

THE EQUATORIE OF
THE PLANETIS

His tables Tolletanes forth he brought,
Ful wel corrected, ne ther lakked nought,
Neither his collect ne his expans yeeris,
Ne his rootes, ne his othere geeris,
As been his centris and his argumentz
And his proporcioneles convenientz
For his equacions in every thyng.

CHAUCER, *The Franklin's Tale*.
[Ed. F. N. Robinson, V (F) 1273]

Cambridge University Press
978-1-107-40427-4 - The Equatorie of the Planetis
Edited by Peterhouse MS and Derek J. Price
Frontmatter
[More information](#)

Cambridge University Press
978-1-107-40427-4 - The Equatorie of the Planetis
Edited by Peterhouse MS and Derek J. Price
Frontmatter
[More information](#)

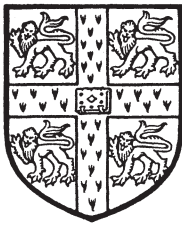


THE MERTON COLLEGE EQUATORIUM
see p. 129

THE EQUATORIE OF
THE PLANETIS

EDITED FROM
PETERHOUSE MS. 75. I
BY
DEREK J. PRICE
PH.D. (LOND.), PH.D. (CANTAB.)
*I.C.I. Fellow in the History of Science
Christ's College, Cambridge*

WITH A LINGUISTIC ANALYSIS BY
R. M. WILSON, M.A.
*Head of the Department of English Language
Sheffield University*



CAMBRIDGE
AT THE UNIVERSITY PRESS
1955

Cambridge University Press
978-1-107-40427-4 - The Equatorie of the Planetis
Edited by Peterhouse MS and Derek J. Price
Frontmatter
[More information](#)

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo, Delhi, Tokyo, Mexico City

Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9781107404274

© Cambridge University Press 1955

This publication is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without the written
permission of Cambridge University Press.

First published 1955
First paperback edition 2012

A catalogue record for this publication is available from the British Library

ISBN 978-0-521-05994-7 Hardback
ISBN 978-1-107-40427-4 Paperback

Cambridge University Press has no responsibility for the persistence or
accuracy of URLs for external or third-party internet websites referred to in
this publication, and does not guarantee that any content on such websites is,
or will remain, accurate or appropriate.

Cambridge University Press
978-1-107-40427-4 - The Equatorie of the Planetis
Edited by Peterhouse MS and Derek J. Price
Frontmatter
[More information](#)

TO ELLEN

Cambridge University Press
978-1-107-40427-4 - The Equatorie of the Planetis
Edited by Peterhouse MS and Derek J. Price
Frontmatter
[More information](#)

CONTENTS

LIST OF PLATES	<i>page</i> ix
LIST OF FIGURES	xi
PREFACE	xiii
I INTRODUCTION	3
II PROVENANCE AND PHYSICAL DESCRIPTION OF THE MANUSCRIPT	6
III TRANSCRIPT AND FACSIMILES	17
IV TRANSLATION	47
V NOTES ON THE TEXT	62
VI THE ASTRONOMICAL TABLES	75
1 Analysis of contents of the manuscript	75
2 Analysis of tables, numerical values, etc.	79
3 Notes and other material inserted in the Tables	84
VII THE PTOLEMAIC PLANETARY SYSTEM	93
1 Preamble	93
2 General foundations of the theory	95
3 The Sun	97
4 Venus, Mars, Jupiter and Saturn	99
5 Mercury	101
6 The Moon	103
7 The Alfonsine ‘precession’	104
8 The technical terms of Ptolemaic astronomy, as found in the text	107
9 Accuracy of the theory and the Equatorie	110
10 The calculation of planetary positions	116

CONTENTS

VIII	HISTORY OF THE PLANETARY EQUATORIUM	<i>page</i> 119
1	Early history	119
2	Eleventh century	120
3	Twelfth and thirteenth centuries	123
4	John of Linières	125
5	Richard of Wallingford	127
6	The <i>Equatorie of the Planetis</i>	130
7	al-Kāshī	131
8	Later developments	132
IX	PALAEOGRAPHY	134
1	Contractions	134
2	Punctuation	135
X	LINGUISTIC ANALYSIS	137
1	Vocabulary	137
2	Phonology	138
3	Accidence	141
4	Summary	143
XI	ASCRPTION TO CHAUCER	149
1	Preamble	149
2	The manuscript is an author’s holograph	149
3	The work was composed <i>c.</i> 1392	151
4	Simon Bredon did not write this text	153
5	Connection with Chaucer’s <i>Treatise on the Astrolabe</i>	156
6	The ‘Radix chaucer’ note	159
7	Comparison of handwriting	162
8	Ascription of the parent-text	164
	GLOSSARY	167
APPENDIX I	Cipher passages in the Manuscript	182
II	Compositio equatorii secundum Johannem de Lineriis	188
III	Specimens of Middle English Scientific Texts	197
	GENERAL INDEX	207
	INDEX OF MANUSCRIPTS CITED	214

