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Edited by D. M. Balme

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38

ARISTOTLE: *HISTORIA ANIMALIUM*

VOLUME I

BOOKS I–X: TEXT

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ARISTOTLE
HISTORIA ANIMALIUM
VOLUME I: BOOKS I–X: TEXT

EDITED BY
D. M. BALME

PREPARED FOR PUBLICATION BY
ALLAN GOTTHELF



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PREFACE

ALLAN GOTTHELF

Upon the death of A. L. Peck, David M. Balme was invited to prepare the third and final volume of the Loeb Classical Library edition of *Historia Animalium*. For reasons presented in the Introduction below, he found it necessary to establish the manuscript tradition, and toward that end collated all the extant manuscripts of *HA* VII–X. A draft of the volume was completed in 1984, including text, full critical apparatus, translation, extensive philological and philosophical notes, preface, introduction discussing the authenticity, date, plan, and manuscripts of these books, and an essay on the structure of the whole of *HA* with an index of comparable passages in the Aristotelian corpus. Balme then decided to continue this work back to books I–VI, intending in the end to produce an *editio maior* of the entire *HA*. His plan was to prepare text, apparatus and commentary for I–VI, then review his draft of VII–X, revising it where necessary in light of the work on I–VI, and adapting the notes on VII–X to commentary form. The original introduction was to be expanded to encompass the entire treatise, and the essay and index were to be moved to this edition. An abbreviated introduction, critical apparatus, and set of notes, all constructed in accordance with standard Loeb practice, and combined with the revised text and translation, would comprise the Loeb *editio minor* of VII–X.

Balme completed work on I–VI in early 1988, and began review of his prior work on VII–X, drafting side by side both commentary tailored to the *editio maior* and notes tailored to the Loeb. He finished book VII(VIII)¹ and had reached VIII(IX) 625a when illness made it impossible for him to continue. He died in early 1989. At the invitation of the Loeb Classical Library,

¹ On this mode of designating book numbers, see below, p. 1.

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I prepared from these materials a posthumous Loeb edition.² Since then I have, at the request of Cambridge University Press, sought to prepare for the Cambridge Classical Texts and Commentaries series a posthumous edition of Balme's *editio maior*, in two volumes: I. Text and apparatus criticus, with introduction to the manuscripts; II. Introduction to the treatise, commentary on books I–VII(VIII), appendix of selected notes on VIII(IX)–X, essay, and index of comparable passages. My aim throughout has been to bring Balme's work to press, staying as close as possible to his intentions for this edition, as I have understood these intentions and as they appear to be reflected in the surviving materials.

In the present volume, then, the text and critical apparatus through VIII(IX) 624b31 is the 1988 revision; the remainder is the original 1984 version. The state of the materials has produced some complications of which readers of this posthumous edition should be aware, in regard to (i) text, (ii) apparatus criticus, (iii) introduction, and (iv) index.

TEXT

Balme had prepared a sample text (with apparatus and commentary) of *HA* I for Cambridge University Press, but had not yet produced a typescript of II–VI, nor a revised typescript of any of the Loeb text of VII–X. I have thus had to construct the present text of II–VI (and the partially corrected text of VII–X) myself, from three sources: Balme's notebooks, his draft apparatus criticus, and his draft commentary. The notebooks for I–VI begin by following the practice used for VII–X: Bekker's text is copied out line by line on the left facing page, and any departure from Bekker in reading or punctuation is written above the line at the relevant position. By the middle of book II

² Aristotle, *Historia Animalium Books VII–X*, ed. D. M. Balme, prepared for publication by Allan Gotthelf (Cambridge, Mass. 1991). For details of the construction of the Loeb edition, see its preface and A. Gotthelf, "A Note on the Loeb *Historia Animalium* vol. III," *Ancient Philosophy* xx (1991).

