

varnish or light, yet as close in its protected state as possible to the imaginative construct we use, or are passive to, in actual perception. In the dream this approximation reaches its extreme (short, I suppose, of actual hallucination): not even after the subject has become fully awake does the reality of dreams always fade and there are cases where a dream experience remembered is indistinguishable from a waking experience remembered. The dream aspect of the imagination is one which will repay investigation from the point of view of aesthetic theory, as the surrealists discovered, though they erred by selecting the automatic quality of the dream as the key to art. Certainly, extreme vividness of the stimulated imagination is the essence of certain sorts of poetry—if not of all poetry in the widest sense of the word, as well as of pictorial art.

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## THE EQUATORIUM OF THE PLANETS

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**T**HE lost literature of medieval England, as Mr R. M. Wilson and R. W. Chambers before him have shown us, would probably occupy as much space in our libraries as what has survived. The earliest records tell of such losses as that of the Ingeld-lay which Alcuin reproaches the monks of Lindisfarne with being so fond of; and to the end of the Middle Ages we can compile for each century a formidable list of works which have vanished, some through the indiscriminate ravages of time, others, we need not doubt, victims to pious zeal (it was Furnivall who at a meeting of the Early English Text Society complained of a lack of Lives of the Sinners). But yet from time to time sunken treasure is washed up, to be chanced upon and dragged away in triumph by some more fortunate beachcomber, whilst the rest of us stare after him in envy. This present century is hardly likely to see another so sensational discovery as when in 1934 the lost 'Book of Margery Kempe' appeared in the Victoria and Albert Museum to have its contemporary binding repaired, and proved to be not

at all the improving but genteel *vade mecum* suggested by the extracts by Wynkyn de Worde and Pepwell, but rather the spiritual autobiography of one of the crackedest pots in all the annals of religious enthusiasm. Twenty-one years have not been long enough for medievalists to recover from this discovery; and now Dr Price comes along with what may be a new work by Chaucer, *The Equatorie of the Planetis*, which caught his eye in MS. Peterhouse College, Cambridge, 75.1. Here again we were in for a surprise, for this is none of the known lost works by Chaucer, not *The Book of the Leoun* which he includes among the 'worldly vanities' which he laments in the Epilogue to *The Persones Tale*, nor the early writing, 'Origines upon the Maudeleyne' which Alcestis seems to praise in the Prologue to *The Legend of Good Women* for its edifying qualities; it is not even any continuation of the unfinished *Astrolabe* treatise, but a guide to the use of an infinitely more complex and advanced piece of astronomical apparatus, the equatorium.

Dr Price, when he came upon the manuscript, was collecting information for a general history of scientific instruments; and his eye was caught by the frequent occurrence, in the mathematical calculations of the treatise, of the date 1392, which led him to think first of Chaucer's fragmentary guide to the use of the astrolabe, left uncompleted in 1391. He soon saw, however, that the instrument described in the Peterhouse work was not made to measure stellar altitudes. This equatorium text is followed by astronomical tables which contain a note which Price interprets as 'The difference (in number of days) between (the year of) Christ and the (year of the) radix of Chaucer'. This led the editor to consider further the possibility of Chaucer's authorship, and, since this Peterhouse manuscript seems to be an author's autograph—and an early draft rather than a fair copy—to compare this putative Chaucer-signature with his other suggested holographs. The writing of his name in the Peterhouse manuscript does agree closely with that in a document of May 1378, in the Public Record Office, appointing a deputy to Chaucer's post in the Wool Quay office in London whilst he, as we know, was absent in Italy on a diplomatic mission. In this present sumptuous edition by the Cambridge University Press,<sup>1</sup> nothing has been omitted which the

<sup>1</sup> *The Equatorie of the Planetis*, edited by D. J. Price, with a linguistic analysis by R. M. Wilson (Cambridge University Press; 52s. 6d.).

most diligent reader might require in seeking to decide on Chaucer's claims to be considered the author; the whole of the 'Equatorie' text is reproduced photographically, and most ingenious diagrams are supplied to help us to compare the suggested signatures. Naturally, too, Mr R. M. Wilson's valuable linguistic analysis is chiefly concerned with this question of possible authorship: does this work, composed in an age when 'standard English' was virtually unknown, and when men spoke and wrote varieties of English peculiar to their districts and with marked characteristics of pronunciation (reflected in spelling), inflexion and vocabulary, exhibit the type of English which we believe that Chaucer spoke and wrote? Mr Wilson, having considered the language and the style, has come to much the same conclusion as Dr Price reaches with regard to the contents of the treatise: there is nothing to show that Chaucer did not write it. The poet himself would applaud the editor's reluctance to stamp as authentic what may turn out to be, if not 'pigges bones', at best the relics of some other saint.

