- 126 Galenus, *In Hippocratis Epidemiarum 2.4.1 comment.* 4 (ad Hippocratis v. 120 sq. L). (Translated from Hunain's Arabic translation of the lost original; *CMG* v. 10.1, p. 312 Pfaff)

Just as Hippocrates recognized these things [sc. the anatomy of the abdomen] only by making an incision in the skin and observing what lies beneath it, so, too, Herophilus later gained knowledge of it. He did not confine himself to learning this from 5 Hippocrates, but made an effort to learn things from nature itself – through which you, too, could recognize what he recognized. Like Hippocrates, he also wrote about the anatomy of the veins. Many physicians have also exposed these veins in the bodies of human beings and have seen them and have 10 written the same about them as did Hippocrates and Herophilus.

5 Herophilus Pfaff (*pro Hippocrates u.v.*)

**Start**

- 127 Galenus, *De usu partium* 4.19 (I, pp. 246–7 Helmreich)

πρῶτον μὲν γάρ παντὶ τῷ μεσεντερίῳ φλέβας ἐποίησεν (sc. ἡ φύσις) ίδιας, ἀνακειμένας αὐτῶν τῇ θρέψει τῶν ἐντέρων, μὴ περαιουμένας εἰς τὸ ήπαρ. ὡς γάρ κοι 'Ηρόφιλος ἔλεγεν, εἰς ἀδενώδη τινὰ σώματα τελευτῶσιν αἱ φλέβες αῦται, τῶν ἄλλων 5 ἀπασῶν ἐπὶ τὰς πύλας ἀναφερομένων.

1 ἐν παντὶ BLU    2 αὐτῶν L<sup>2</sup>: αὐτῷ BDU    4 αὗται αἱ φλέβες D

- 127 First, throughout the mesentery [nature] created special veins [lymphatic vessels] which are devoted to the nourishment of the intestines themselves but which do not pass on into the liver. For as Herophilus, too, says, these veins terminate in certain glandular bodies [sc. lymphatic glands of the mesentery], although all the other veins proceed upward to the porta.

**Stop**

- 128 Galenus, *De anatomicis administrationibus* 13.10 (II, p. 161 Simon; translated by Duckworth, p. 177, from Hunain's Arabic translation of the lost original)

As regards the other things that you see in the arteries and the veins, there is no difference between mature and foetal bodies. But now, since Erasistratus and Herophilus, and other anatomists who lived after them, when they had completed their discussion of the dissection of the veins and of the arteries which have no veins alongside them, wanted to enumerate these in a single list, but never included them all, I think that I should supplement here my description . . .

### 7 Bones

- 129 Rufus Ephesius, *De nominatione partium hominis* 123 (p. 149 Daremburg/Ruelle)

τῶν δὲ δοτῶν τὸ μὲν ἔσω, κνήμη, καὶ τούτου τὸ ἔμπροσθεν, ὀντικνήμιον [τὸ δὲ ἔξω, κερκίς]. 'Ηρόφιλος δὲ καὶ τὴν κνήμην κερκίδα ὄνομάζει.

2 τὸ . . . κερκίς del. Daremburg

- 129 One of the bones [sc. of the lower leg], the inner one, is called *knēmē* [tibia], and the part in front of it *antiknēmion* [shin]. Herophilus, however, also calls the tibia *kerkis* [*lit.*, 'weaver's shuttle; taper rod'].

### C · COMMENTS

- T60 Since Oribasius copied this passage from Galen, Galen remains the primary source for T60, which contains one of the more substantial fragments in this collection. But significant textual variants occur in Oribasius' text, and these are recorded in the apparatus. *Orib.*, without further specification, refers to *P*, which Raeder has identified as the source of all other MSS containing Book xxiv of Oribasius' *Collectiones medicae*.

On the earlier anatomical treatments of the liver, see above, pp. 162–4 and nn. 68–76 (cf. also *Comments*, T127). A measure of the anatomical advance represented by this fragment is the fact that Galen, about four and a half centuries later, still accepted Herophilus' account as correct in all essential respects: 'This Herophilus said correctly' and 'Herophilus writes very accurately [or: most accurately] about it' (T60).

The number of its lobes: the number of hepatic lobes had been a long-