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Bekker's text is no longer copied out, but is imagined to be present, and departures are written at or above the position in which they would appear. For much of book III and most of IV-VI (and VII-X) the facing right page contains translation. The manuscript variants and relevant Latin versions are written below, mostly left, and various notes and draft commentary sentences are written below left and right. The notebook indications of departures from Bekker, together with the translation (including later corrections thereto), provide the first (and primary) source of information regarding Balme's intended text.

A second source of information is the handwritten fair copy Balme produced of the apparatus to I-VI, together with the 1988 corrected pages (to 624b31) of the original Loeb apparatus to VII-X. In both cases the order of the entries (and any changes thereto) provide evidence of the text Balme intended to read. The matter is complicated, however, by the fact that in numerous cases where Balme chose to cite in the apparatus the reading of the text as well as the rejected variants, he did not cite the preferred reading first, but instead listed all the variants according to a standard sequence of manuscripts. (What his purpose was in doing so is not clear to me.) Often as well, he wrote the "cett." variant after the variant(s) identified by MS siglum even when he intended to read the former in the text. In both sorts of apparatus entries, then, the first reading was not necessarily the preferred one; the latter had to be inferred rather from the total of the evidence.

The third source of information is the lemmas that begin the commentary entries, but it must be understood that these indicate the preferred reading at the time the entry was written, and do not rule out subsequent changes to the text or apparatus for which a revised commentary entry was not yet written. In the overwhelming number of cases these three sources – notebook, draft apparatus, commentary entry – are harmonious in pointing to the variant Balme intended for the text. But in some cases they are inconsistent. The commentary entry often appears to have been the last thing written, but not always, so that in

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each case of inconsistency I have had to determine as best I could which of the competing variants is most likely to have been Balme's latest choice.³

Readers should also be aware of the manner in which the text was physically (and electronically) produced. With the permission of Thesaurus Linguae Graecae, *TLG's* text of *HA* (transcribed from Louis' Budé edition) was downloaded. This text was carefully corrected against Bekker's edition to get an electronic version of the Bekker text from which Balme's notebook started. All of Balme's departures from Bekker were then entered in. Every effort has been made during this three-stage process to ensure accuracy, but if nevertheless any errors have crept in Balme should not be held responsible for them.

As noted in the Introduction (p. 34 n. 35), Balme's 1988 revision of VII-x through VIII(IX) 624b31 introduced into the text

³ The one notorious case of this is at VIII(IX) 623b5 where the manuscripts almost uniformly read ἐνὶ . . . ὀνόματι ὁμώνυμον, as does Michael Scot's translation from the Arabic, while William of Moerbeke, followed by a later hand in one Greek manuscript (and a later manuscript which copied that one), reads ἐνὶ . . . ὀνόματι ἀνώνυμον (the more familiar expression, e.g. 490b11). The issue is of some importance for our understanding of an aspect of Aristotle's scientific methodology. In the 1984 Loeb draft Balme read as the third word ἀνώνυμον, and referred in his note to this reading's "obvious correctness." In the 1988 materials, these words are marked for deletion in the 1984 copy, and the rewritten commentary version is otherwise substantively unchanged, except for the fact that, oddly, ὁμώνυμον is now given as the lemma. That might be thought just a slip, but in his notebook Balme has written ὁμώνυμον above the original ἀνώνυμον, crossing the latter out, and he has corrected the apparatus to read the positive term, although here a marginal marking suggests the change is provisional. The sources, then, are inconsistent, and it has fallen to me to make the decision in regard to the present edition, as it did when the Loeb was being prepared. In both cases I decided that Balme's increased leaning toward ὁμώνυμον, his at least provisional change in both notebook and apparatus, and the fact that the principles he enunciated in the Introduction for determining readings (pp. 3-4, 42, 44) would seem to call for ὁμώνυμον, are together decisive: both editions read ὁμώνυμον, and the Loeb translation and note were modified to accommodate it. Fortunately, such cases are rare, and in all of them the choice has been between only two options, each of which Balme viewed as a plausible reading. But readers should know that these cases exist.