LIST OF PLATES

The Merton College Equatorium		<i>frontispiece</i>
I	Folio 71 v. (A). Actual size	<i>between pp.</i> 16–17
II–V	Folios 7 r., 30 v., 38 v., 62 v.	„ „ 78–79
VI–IX	Folios 63 v., 64 r., 64 v., 65 r.	„ „ 86–87
X	Folio 71 r.	<i>facing p.</i> 91
XI	Folio 5 v.	„ 159
XII	(a) Part of folio 5 v. ‘Radix chaucer’ note (b) Name on Peterhouse MS. (enlarged) (c) Name on P.R.O. document (enlarged) (d) P.R.O. document	„ 164
XIII	(a) First line of text, folio 71 v. White light (b) The same. Ultra-violet light (c) The same. Infra-red light (d) Owner’s mark from 1461, f. 74 v.	„ 165

Plates of the text, folios A–N, are printed with transcriptions on pp. 18–45

Cambridge University Press
978-1-107-40427-4 - The Equatorie of the Planetis
Edited by Peterhouse MS and Derek J. Price
Frontmatter
[More information](#)

LIST OF FIGURES

1	Front fly-leaf	<i>page</i> 12
2	The five circles on the limb of the Equatorie	48
3	Setting for a major planet	54
4	Calculation of latitude of the Moon	58
5	Cycle of lunar latitude	59
6	Graph of variation in place of Caput	73
7	The celestial sphere	96
8	Theory of the Sun	98
9	Use of the Equant	99
10	Theory of Venus, Mars, Jupiter and Saturn	100
11	Movable centre deferent of Mercury	101
12	Oval deferent of Mercury	102
13	Movable centres of the Moon	103
14	The Alfonsine-Ptolemaic system of reference	105
15	Simulation of Ptolemaic Theory by the Equatorie instrument	108
16	Equivalence of the Ptolemaic and Copernican hypotheses	111
17	Compensation for lack of eccentricity of epicycle	112
18	Equivalence of eccentric deferent and equant with Keplerian orbit	114
19	Skeleton geometrical construction demanded by Ptolemaic theory	116
20	Diagrams for the equatorium of John of Linières	190–4
21	Theory of Sun in Trinity MS. O. 5. 26	201

Cambridge University Press
978-1-107-40427-4 - The Equatorie of the Planetis
Edited by Peterhouse MS and Derek J. Price
Frontmatter
[More information](#)

PREFACE

THE text which is here edited is one of considerable interest to all students of medieval literature and of medieval astronomy. In addition, as pointed out later, it may also be of importance to Chaucerian scholars.

This wide range of interest has necessarily led to the transgression of many academic boundaries which the modern tendency towards specialization has tended to keep almost inviolate. Consequently it early became evident that there were many instances where it was desirable to obtain expert opinion on various specialized points, such as palaeography, medieval astronomy, the history of cipher writings, etc. It is therefore a great pleasure to record that my many requests for assistance from experts in Cambridge and elsewhere were always met with great kindness and consideration.

It was also fortunate that Mr R. M. Wilson, M.A., consented to act as adviser on the linguistic side. In addition to writing Chapter X and compiling the Glossary, he has also provided the section on Punctuation in Chapter IX, and we have collaborated in the translation of the text. Throughout the preparation of this edition we have had frequent consultations, always on the understanding that although advice was freely given on either side, its acceptance or rejection was a matter for the person responsible for that chapter. It need hardly be added that similar considerations apply to advice which we have received from others. Their help has been acknowledged whenever possible, but this must not be taken as committing them to any errors of statement or judgement for which we alone must accept responsibility.

Since this is the first detailed account of a complicated manuscript, it appeared necessary to provide a full description of its varied contents, together with the customary critical apparatus and the special technical explanations which are made necessary by the subject-matter. I have thus attempted to provide the raw materials for the discussions and the assessment of evidence demanded by the manuscript.

It would be out of place to insert these discussions and assessments in the present volume before scholars have had an opportunity of examining the material for themselves, and for this reason the summing-up has been restricted

PREFACE

to a tentative account which is designed to assist the reader rather than urge the acceptance of this or that opinion. Particularly in the chapter dealing with the problem of ascription, especial care has been taken to separate the different issues involved and to distinguish those things which appear reasonably certain from those which bear only a greater or a lesser probability of being true.

It is difficult if not impossible to perform this task without betraying the influence of preconceived notions, and it would be dishonest to pretend that a neutral course has been steered throughout the investigation. On the contrary, it would have been impossible, perhaps even undesirable, to embark on this edition without having arrived at some conclusion one way or another.

To explain this it is necessary to outline the early stages of this research. The Peterhouse manuscript was first seen by me at the beginning of December 1951 while collecting data for a general history of scientific instruments. Since the text was in English, and the date 1392 frequently occurred, it seemed at first possible that this might be a missing part of Chaucer's apparently incomplete *Treatise on the Astrolabe* written in 1391—the only instrument tract written in Middle English known to me at that time.

