INTRODUCTION

I THE TREATISE

Galen's treatise Περὶ τῶν ἀπορῶν κινήσεων (*De motibus dubiis*, *On problematical movements*, and henceforth *DMD*) is among the least familiar today of all those written by the great doctor of Antiquity.[1] Condemned for centuries as spurious, it languished unread in renaissance printings of the works of Galen in Latin. Yet it deserves attention both for its interesting history as a text transmitted to us mainly in three different translations and for its unusual character.[2] Unlike many, more dogmatic, works by Galen, *DMD* raises a series of questions. As a fifteenth-century annotator put it: 'Here Galen intends to discuss liquid, i.e. clear, movements in animals, such as the movement of the tongue, penis, thorax, gullet, and larynx: the types of fibres and muscles through whose mediation all these movements are produced: and whether they are voluntary, natural, or some combination of the two.'[3] In it Galen investigates bodily movements that, at first sight at least, appear to contradict some standard axioms, for instance, the clear distinction between voluntary and involuntary movement, and the role of the nerves and the muscles in effecting movement. The penis and the tongue, for example, expand and move at times without the apparent aid of muscles; urination is at times a voluntary act, and at others involuntary; and some individuals can apparently perform at will the usually involuntary act of vomiting. To all these problems, Galen offers solutions based upon his long experience with animal dissection and, not least, his familiarity with the anatomy of the throat, tongue, and thorax.

[1] For a late division of this treatise into two books, see below, p. 254.
[2] An English summary is given by Debru (2002).
[3] Paris, Bibliothèque de l'Université 125 (= **L**[3]), fo. 129[va]: *Nota quod G. intendit hic determinare de motibus liquidis .i. manifestis in animalibus sicut de motu lingue virge virilis clibani pectoris ysophagi et epiglotis omnes mediantibus quibus speciebus villorum et lacertorum fiant isti motus et utrum sint voluntarii vel naturales vel compositi ex utroque*. For this (mis)understanding of *liquidi*, see below, p. 253.

This focus on anatomical problems, rather than on practical solutions of immediate benefit to doctors, helps to explain the general neglect of this tract over the centuries, even though a Latin version, derived at third hand from the Greek, circulated widely in the Middle Ages, and was reprinted in all the editions of Galen's *Opera omnia* in Latin from 1490 until 1625.[4] But it was never printed separately or as part of a selection of related texts, and in 1541–2 it was firmly located among the *Spuria*.[5] There the matter rested. Warned off by a series of distinguished Galenists, scholars rarely bothered even to notice it. Laurent Joubert (1529–83), professor of medicine at Montpellier and author of a celebrated treatise on laughter, was typical in stressing that its author's doubts about explaining laughter were not those of Galen himself, but of a pseudonymous (and lesser) writer.[6] Indeed, so rarely was it mentioned after the sixteenth century that a distinguished translator of Galen, Margaret May, could declare in 1968 that the book had totally disappeared.[7] An edition may have been contemplated a century or so ago by Hermann Schöne, but it was never brought to fruition.[8] Writers on Galenic anatomy and physiology were silent about it, except for Jeffrey Wollock, who discussed Galen's ideas on the tongue briefly in his 1980 Oxford dissertation on speech defects and in its much later printing. His conclusion was generally favourable: large parts of this treatise were genuinely Galenic, although it also contained much spurious material.[9] But he never developed this insight, and Galenists had little reason to investigate further.