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many readings from the MS family he labeled “β”, probably as a result of his work on I–VI. Readers should keep in mind that, had Balme completed his revision, there is every evidence that this practice would have continued, at about the same rate, from 625a1 to the end of IX(VII).⁴

Books I and VII–X, for which there is typescript, were re-paragraphed by Balme; and for most of books II–VI, departures from Bekker’s paragraphing are indicated in the notebooks. I have followed Balme’s re-paragraphing in every case. In the latter half of book III, and at one or two other places where Balme had not completed his review of Bekker’s paragraphing, I have added paragraphing in accordance with what appear to be Balme’s principles, aided by his divisions in the commentary and in his essay on the structure of *HA* to appear in volume II. Because his practice in I–VI was to paragraph less frequently than he did in the Loeb, the paragraphing across books in this edition is uneven; I have thought it best to leave it in this state rather than attempt to re-paragraph VII–X. The matter of paragraphing was particularly important to Balme because, he thought, it revealed (or disguised) the structure of Aristotle’s argument, which in his view had often been misunderstood by earlier editors, who thought of *HA* as a natural history rather than the theoretical or analytical treatise Balme insisted it is.⁵ In preparing the full typescript of the text, Balme would very likely have made some adjustments, and adopted a uniform policy throughout; but the present paragraphing, which in places may only be penultimate, remains illuminating for his view of the course of Aristotle’s argument.

On the ordering of books VII–IX and of the text within books

⁴ This does not apply to X because all of its extant MSS already derive from a β MS.

⁵ As will be discussed in the Introduction to vol. II. See also Balme’s introduction to the Loeb, 30–31, and two of his contributions to *Philosophical Issues in Aristotle’s Biology*, ed. A. Gotthelf and J. G. Lennox (Cambridge 1987): “The place of biology in Aristotle’s philosophy” (ch. 1), and “Aristotle’s use of division and differentiae” (ch. 4).

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ix(vii) and x, and on the chapter divisions, see the opening two paragraphs of the Introduction below. The decision regarding the placement of chapter numbers was my own, based on Balme's view that the traditional chapter divisions (which he wished to retain for convenience) also sometimes distorted Aristotle's argument, so that attention to them should be minimized.⁶

Bekker line numbers are carefully indicated throughout; they appear between slashes in mid-line at any point where a new Bekker line begins. On occasion it has been necessary to hyphenate a word differently from Bekker, and at times of course a line may begin or end at a place where Balme's reading is different from Bekker's; otherwise the match with Bekker line numbering is exact.

The remaining issue is the regularization of spelling. Balme clearly wanted this edition to serve as a resource for lexicographers, so for the most part he did *not* regularize the spelling of words that appear variously in the manuscripts (e.g. πλεύμων/πνεύμων, γίγνομαι/γίνομαι). Instead he chose at each place the form best attested at that place, even if that meant alternative spellings within the same sentence or two. In the case of the insect(s) traditionally transliterated *anthrena*, of the four or five different spellings found in the MSS, two – ἀνθρήνη and ἀνθρίνη – made it into Balme's Loeb text. Occasionally, though, he did regularize. He uniformly spelled ζωότοκος and its verbal variants without the iota subscript (perhaps following LSJ), and in a few cases he indicated in an apparatus or commentary entry that he intended to regularize the spelling or breathing, e.g. ἄλκυών (even though the better attested reading is sometimes ἄλκυών, on which again see LSJ). Although the revised Loeb text is marked for both ἀνθρήνη and ἀνθρίνη, the relevant apparatus entries and an earlier commentary entry suggest that Balme probably intended to regularize the text to ἀνθρήνη. In light of that, I have in this edition regularized to ἀνθρήνη. Al-

⁶ The model for the scheme is *Aristotle: De Animalibus: Michael Scot's Arabic-Latin Translation*, ed. A. M. I. Van Oppenraaij (Leiden 1992-).

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though there may have been other cases where Balme intended in the final version to regularize the spelling, I have elsewhere printed the text as he left it.