It was soon clear, however, that the instrument described was certainly no type of astrolabe, but a planetary calculator of unfamiliar design, and my interest was further aroused by finding that some of the leaves of the manuscript contained short notes written in cipher; a more detailed study of the manuscript was obviously necessary. In the meantime I was able to decode the notes and found that they were technical rubrics written in Middle English. A full reading of the instrument text revealed that the scientific content was of considerable interest in its own right, though it provided at first sight no evidence for or against my suspicion that it was connected in some way with the *Treatise on the Astrolabe*.

Leaving the text, I turned my attention to the astronomical tables which occupy the greater part of this manuscript volume, and in the course of this study I found, near the inner margin of one of the folios, a note which seemed to contain the word 'chaucer' or possibly 'chancer'. But since nearly half the crucial part of this note was hidden by the very tight binding of the volume it was impossible to read the whole of the short sentence. Application was therefore made to the authorities of Peterhouse, pointing out the importance of the manuscript and its possible connection with Chaucer, and they very kindly consented to have it unbound so as to reveal the hidden part of this note, as well as certain fragments of the text which were similarly obscured.

The full sight of the note indicated that 'chaucer' was the correct reading, and further work with the manuscript led me to think that the text might well

PREFACE

be an author's holograph. The obvious thing was to compare the hand with those appearing in certain Chaucer documents in the Public Record Office, and it was clear that there was no agreement at all. My attention was then drawn to another document which had been suggested as a Chaucer holograph by Professor Manly. The relevant file of documents was brought to me, and a casual leafing through showed that only one of them was in a hand similar to that of the Peterhouse manuscript—but this one document displayed a striking similarity. The document was in fact Professor Manly's suggested holograph, and although the manner of finding it does not objectively increase the weight of the evidence, the subjective effect was considerable.

By the end of January 1952 it was possible to bring together photographs of the manuscript and the Public Record Office document, and the detailed comparison proved sufficiently satisfactory for the publishing of a tentative account of my findings.

The research had thus been carried out from the beginning in the hope of the result which had in fact emerged—a most dangerous procedure and one liable to lead to an unconscious weighting of the evidence. I can only hope that I have not fallen into serious error on this account, and there has been an attempt at each stage to lay the evidence before sceptical critics. For their sake as well as for mine I must issue a final caveat: there is, in my opinion, nothing in this book which can by itself be accepted as definite proof of authorship; there is, however, a mass of lesser evidence which has the cumulative effect of suggesting that this is a Chaucer holograph and making it difficult to advance any other reasonable hypothesis to explain all the features of the manuscript. Any single piece of evidence is vulnerable by itself, and the final verdict must therefore depend on the coming to light of fresh evidence, or on the expert assessment of the fabric as a whole.

I must acknowledge first the invaluable advice of Mr R. M. Wilson and Dr A. R. Hall, who have been continuously consulted throughout the progress of this research. On special topics I have had great benefit from the frequent expert advice of Professor Bruce Dickins, Professor R. A. B. Mynors, Mr H. L. Pink, and the staffs of the Cambridge University Library, the University Press, and the Cavendish Laboratory. For other requests which have met with a never-failing courteous response I must acknowledge my thanks to the Keeper of Western Manuscripts of the Bodleian Library, the Public Record Office, the Librarian and the Society of Merton College, the Keeper of Western Manuscripts at the British Museum, and also to Dr B. F. C. Atkinson, Mr B. Colgrave, Dr A. C. Crombie, Dr D. Dewhurst, Dr D. R. Dicks, Dr D. M. Dunlop, Mr I. J. Good, Her Majesty's Nautical Almanac Office, Professor E. S. Kennedy,

PREFACE

Dr H.Lowery, Mr H.A.Mason, Monsieur H.Michel, Professor V.Minorsky, Dr J.Needham, Professor O.Neugebauer, Dr C.T.Onions, Professor Johnstone Parr, Mr B.Penrose, Dr E.Rosenthal, The Royal Museum of Brussels, Dr D.S.Sadler, Mrs D.Waley Singer, Dr W.D.Stahlmann, Professor E.G.R.Taylor, Professor J.R.R.Tolkien, Mr J.E.Tolson, The University of Nebraska, Mr W.Urry, Miss H.Wallis, Professor R.Weiss, Mr D.W.Whitfield, Miss E.Williamson, Dr H.J.J.Winter, Professor E.Zinner, and Mr F.Zloof.

No work on the history of medieval science would be complete without an appreciation of the magnificent tools for research which are provided by the encyclopaedic publications of Professors George Sarton and Lynn Thorndike; in the study of the history of scientific instruments a similar tribute must be paid to the pioneer work of R.T.Gunther.

This research would not have been possible without the co-operation of Rev. J.N.Sanders, then Perne Librarian of Peterhouse, or without the privileges and facilities which have been extended to me by the Master and Fellows of that College. The detailed study of the manuscript has been made much easier for me by the kindness of the Syndics of the Cambridge University Press, who provided a set of photographs taken while the quires of the volume lay detached from their former tight binding. Finally, I should like to thank Professor Sir Lawrence Bragg for his magnificent and much appreciated personal support, and the Managers of the Imperial Chemical Industries Fellowships for permitting me the tenure of a Fellowship for three years for research on the history of scientific instruments.

DEREK J. PRICE

CHRIST'S COLLEGE
CAMBRIDGE

July 1953