Credit for reawakening interest in *DMD* goes to Carlos Larrain, who published Prodromenos' Greek quotation from

[4] Bonardus (1490) sigg. ii.i^{v}–iv^{v}. For editions, see below, pp. 77–80, and for circulation and use during the Middle Ages, below, pp. 90–112.
[5] Da Monte (1541–2) 1 sig. α 4^{v}.
[6] Joubert (1579) 11.
[7] May (1968) 488 n. 46.
[8] The archives of the Corpus Medicorum in Berlin contain a transcript of **D** made by Frau Schöne.
[9] Wollock (1997) 30.

this book in 1993, and followed it up the next year with the *editio princeps* of Niccolò da Reggio's Latin version from the Greek, printed in parallel columns alongside the earlier Latin version from the Arabic by Mark of Toledo.[10] Two years later, in 1996, Larrain published a German commentary on the whole tract, in which he also drew attention to possible further parallels in Nemesius.[11] Unfortunately, Larrain seems not to have known of the existence of Ḥunayn's Arabic version, and his use of Mark's version is liable to confuse as much as to enlighten.[12] Instead of a new edition, Larrain offered a reprint of that of 1502, in which the alternative readings there given in the margin were placed as variants in the text.[13] The result is far from satisfactory, for not only are there omissions and unnecessary additions, but the very serious divergences between the main families of manuscripts are minimised. In his edition of *Nic* Larrain often failed to read the tricky hand of **Vp**, and he seems to have made little effort to check his transcription against Mark's version.[14] His commentary frequently explains what is not there, and the reader is rarely helped to understand what is often extremely difficult, and occasionally corrupt, Latin. Nonetheless, to give Larrain his due, he rightly emphasised the great superiority of Niccolò's version in rendering Galen's message clearly, and he used the 1502 edition of Mark largely as a convenient resource from which to supplement *Nic* and to reveal its virtues. He may or may not have been aware of the difficulties involved in a proper study of Mark's version, which would have delayed by many months, if not years, publication

[10] Larrain (1993), (1994).
[11] Larrain (1996). For Nemesius, see below, p. 19.
[12] In what follows, I refer to Niccolò and Ḥunayn in this way when referring to them as authors or to details of their lives: when referring to their versions I use the abbreviations *Nic* and *Hu*.
[13] Surianus (1502). On this edition, see below, pp. 79–80.
[14] Cf. Garofalo (2004). In Larrain's defence, too, making an *editio princeps* is very different from working with an already edited text, and the possibilities for error are much greater.

of the arguably far more valuable version by Niccolò. Larrain's decision can easily be justified, certainly from the perspective of wishing to reintroduce Galenists to a tract that had effectively been forgotten. Although this edition will be severely critical of much of what Larrain did, he laid the foundations on which this edition and commentary rest, and without his enthusiastic proselytising, *DMD* would have continued to languish unread.

Authenticity

Doubts were raised about the authenticity of *DMD* even in the Middle Ages. The learned Bolognese annotator of **Vc** not only noted that one passage was not to be found in his manuscript of Galen but also suspected that another section was interpolated: *ab hoc loco* [sc. *de hoc dubium] usque* et quidam medicorum *videtur nil pertinens nec testus G.*[15] His suspicion, although in part justified by the poor quality of his text, was unfounded, and early editors of Mark's translation continued to believe in its authenticity: indeed, Surianus appealed to the authority of no one other than Galen himself to correct his own book.[16] But in 1541–2 it was consigned to the volume of *Spuria* by the celebrated Galenist and professor at Padua, Giovanni Battista da Monte, the editor of the first complete edition of the (mainly new) Latin versions of Galen.[17] A few years after Da Monte, the Swiss doctor and editor Conrad Gesner was a little more enthusiastic, although he still relegated *DMD* to the *Spuria*.[18] He acknowledged that there was much in it that smacked of Galen, and wondered whether this was the planned work indicated by

[15] **Vc**, fo. 40^{rb} = pp. 219, 11–221, 11.
[16] Below, pp. 79–80.
[17] Da Monte (1541–2) 1 sig. α 4v. It is not clear whether he considered that this tract was spurious in the strict sense or merely provided a later reworking of doctrines found elsewhere in the genuine Galen. His example was followed by Cornarius (1549) VIII 251, and by Cardano (1663) 558.
[18] Gesner (1561–2) prefatory volume, sig. B + 2^{r}, and, much abbreviated, *Spuria*, p. 66.