What was this 'planetary calculator of unfamiliar design', the equatorium, and why should we suppose that the most elegant and accomplished poet of his age may have written this handbook upon its use? In his very thorough introduction, Dr Price answers the first of these questions for us as only a scholar versed in the arcana of medieval science could. The equatorium was an instrument designed to spare students much laborious reckoning with numerical tables when they needed to reach a quick if rough computation of the positions, relative to the earth and to one another, of the sun, moon and planets. To be able to do this, the equatorium simulated the Ptolemaic planetary theory; as we look at the frontispiece of this new edition, the photograph of the only surviving medieval equatorium known to the editor, that at Merton College, Oxford, we see a working model of a geocentric planetary system. Ptolemy himself had not been concerned with the distances between the planets, the 'sizes of their spheres', and hardly at all with their order, that is, with their relative distances from the earth; he had followed, as being more probable though not certain, what he called 'the order of the ancients'. There seems to be no evidence that any of his disciples in classical times attempted such a synchronistic device; and according to the editor the stimulus towards such studies and calculations did not

come until 'the revival of learning, when the *Almagest* was recovered and made known to the West through the activities of the Hispano-Arabic translators and scholars'. The very title, *Almagest*, is significant, for this, we are told, is merely *al-megiste*, the *μεγίστη σύνταξις* (τῆς ἀστρονομίας) of Ptolemy: Gerard of Cremona's Latin translation of the Arabic version appeared in 1175. For Dr Price, we can see, the revival of learning is to be associated with the late eleventh century and with the astonishing fusion of Greek, Latin and Arab cultures in the Mediterranean lands, perhaps most vividly symbolized for us in the character and achievements of Frederick II, the wonder of his world; and this text comes to remind us that in the sciences too we must remember what was then taking place in Sicily and Castile, if we are to understand what happened at the close of the Middle Ages in the West. Denomy and others have recently shown us that what had come to seem a purely Western, Latin, Christian phenomenon, the secular literature of courtly love, may in fact derive from the philosophers and poets of Islam. Now Dr Price contends that the *Equatorie* is derived, without doubt, from a Latin version of some Arabic treatise; and he is able to support his contention on linguistic as well as scientific grounds. The very opening of the work, 'In the name of God, pitiful and merciful', is the characteristic Muslim '*bismillah*'; and the editor, dealing with its second phrase, '*seide leyk*', reports the ingenious suggestion of Professor Neugebauer that the '*leyk*', unintelligible as such to us and also, presumably, to medieval English readers, since the word has been erased and can now be read only in ultra-violet light, is not a proper name but 'might have originated in the mis-transliteration of an Arabic word read from left to right instead of in the correct order for that script'. The suggested etymology is *qila*, 'it is said'. Happy the first Ph.D. candidate to be accorded the privilege of turning the *hapax legomena* of the medieval vernacular languages back to front and trying to discover Arabic roots in them!

When he comes to survey the spread of the new astronomy in England, the editor has yet other verbal ingenuities with which to surprise us. It is perhaps not without significance that the surviving equatorium is at Merton, since that college was associated with a whole group of astronomers in the early fourteenth century, of whom Dr Price specially mentions Richard of Wallingford, abbot of St Albans, who in 1326 composed his treatise upon the instru-

ment which he called *Albion*. This is so called, we are assured, not because it is designed upon an English meridian, but as a pun ('All by one'), referring to the fact that it consists of one main plate, not, for instance, a separate plate for each of the seven planets, as in an earlier instrument described by Alfonso the Wise. It is quite clear that the equatorium marked a considerable advance in the technique of astronomical measurement and computation; but as we read Dr Price's learned and humane commentary we may be tempted to forget that medieval scientists, unlike him, did not pursue knowledge as an end in itself. From many of Chaucer's other works we know of his passion, the passion of a worker, no mere dilettante, for astronomy; and Chaucer would have told us that no man who aspired to true learning could afford to be ignorant of the science. But it is when we come to examine medieval views on the worth and the ends of astronomy that we see diversity and conflict.

Long before the revival of learning, however early we choose to put that event, those who read the Latin Fathers diligently would find fragments of the Greek view of the universe preserved. St Augustine in Book XVI of *The City of God* says that antipodes are theoretically possible, although it is absurd to suppose that they could have sprung from Adam; and St Basil the Great in his *Nine Homilies upon the Hexaemeron* makes it clear that he understands that there are stars about the south pole of the heavens, invisible to us. But such theories were from early times opposed by other teachers as anti-Christian, un-Western, non-Biblical; Clement of Alexandria is perhaps the first to teach that in the description of the Tabernacle and its furniture we have an allegory of the universe, and Lactantius in his *Divine Institutions* devotes Book III, 'On the false wisdom of the philosophers', '... to heaping ridicule on the doctrine of the spherical figure of the earth and the existence of antipodes.'<sup>2</sup>

But although medieval men quarrelled about the nature of the universe, there were few to question the doctrine, which seems to be as old as mankind, that man is subject to the 'influences' of the planets. This doctrine, and the prevalence of belief in it, has been very well illustrated from another of Chaucer's works, *The Knight's Tale*. Numerous critics have shown that Chaucer's sources for his story are Boccaccio's *Teseide*, with passages added from

<sup>2</sup> J. L. E. Dreyer: *History of the Planetary Systems* (Cambridge, 1906), pp. 208-13.