Regularization to ἀνθρώπη (in several cases of a better attested ἀνθρώπινη) creates one of the few discrepancies between the present edition's books VII–X and the Loeb edition. A word about other discrepancies is in order. I have had the opportunity to correct a number of typographical errors in the Loeb and a few earlier misreadings of Balme's intentions (e.g. 620b20 στόματι in place of the Loeb σώματι). A few of Balme's later 1988 changes, incorporated into the Loeb, have on reflection been deleted, and a few changes excluded from the Loeb have been incorporated here (e.g. compare the editions at 623a30–33). Typographical errors aside, the differences amount probably to fewer than ten words. Otherwise the texts are identical.

APPARATUS CRITICUS

Balme's handwritten fair copy of the apparatus criticus for books I–VI, and the 1984 apparatus for VII–X, with the 1988 corrections to 624b31, are the basis for the apparatus criticus in the present edition. A uniform ordering of variants is followed: the accepted variant where cited in the entry always appears first, and the MS sigla are cited in order by family, and in a standard order within families. Where the "cett." reading is read in the text, and is cited in the apparatus entry, it too appears first.

The fair copy entries have often been checked against Balme's notebooks and always against the text and draft commentary, and on those occasions where the former were in error (most often in accent), they have been corrected from the latter (or, in a very few cases, from LSJ). In no case that I can recall, with one category of exception, was any Greek word admitted into the apparatus MS reports that was not in either Balme's draft apparatus, his notebooks, or his draft commentary.

The one category of exception is the readings of the fragmentary W^c (VI 567a10–569a1, portions of 569a1–570b28), in

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our oldest manuscript containing any of *HA*, the ninth century Par. suppl. 1156 (cf. pp. 9–10 below). As Balme mentions in the Introduction, he has in all cases “read, not the MSS themselves, but microfilm of them . . . The microfilms have [for the most part] clearly shown the configuration of the script, but have not distinguished the colours, so that separating the different hands has been uncertain.” (p. 7) One exception in regard to the clarity of script is *W^c*, which Balme’s notebook mentions as particularly difficult to read. Since Dieter Harlfinger of the Aristoteles-Archiv has recently autopsied *W^c*, and Balme had the highest respect for his codicological work,⁷ I have admitted into the apparatus Harlfinger’s reports of *W^c* (kindly transmitted to me by Friederike Berger) in place of Balme’s, as I am certain he would have wanted.

In this connection it is appropriate to mention the other caveat that appears in Balme’s Introduction: “in observing the mis-reports made by far better scholars than myself, I realize that I cannot hope to have avoided making many mistakes too. The most likely are omissions; for when reading a MS, so long as its grammar and sense are acceptable, one easily overlooks variants, especially in particles and in word order.” (p. 5) Balme’s apparatus criticus is far superior to any existing one for *HA*, but it will not be flawless. In particular, Friederike Berger, whose valuable study, *Die Textgeschichte der Historia Animalium des Aristoteles, Serta Graeca*, Wiesbaden, forthcoming 2003 (originally a Hamburg dissertation done under Harlfinger’s supervision), is drawn on in the Introduction below, has informed me of some omissions in Balme’s reports of Vat. Pal. 260 (*Y^c*), and of occasional discrepancies between her readings of the various hands in several other MS and Balme’s, much in line with his warning. I have not thought it appropriate to admit into the apparatus any MS reports (other than of *W^c*) for which there was no basis

⁷ Indeed much of the information about the provenance and date of the MSS given in Balme’s original introduction to vii–x derived, as is there indicated, from Harlfinger’s work.

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in Balme's materials (see above, two paragraphs). I can say that no omission or discrepancy of which I am aware affects either what should be read in the text or any of the conclusions drawn in the Introduction about the relations of the MSS. A full autopsy of Y^c would enrich the present apparatus, and may well enhance our understanding of that manuscript's place in the text history of *HA*; the best study to date is Berger's, and her conclusions about Y^c are reported in the Introduction below, as will be explained shortly.