Galen himself in *De diss. musc.*[19] But although he thought that many of its errors were the fault of subsequent translators, and not of Galen himself, he also accepted that there were features (unspecified) that departed from Galen's normal method of presentation. Gesner's comments were developed slightly by René Chartier, a century later. Either this, or a book of a similar title on which it depended, was genuine, for it contained many cross-references to authentic texts, but it was filled with a variety of errors, most of them the result of translation and transmission.[20] Chartier's more positive evaluation was not followed up, and J. C. G. Ackermann's judgment, repeated in the first volume of Kühn's edition, seemed to settle the matter. *DMD* was among the best books deriving from Galen, although clearly spurious. Its author was a learned Christian (for why else should he have used the name of Peter at IV.16?), and there were so many errors in his anatomy that one could scarcely believe in a Galenic origin. At best, it was made up of excerpts taken from the lost Greek of Galen and cobbled together in a misleading way.[21]

These concerns about authenticity were entirely proper, given that Galen had failed to mention this work in *De libr. propr.* and that scholars had only the Latin version of Mark to guide them.[22] But the recovery of the Greek fragments proves that the original was written in Greek, and Niccolò's careful translation technique preserves many typically Galenic mannerisms. Besides, the author's cross-references to other tracts, and the citation of this work elsewhere by Galen, remove all doubts about its being genuine.

[19] Galen, *De diss. musc.* 2: XVIIIB.931 K.
[20] Chartier (1672) V 468.
[21] Ackermann (1821) clxii, following Gesner. The anatomical mistakes presumably included the anatomy of the arm at I.4, which was the result of an editorial error.
[22] The deficiencies of that list were not fully appreciated until the twentieth century, although they were already known to the Arabs; see Bergsträsser (1932) 93.

Date

Dating Galenic treatises is far from easy.[23] Identifiable historical incidents are rare, and Galen often returned to a theme after many years, using arguments and language that he had first employed decades earlier. More confusingly, his cross-references as transmitted in the manuscript tradition can include references to works that must have been written long after the original composition of the tract in which they are cited. Sometimes they take the form of a simple reference, sometimes they are part of a much wider revision.

Galen's cross-references in and to *DMD* show this confusion. He cites in *DMD* at least nine of his own treatises, which range in date from the mid 160s, during his first stay in Rome, to the last years of Commodus, 189–92, just before the last four books of *Administrationes anatomicae* (*AA*) and many other writings on anatomy were destroyed in the fire that broke out at the Temple of Peace in early 192.[24] The list of works, with their probable dates, is as follows:

III.3 *De mot. thor.*, book 3 (*c.* 168–9)
III.3 *De caus. resp.* (163–8)
III.4 and IV.1 *AA*, and specifically to book 10 (189–92)[25]
III.4 and IV.7 *DUP* (169–80, and revised in the 190s)
IV.22 *De elem. sec. Hipp.* (early 170s)
IV.32 and 36, VI.13 and XI.33 *DNF* (169–80)
X.4 *De mot. musc.*, book 2 (169–80)
X.6 *De caus. sympt.* (169–76)
XI.1 *De anatomia vivorum*, book 2 (165–75).

[23] The basic chronology was worked out by Ilberg (1889–97) and refined by Bardong (1942) and Peterson (1977).

[24] The reference at 1. 19 to 'where we spoke about the ruling part of the soul' need not apply to a specific text; see the commentary *ad loc.* For the fire, see *De indolentia*, ed. Boudon-Millot (2007b) 1–38.

[25] Larrain (1994) 190 wrongly identifies the lost *De anathomia que in animalibus* with *AA*.

