Dioclès il a été donne une édition et une traduction anglaise dont nous aliens discuter'. This may or may not be ambiguous in French, but since there is only one work of Diocles, and since R. has just mentioned the Dublin *deterior*, the anglophone reader may easily misinterpret 'texte' as meaning that T. only used the *deterior*, and suppose that R. is the first to have used the Meshed MS. It is far from clear in R.'s account that the Anglo-American scholar did indeed use the Meshed MS, and used it exclusively, having obtained photographs in the time of the late Shah; he further provided excellent reproductions (T. pp. 114–37), which R. has used in turn, again without explicit acknowledgement. R. then (pp. 24–31) lists more than 200 places at which his Arabic text differs from T.'s, but without cross-references back to his own, or distinguishing the trivial from the substantive. R.'s statement that 'J'ai tenu . . . à inscrire toute conjecture faite par G. J. Toomer dans l'apparat critique' gives a new meaning to the term 'apparatus criticus'. R. alludes polemically (pp. viii–ix) to T.'s text as 'établi et traduit en anglais de façon déconcertante et étonnament fautive'; he adds (p. 23) 'Quant aux erreurs et contre-sens qui affectent la traduction, non moins nombreux que les fautes de l'édition du texte arabe, je ne les évoquerai point ici, non plus d'ailleurs que ceux commis dans le commentaire historique et mathématique. Au lecteur de comparer les deux traductions, s'il le souhaite, ainsi que les analyses et les commentaires.'

R. reviewed T's edition in *Archives internationales d'histoire des sciences* 28 (1978), 329–33, concluding that 'Il serait trop long de faire un bilan exhaustif de toutes les autres imprécisions et inexactitudes historiques . . . dans l'introduction, les notes et les commentaires. Nous ne pouvons donc que suggérer au lecteur de consulter directement les photocopies du manuscrit, reproduites dans le livre de M. Toomer, en attendant que lui soit proposée une édition scientifique qui serve vraiment le texte au lieu de le corrompre.' One wonders why there is no reference to this piece in the bibliography or notes in the present edition: it could hardly be more relevant.

Anyway, the reviewer has done this extensive homework, though detailed cross-referencing between the two editions is rendered maximally difficult because R. perversely omits T.'s straightforward numeration of the sentences. The lesson is that T.'s work is far from the incompetent tosh that R. implies, in every respect overtaken by the present edition, which depends so heavily on T. anyway. T.'s work on Diocles remains fundamental. The reader should be aware that at many points R. is either tacitly making T.'s view his own or tacitly contradicting him. The misleading caricature, the extensive borrowing, the refusal to acknowledge any merit in T.'s work or to focus on substantive points of difference in the mathematical interpretation, all indicate a sad case of *odium theologicum*.

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GREEK MUSICAL TEXTS

E. Pöhlmann, M. L. West (edd.): *Documents of Ancient Greek Music. The Extant Melodies and Fragments Edited and Transcribed with Commentary*. Pp. 222, ills, pls. Oxford: Clarendon Press, 2001. Cased, £40. ISBN: 0-19-815223-X.

Since the publication of Egert Pöhlmann's *Denkmäler altgriechischer Musik* in 1970, which for the last thirty years has been the standard work on the surviving musical

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documents of classical antiquity, many new musical fragments, especially papyri, have been discovered. Thus the need to update Pöhlmann's collection was increasing, especially in a period of growing scholarly interest in this area of classical studies. This assemblage adds twenty-three new items, giving a total of sixty-one musical remains, presented according to their chronological sequence (the spurious *specimina musicae antiquae* of the medieval and Renaissance sources are no longer included). To support P. in translating and revising the old edition and in reassembling the new papyri we find the other leading expert in the field of ancient Greek music, Martin L. West, who has himself published some of the new discoveries in recent years.

Each fragment is accompanied by two new sections of critical apparatus, one for the melodic and rhythmical notation and one for the poetic text, a transcription into modern musical notation and a commentary in which features of the document and its content are explained and discussed. As opening item the authors include the syllabic text τοτη τοτοτε, written on the epinetron of the Eleusis Museum and regarded by some scholars as an example of the solmization system attested in some theoretical sources. I find W.'s hypothesis, which explains these syllables as imitative of the tonguing technique used by wind players, particularly noteworthy: not least because it is supported by a seventeenth-century account where the Greeks are said to have had such μελετητικὰς *syllabas* in auletic training (G. B. Doni's *Progymnastica musicae pars veterum restituta et ad hodiernam praxim redacta*, Book 1).