Nor can I myself hope to have avoided making mistakes in transcribing hundreds of pages of fair copy apparatus to electronic files, and working with them on computer screen. Every effort has been made to make the apparatus as accurate as possible. In particular, this edition has benefited enormously from the kind efforts of Pieter Beullens and Fernand Bossier, editors of the forthcoming *Aristoteles Latinus* edition of William of Moerbeke's translation of *HA*,⁸ who in connection with their own work have read carefully through an earlier draft of the present edition's text, apparatus, and commentary. They found numerous errors of transcription on my part and some previously unnoticed inconsistencies, and they raised many pointed and valuable questions; this edition is immeasurably better for their efforts. Likewise, absolutely meticulous reviews of the text by Liliane Bodson as part of her work on a full index of *HA* (described below), and work on the entire typescript by my copy-editor, Muriel Hall, have enabled many additional corrections. But for any remaining errors I alone am responsible.

In the case of the Latin versions, Balme cited Michael Scot's thirteenth century translation from three manuscripts. Most of the reports are on Balme's sole authority, but Aafke van Oppenraay, editor of the forthcoming *Aristoteles Semitico-Latinus* edition of Scotus's translation of *HA*,⁹ has kindly checked a

⁸ Guilelmus de Moerbeka: *De historia animalium*, 2 vols. (Leiden).

⁹ Aristotle: *De Animalibus*. Michael Scot's Arabic-Latin Translation. Part 1: Books 1–x: *History of Animals* (Leiden).

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number of difficult cases for me. In the case of William of Moerbeke, the two manuscripts Balme used turned out to be among the more inferior ones, one of which was contaminated by readings from a Scotus MS. Beullens and Bossier have established that Toletanus 47.10 (siglum “Tz,” here “Guil. (Tz)”) is the earliest and best MS, and that the other important MSS form a family of their own (which they designate “a,” and which is here designated “Guil. (cett.)”). With great generosity, they have together checked every apparatus report of William’s translation, and provided separate citations for Guil. (Tz) and Guil. (cett.) where appropriate.¹⁰

Balme reports the translation of George of Trebizond (Trapezuntius, siglum “Trap.”) from Laur. 84.9. John Monfasani, editor of various Trebizond writings, has kindly checked some uncertain cases. Balme’s reports of the Aldine edition and of Gaza’s Latin translation were where necessary checked against my own copies of these works.¹¹

Some small matters regarding the apparatus may be noted:

- (i) Because the MSS mostly omit or mishandle iota subscripts (below, p. 13), Balme’s practice is to cite their Greek consistently without subscripts. Citations of the printed text, however, include them. The same entry, then, may contain occurrences of a word with and without subscripts.
- (ii) The citation “edd.” should be understood, as indicated in the table of Sigla, to refer to “several or all” editors, and not necessarily all.
- (iii) The citation “vac. n” (where “n” is a number) should be understood to mean that the manuscript(s) cited have a gap of *circa* n letters.
- (iv) Although “no editorial conjectures from Aldus onwards have been admitted to the text” (p. 4), and Balme has often returned to manuscript spellings, accentuation, and breathings from which editors had departed, on rare oc-

¹⁰ See also below, p. 43 n. 45.

¹¹ Cf. pp. 36 n. 37, 46 n. 50 below.

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casion he himself departs from the MSS, with or without other editors, on such small matters only (most often in regard to the breathing in oblique cases of αὐτός/αὐτός).