In *AA* 11 Galen twice refers to *DMD* as a book that he intends to write, and he expresses the same intention in *DUP* 10.[26] At the even later *De diss. musc.* 2: XVIIIB.931 K, he explains that he will discuss the muscles of the lips in a forthcoming volume dealing with problematical movements. From this one might conclude that *DMD* must have been written in the 190s or even later, but before the completion of the revised commentary on *Epidemics* 6, where readers wishing to know why ejaculation in the sexual act is a voluntary activity are referred to his longer discussion in *DMD*.[27]

But at two places early in *AA*, Galen seems to refer to *DMD* as if it were already completed. At 4.3: II.433 K, he notes that more is said (λέγεται) in *DMD* on the nerves and muscles of the lips, and, shortly after, at 4.5: II.443 K, he says that he has postponed (ἀνεβαλόμην) the discussion of the muscles moving the eyelids from *DUP* to *DMD*. Neither passage is unproblematic. Despite what Galen says, *DMD* does not deal with the nerves and muscles of the lips, although he does spend time on those of the tongue and throat. His 'more is said' could be taken in a future sense, to indicate that he already had a detailed plan of what he was going to write in *DMD*, a plan that in the end he did not fulfil.[28] The second passage does not say explicitly that *DMD* was ever written, but explains why Galen has chosen to omit the muscles of the eyelids from his exposition.[29]

[26] Galen, *AA* 11.10 and 12: pp. 128, 135 Simon = pp. 102, 107 Dkw = pp. 942, 948 G; *DUP* 10.10: III.808 K = II,10 H.

[27] Galen, *In Hipp. Epid.* VI *comm.* 3.17: *CMG* V 10.2.2.151 = XVIIB.53 K, wrongly identified by Wenkebach as a reference to *De mot. musc.* See below, p. 8. But although Galen devotes much space to talking about natural and voluntary movements in evacuation, especially in chs. VI-VIII, and discusses the physiology of an erection in ch. IV, this is hardly the 'longer discussion' promised to the readers of the commentary.

[28] As in the passage from *De diss. musc.* cited above.

[29] There is no mention of *DMD* in the relevant passages of *AA* 10.4, but the presence of lacunae in the MS, especially at p. 62 Simon = p. 50 Dkw = p. 883 G, weakens the argument from silence. But at *DMD* III.4, Galen's specific reference to this section strongly suggests that *DMD* was written later.

But even if we take the two passages to mean what they apparently say, that *DMD* was now finished, neither offers strong support for a date of composition before *AA*. Both show all the marks of a later revision by Galen, especially as we know that he rewrote books 12–15 of *AA* after the fire, and may well have made some slight revisions to the earlier books at the same time. In the first passage, the whole sentence can be removed without any detriment to the flow of the argument, an obvious sign of a later insertion either by a somewhat forgetful Galen or by a scribe who remembered that this is what Galen had said in *De diss. musc.* that he had planned to do. In the second, the Greek reads oddly, and the first part of the sentence, where this reference occurs, is not balanced by the second as the argument leads one to expect. Whatever interpretation of these two cross-references is adopted, they are not strong enough to counter the evidence of the other cross-references that put *DMD* into the 190s, or even the early third century. It is thus one of Galen's last works on an anatomical theme, but also one that had been planned for some time during the writing of *DUP, AA*, and *De diss. musc.*

Such a date would also be compatible with the evidence of Galen's commentary on *Epidemics* 6.5.2: XVIIA.233–7 K, a work written around 189, although revised later, according to Smith (1979) 124. In it Galen uses the same examples as in IV.5 and 16 to exemplify the way in which Nature appears to be able to act without previous instruction in carrying out voluntary movements. Although this is one of the problems Galen touches on in *DMD*, there is no cross-reference to this work at this point in the commentary. One explanation for the silence might be that *DMD* was written after his first version of the commentary, but Galen's self-citations are rarely consistent, and, in particular, the absence of a cross-reference does not constitute a strong argument towards establishing a date. Nonetheless, as with the similar passages in *De form. foet.* (discussed below, p. 295), the commentary on *Epidemics* 6 shows that Galen was pondering the same questions at a roughly similar time although in a different literary genre.