This collection now offers us a broader picture of the development of ancient music from the fifth century B.C. to the fourth century A.D. There we can see the growing taste for melismas instead of the prevailing isosyllabism of the Classical period, clearly indicated by the increase of rhythmic symbols; the displacement of enharmonic scales by chromatic ones, a phenomenon that Aristoxenos had already pointed out in the fourth century B.C. (*Harm*. 30.5–8 Da Rios); and the ever more frequent usage of occasional accidentals with the purpose of increasing the imitative and emotional character of musical language. We can also see examples of unconventional modal scales, whose evidence could hitherto be found only in theoretical sources; see, for instance, the Ashmolean papyrus inv. 89B/29–32 (*DAGM* no. 6), where, in the tetrachord M-*Γ* (½ + ¾ + 1¼), the two commentators find an example of 'soft diatonic'; or the Berlin papyrus 6870 (*DAGM* no. 17), in which we could regard the melodic upward interval *d′ e*↑′ as an example of *ekbolē*, as if to say the ascent of five enharmonic dieses quoted by Bacchius (*Is*. 302.3–6 Jan) and Aristides Quintilianus (*De mus.* 1.11). The same melodic interval is also found in *DAGM* no. 6 (fr. 13 ii.5): *d*♭ *e*↓.

The infrequency with which manuscript transmission was involved in handing down musical memories (cf. p. 5) reopens an old question about the usage of musical writing in the ancient world. On the one hand, the possibility that Alexandrian scholars had solid musical evidence of ancient poetry (recently reaffirmed by Thomas J. Fleming, as far as dramatic texts are concerned; see 'The Survival of Greek Dramatic Music from the Fifth Century to the Roman Period', in B. Gentili and F. Perusino, *La colometria antica dei testi poetici greci* [Pisa and Rome, 1999], pp. 17–29) seems now supported by some musical fragments. The mention of Hypolydian and Lydian keys in the scholia to some of the Mesomedes' *Hymns* (*DAGM* nos 29–31) suggests that these pieces were once transmitted with musical notation: this and the explicit modulation signature *phrygisti* accompanied by a large chi-like sign in the text (usually employed in antiquity to point out something noteworthy) in the Vienna papyrus G 29825a/b^{r} (*DAGM* no. 9) seem to confirm our informations about the scholar Apollonius, called εἰδογράφος

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because he made a musical classification of lyric texts for the Alexandrian Library. On the other hand, most of the extant musical papyri probably had no intention of handing down ancient music to posterity. They would only have helped to support public anthology-performances, which might even have included new musical settings of originally spoken verses. Thus, the likelihood that the musical setting of Euripidean papyri (*DAGM* nos 3 and 4) goes back to Euripides himself cannot be taken for granted, as the authors do: they could easily be an entirely new third-century setting, or represent the partial oral transmission of ancient hummable tunes.

The practical purpose of these documents can be confirmed on the basis of their dissimilar employment of notational signs, especially the rhythmical ones, like diseme and triseme marks, arsis-points, and pause symbols. Their interpretation varies in each individual case, probably according to the requirements of the performance for which (or the performer for whom) it was intended. Perhaps the converse usage of the arsis-points (*stigmai*) to mark out the thesis of the trochaic metron in Oxyrhynchus papyrus 3162 (*DAGM* no. 55) finds its own logic if we assume, as Winnington-Ingram has long since pointed out for other fragments, that in the third century A.D. the meaning of the terms ἄρσις and θέσις had already been reversed as a consequence of their application to the tonic accent (instead of to the raising or lowering of the foot in beating time) and was becoming familiar to musicians too. But see the most recent comprehensive study of this argument (J. Luque Moreno, *Arsis, thesis, ictus: las marcas del ritmo en la música y en la métrica antiguas* [Granada, 1994]), which regards this semantic inversion as a 'philological ghost', trying to show that Latin sources do not really relate to any vocal ictus.

In revising the 1970s edition, many improved readings have been obtained and small mistakes corrected. An oversight occurs in Athenaios' Paean (*DAGM* no. 20): at l. 23, the note O is supposed to be *b*, not *e*♭, as the comment at p. 73 also indicates. It would perhaps be worth studying more carefully the diagonal stroke used as a divider in musical notation (as in *DAGM* no. 44, fr. 1↓): it resembles the form of musical *diastolē* we find in some medieval manuscipts (Anon. Bell. 11, see apparatus), and even its usage seems consistent with the theoretical formulation of it.

It is clear that the outstanding value of this collection lies not only in the richness of its documents and in the clarity of their exposition, but also in the results of the two editors' scholarly collaboration (even when their personal points of view on some questions are conflicting, as in the Vienna papyrus G 2315). While this work is without doubt the fruition of years of study and discovery, its main worth is that of furnishing scholars of the new millennium with the necessary tools to investigate many still unsolved problems concerning the music, the rhythm, and, on a larger scale, the history of ancient Greek culture.

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MEDICAL PAPYRI

I. ANDORLINI (ed.): *Greek Medical Papyri I* (Progetto Corpus dei Papiri Greci di Medicina). Pp. 182, pls. Florence: Istituto Papirologico G. Vitelli, 2001. Paper, €41.32. ISBN: 88-87829-23-3.

After earlier glimpses of the material in A'.s contribution to *ANRW* II 37.1 (1993)

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