- (v) Citations from the Latin translations usually match the Greek lemma exactly, but sometimes additional words were included by Balme to make clearer which Greek variant is read by the translator.
- (vi) Latin citations for the most part follow the orthography of the editor(s) of the edition used. (Where the readings of two translators are the same, for instance, they are jointly cited for that reading, regardless of orthographic difference, with the orthography of the earlier of the two used.)
- (vii) There are many more citations from Trap., and more reports of editorial conjectures, in the apparatus of VII–X than of I–VI, reflecting perhaps Balme's decreasing sense of their usefulness in establishing the text.
- (viii) "Hp." in the apparatus to III. 511b26–30 and 512b13–513a3 signifies the Hippocratic corpus. As Balme indicates in the commentary volume ad 511b23 and 512b12, the quotations Aristotle attributes to Syennesis and Polybus appear, unattributed, in the Hippocratic treatise *nat. oss.* 8 (IX 174 L.) and 9 (IX 174 L.), respectively, and the Polybus passage appears as well, also unattributed, in *nat. hom.* 11 (VI 58 L.).
- (ix) The apparatus cites some fifteen authors of one or two conjectures each who are not listed in the table of Sigla. It has not proven possible to track down in every case the particular work in which the conjecture was published; in the majority of cases, however, readers may begin to do so by consulting Peck's bio-bibliographical notes in his Loeb introduction to *HA* (I. xlii–liii). The only name not in the Sigla that appears more than twice in the entire apparatus is "Karsch," signifying A. Karsch, tr. *Naturgeschichte der Thiere*, 3 vols., Stuttgart 1866, n.d., n.d.
- (x) The eight citations of "Peck" in book VII(VIII) (to 594a9) are drawn from the typescript to which Balme was given

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access containing the small portion of work A. L. Peck had managed to complete towards his own Loeb vol. III before he died.

Finally, the differences between the present critical apparatus and the highly abbreviated version that appears in the Loeb edition (citing mainly departures from Bekker) are again minor, reflecting primarily the correction of typographical errors and occasional changes in the citations of William of Moerbeke's translation (as above, pp. xv–xvi).

INTRODUCTION

The present Introduction includes nearly all of Balme's original study of VII–X, modified and supplemented to serve as an introduction to the text of the entire treatise, as follows.¹²

The opening two paragraphs generalize to the full treatise, and slightly expand, the paragraph which opens the original introduction to the text of VII–X. Descriptions have been supplied of the seven MSS which contain only text from I–VI, and were thus not described in the Loeb, and descriptions of several of the other 19 MSS have been updated where necessary. These descriptions and updates have kindly been provided by F. Berger (above, p. xiv), in occasional consultation with D. Harlfinger. The supplementation has been kept to a minimum, and I have tried to provide it in such a way that readers could always or almost always infer what was Balme's and what has been added. Thus, the descriptions supplied by Berger are identified in advance in footnotes as being supplied by her,¹³ and most updating is accompanied by bracketed footnotes. Indeed all notes not by Balme are put in square brackets; if attached to a MS description the note is Berger's, otherwise mine. Small edi-

¹² Balme had begun to collect material towards an introduction to the *editio maior*, but his notes are in too preliminary a state to be made use of here.

¹³ Cf. Introduction, nn. 7, 9, 16, 27, 32.

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torial changes in the text, facilitating these additions, and updatings of some other information, have not been marked.

All the MS citations from VII–X in support of claims regarding the MSS are by Balme, and in the discussion of those individual MSS no citations have been added from I–VI. The claims about these MSS are thus always to be understood, as is sometimes there noted, “on the evidence of VII–X.”¹⁴ Berger and I supplied citations from I–VI only for individual MSS that contained text from those books alone (and thus were not yet described by Balme), and for comparative claims regarding those and other MSS. At Berger’s suggestion, some slight rearrangements were made in the order in which material was presented, most notably the moving of Balme’s discussion of the relative value of the manuscript families to the end of the discussion of the MSS. Since I did not, for better or worse, always follow her suggestions, I alone take responsibility for the final form of the Introduction, although with gratitude for her enormously helpful advice.

Finally, the citations from William of Moerbeke were in a few cases adjusted in accordance with the earlier-described general practice herein regarding William’s MSS.

INDEX

Balme had intended to prepare an analytical index, but left only very preliminary indications which could not be followed up. The index supplied in this edition has been produced in collaboration with Liliane Bodson and the Laboratoire d’Analyse Statistique des Langues Anciennes of the Centre Informatique de Philosophie et Lettres of the University of Liège (LASLA-CIPL). Following the procedure used for the production of L. Bodson, *Aristote De partibus animalium: Index verborum, Listes de fréquence* (Liège 1990), the present edition’s Greek text has been

¹⁴ Or VII–IX, as appropriate.