This treatise thus comes towards the end of a long life in part dedicated to dissection.[30] His teachers at Pergamum and Smyrna, Satyrus and Pelops, had been trained in an Alexandrian anatomical tradition, and imparted their knowledge to an eager pupil. Even before he left for Alexandria in the mid 150s, Galen had written a short treatise on the anatomy of the womb, *De libr. propr.* 2: XIX.16 K, and another in three books on the movement of the chest and lungs, *AA* 1.1 and 8.2: II.217 and 660 K. The latter was largely a summary of his masters' ideas, and its major conclusions were refined in many of Galen's later works; see below, p. 274. Anatomy was one of the reasons why he moved to Alexandria as a student, although what he found there and the, in his view, incompetence of his teachers left him dissatisfied, Nutton (1993). Little is known of his period of service with the gladiators of Pergamum before coming to Rome in 162, although he says that he dissected regularly, and his experience with wounds will have enlarged his understanding of the interior of the body. His experience with dissection, he claims, gained him this prestigious job, for he challenged his competitors for the post to emulate his skill in cutting open and stitching back the belly of a monkey, *De examin. med.* 9.4–6: *CMG Suppl. Or.* 4.103–5. Once in Rome, he embarked on a series of anatomical dissections, at first in public, but later in private before a small group of friends and students. The results he described in a great number of treatises aimed at a diversity of audiences, beginners, fellow anatomists, Aristotelian philosophers, and Platonists, which continued into the 180s. Some, like *AA*, offered detailed technical guidance, others, like *DUP,* applied the findings of anatomy to wider themes in medicine or philosophy. Some of these discoveries were Galen's own, others his teachers' or his contemporaries',

[30] General biographical accounts of Galen are easiest found in Singer (1997) vii–xliv; Nutton (2004) 216–47; Boudon-Millot (2007a) vii–xc. Schlange-Schöningen (2003) is an exhaustive monograph in German, but written before the new information in Vlatadon 14 became available. Mattern (2008) deals largely with Galen's clinical practice.

others had been made centuries earlier by the great hellenistic anatomists, Herophilus and Erasistratus. Even making allowance for his own rhetoric, Galen's own achievements as a dissector are substantial.[31] *DMD* thus encapsulates the interests of a lifetime, not just in dissection but in what we would term physiology, how the body works as an organism.

Galen's anatomical reasoning

DMD offers a fascinating glimpse of Galen's aims and methods, and of the difficulties they raise for a modern historian of medicine. Although, as we have just seen, this treatise had long been contemplated, it reads like a relatively impromptu exposition, just as if it was being dictated to a copyist.[32] While the overall theme is clear, the balance between the various sections is uneven, and Galen seems almost to be thinking on his feet. One question resolved leads on to another, one suggestion prompts another idea, or none at all, for at XI.1 Galen begins again in a manner that suggested to some later interpreters that he was starting a new book. At I.20 his reference back to something he said at the very beginning is inaccurate, as if he imagined that what he was now about to say was something he had already discussed. There is a moderate display of erudition, especially at VIII.2 and, at XIII.3, a nice case-history that also shows Galen's social contacts, at least by implication.

What is most striking throughout is Galen's anatomical reasoning, used here as a way of answering difficult questions about volition that had exercised lawyers and philosophers as

[31] On Galen's experiments, see Debru (1995), (1996); Manzoni (2001); Rocca (2003). May (1968) 39–43 gives a short summary of Galen's anatomical discoveries.

[32] Above, p. 7. The infrequency of references to 'you', except in the final chapter, which may have been partly derived from material already written down, suggests that this was not a work declaimed before an audience or written with a specific patron in mind. For Galen's use of dictation, see Dorandi (2000) 77–128; Boudon (2004).