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lemmatized, under Bodson's supervision, providing the basis for a full index to *HA* to be published by Georg Olms in 2003. (For details, see p. 514 below.) Working with Bodson I have selected from the full lemmatization those categories of entries which I judged would be most valuable for the typical user of this volume; readers with more specialized interests should consult the full index. The work has been facilitated by the support of LASLA-CIPL's President, Joseph Denooz, and by the support, and the ingenious programming, of its Executive Director, Gérald Purnelle; and Marie-Christine Lochen has provided scrupulous data-processing management.

* * *

This Preface brings to a close some ten years of part-time work aimed at preparing Balme's text and critical apparatus for publication. I have received much valuable assistance throughout. We are enjoying a renaissance in the codicological and philological, as well as in the philosophical, study both of Aristotle's biological corpus and of its later scholarly and scientific tradition, and I have been fortunate to be able to draw on the expertise of many of those active in this work. Many others have made important contributions to this volume as well.

I begin with the Balme family without whose support this project would of course not have been possible. Balme's literary executors, his children Mary Picton-Turbervill and Richard Balme, have taken the greatest care that their father's work be properly represented, have made all the needed material freely available, and have been immensely supportive and extraordinarily patient. I dedicate my own small contribution to this volume to David Balme's wife of 52 years, Margaret Balme, whose friendship and support, and stories of David and their life together, have been a treasure to me.

George and Philippa Goold, then editor and associate editor of the Loeb Classical Library, and Zeph Stewart, executive trustee of the Loeb, are to be thanked for their early and active

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support of a division of labor between the Loeb edition and a Cambridge *editio maior*. Jeremy Mynott's early interest on behalf of Cambridge University Press in such an edition was gratifying, as was support from Geoffrey Lloyd and the other Syndics of the Press, and from the editors of the Cambridge Classical Texts and Commentaries series (CCTC). I thank also Pauline Hire, Mynott's successor as editor, for her wise advice, great support and extraordinary patience. I owe very special thanks to CCTC's consulting editor, David Sedley, who has been immensely generous, on a variety of fronts, with his great erudition, his wisdom and his time. I am very grateful as well to Muriel Hall, for her outstanding copy-editing, and to Caroline Murray, for her wise and supportive production supervision.

I thank the Thesaurus Linguae Graecae and especially its then Director, Theodore F. Brunner, for permission to download the *TLG* text of *HA*. This was done, in many small sections, with Silver Mountain Software's *TLG Workplace*, which converted the text into a *Nota Bene* word processing file. The entire volume, with the exception of two books of apparatus, was prepared in *Nota Bene's* *Lingua Workstation*, which facilitated especially my work with the Greek text and the apparatus criticus. The two other apparatus books were typed for me on a Macintosh platform, and I am grateful to Alan C. Bowen, Director of the Institute for Research in Classical Philosophy and Science, for providing me both with a Mac machine and with guidance in its use during the extensive editorial work that proved necessary. I am grateful as well to Bowen for advice on some difficult substantive matters of Greek and Latin. I thank Asco Typesetters (Hong Kong) for their outstanding settings of a very complex typescript.

I must mention again the invaluable contributions of Pieter Beullens, Fernand Bossier, Friederike Berger, and Liliane Bodson; their expertise and exceptional generosity have very greatly improved the result.

Konrad Vollmann kindly provided me at an early stage with his working transcript of a Scotus manuscript. I thank Aafke

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van Oppenraay for her subsequent assistance, described above, in regard to Scotus' translation, and John Monfasani for his, in regard to Trapezuntius'. Louis Filius and Dimitri Gutas each kindly checked a MS of the Arabic translation for me at several places; their work will bear most fruit in volume II, where Balme cites the Arabic on occasion, but it provided the background for certain decisions in regard to this volume. I have already mentioned my debt to Liliane Bodson and LASLA-CIPL for their contribution to the present volume's index; I look forward as well to their full index of *HA*.

John Palmer is to be thanked for some expert, and philologically informed, typing, and Christos Panayides for excellent proofreading.

The National Science Foundation provided me in 1986–1989 with a US-UK Cooperative Research Grant (Award No. INT-8519800) to work with Balme on aspects of his edition, both transatlantically and in the UK, during three summers and one semester, an interaction which proved immensely valuable in the preparation of this edition. I would like to thank my project officer, Christine Glenday, once again for her support during the difficult period after Balme's death. A completed draft of Balme's text of *HA* was necessary background for the project under my National Endowment for the Humanities Interpretive Research Grant RH-21075-92, and I am grateful to my project officer, Daniel Jones, for permitting extensive work on this edition under that grant. The College of New Jersey (formerly Trenton State College), through its Faculty Institutional Research and Sabbatical Leave Committee, provided over the years some released time from a very demanding teaching and chairing schedule to work on this project. Ann Costanzo and Joanne Cantor provided unfailing office assistance in many ways.

I have received encouragement over the years from more people than I can name, but I would like to single out Jim Lennox, my associate in so many Aristotelian endeavors, and three other friends I have worked closest with, in one way or another,

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on matters of Aristotelian biology, David Charles, Pierre Pellegrin, and Wolfgang Kullmann.

I cannot say whom David Balme would have thanked had he lived to write his own preface. Several individuals are named in his Preface to the Loeb edition. I do know from him that it was conversation with Harold Cherniss about the inadequacy of existing editions of *HA*, while Balme was a visiting member of the Institute for Advanced Study in 1976–77 working on the Loeb translation of VII–X, that confirmed his inclination to turn from translation to a full review of the manuscripts of *HA*. His gratitude to the libraries which supplied microfilm of these MSS is expressed in the Introduction below.

My own primary debt of gratitude is to Balme himself. My great sadness at his premature loss has been tempered, so far as that is possible, by over twelve years of frequent company with his mind and spirit and his great knowledge both of Aristotle and of the Greek language. It has not always been easy having him, as it were, looking over my shoulder, but it has always been inspiring, as it always was to know and spend time with him when he was fully present.

David Balme's work on *HA* was nearing completion when he died. The present edition, as posthumous, can only be penultimate, and I have tried above to indicate in what ways. Nevertheless, readers will or should know that the edition is the product of an outstanding scholar's sustained and loving work, across some fourteen years, on the manuscripts, the content, and the wider implications of *HA* – and that this work itself built upon more than twenty-five years of prior reflection on *HA*, a treatise which always held great fascination for him,¹⁵

¹⁵ See the biographical introduction to *Aristotle on Nature and Living Things: Philosophical and Historical Studies presented to David M. Balme on his seventieth birthday*, ed. A. Gotthelf (Pittsburgh and Bristol, 1985).

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and about which he has already taught us so much.¹⁶ Balme's knowledge of the language and content of Aristotle's biological corpus, and their relation to Aristotle's language and thought overall, and to the language and thought of the ongoing scientific, philosophical and cultural tradition in which this corpus was embodied, was unsurpassed. I hope my own contribution to this volume, aimed at revealing as much as possible of the Hermes in the stone, found in this case almost fully carved already but still in need of a careful chisel, has been worthy of his achievement.

¹⁶ Beginning with his groundbreaking 1960 Second Symposium Aristotelicum paper, "Aristotle's use of differentiae in zoology" (Louvain 1961); cf. the revised and expanded 1987 version, "Aristotle's use of division and differentiae" (above n. 5). For a complete bibliography of Balme's writings on ancient philosophy to 1985, see "Bibliography of David M. Balme's Writings on Ancient Philosophy" in *Aristotle on Nature and Living Things* (previous note); for his post-1985 publications, see "Additional Bibliography," in *Aristotle: De Partibus Animalium I and De Generatione Animalium I (with passages from II.1-3)*, tr. w. introduction and notes by D. M. Balme, rev. ed. (Oxford 1992).