Stadius' *Thebaid*, and that one of his own most important contributions to the story, the substitution of the planets for the gods as promoters of the conflict, serves to bring it up to date. One critic, indeed, has claimed that 'the real conflict behind the surface action of the story is a conflict between the planets, Saturn and Mars; that the kings Lycurgus and Emetrius are, respectively, Saturnalian and Martian figures introduced to champion the causes of the heroes; and that the illness of Arcite is a malady inflicted upon him by his planetary enemy, Saturn'.<sup>3</sup> And the same critic later writes: 'Neither Palamon nor Arcite is wise enough to solve the problem of human suffering in relation to Destiny and Providence, but their pitiful cryings in the dark serve admirably to impress upon the reader's mind the necessity for some solution'.<sup>4</sup> The philosophical problem is there as Boethius had stated it: whether we say that Destiny is exercised by servants of Providence or by human souls, by all nature serving God, by the celestial moving of stars, by virtue of angels or by the machinations of devils, by any of these or by all together, still we can see that Destiny is woven and accomplished.<sup>5</sup> The solution, as Chaucer seems to offer it in *The Knight's Tale*, is also Dante's solution. In the *Divine Comedy*, in which nothing happens by chance, it is not fortuitous that the conclusion of *Inferno* and *Purgatorio* prepare us for the end of *Paradiso*. As Virgil and Dante climb out of Hell on Easter Sunday morning, their sign that they are free is that they can once again behold the stars—'E quindi uscimmo a riveder le stelle'. When at Beatrice's bidding Dante has drunk of the purging waters of Eunoe and is purified of his lethal doubts and intellectual failings, he knows that he is now at last disposed to mount towards Paradise—'Puro e disposto a salire alle stelle'—and there, when at last he is accorded his beatific vision of the Light, he was, he says, as the geometer whose uttermost intellectual efforts to discover the principle by which the circle should be measured have failed: he could not make the image, humanity, to agree with the circle, divinity, until to the help of his desire and his will came that Love through which divinity became humanity, the Love that moves the sun and the other stars—'L'amor che muove il sole e l'altre stelle'. Chaucer can hardly have failed to think of this conclusion to the

3 Walter Clyde Curry: *Chaucer and the Medieval Sciences* (Oxford, 1926), p. 120.

4 *Ibid.*, pp. 160-1.

5 *De Consolatione Philosophiae*, Book IV, Prose vi.

*Paradiso* in composing Theseus' great speech at the end of *The Knight's Tale*; it is almost with Dante's own words that he opens:

'When the first mover of the cause above  
First made the beauteous chain of love . . .'

It is love which by the will of the Creator has bound the four elements. All created things are mutable and perishable, he alone is stable and eternal, and man's mortality does but glorify his immortality. Stripped of its artful antique dress, this legend of the warring planets and their earthly pawns teaches the same moral as Chaucer's contemporary Ruysbroek in *The Book of the Twelve Beguines*. God in the firmament has established seven orbits, in each of which a planet moves, adorning, ruling, making fruitful heaven and earth, according to the ordinance of the wisdom of the Creator. The highest planet in the firmament is Saturn, angry and ill-disposed, bringing hail and snow and floods, reigning in mid-winter when the Sun is in Capricorn and Aquarius. All this, Ruysbroek teaches, has also a spiritual significance: the cold and malevolent Saturn is the highest planet to show us that nowadays love has grown cold, that men have become dry and barren of good works. On the Day of Judgment, Saturn shall be in the ascendant: 'But you shall not fear too greatly, for inordinate fear makes men to lose faith and to despair, and that is a great and mortal sin, proceeding from evil causes in opposition to the Holy Ghost. And the nature of the heavens and the courses of the planets teach us this: for everything which God has made in nature and in grace is well ordered.'

Ruysbroek and Dante and Chaucer all believed that God had created the planets so as to provide the means through which he might order men's lives: to them it was as self-evident that wars came about in accordance with the will of God through the influence of Mars as that the crops grew in the spring through the influence of the sun. The difficulty is not how to understand medieval belief in planetary influences, but how to interpret the rare instances when a certain scepticism seems to appear. One such instance, at first sight surprising, is found in the official *Vita* of St Bridget, prepared by her two Swedish chaplains for her canonization process in 1379. We are told there that when her young son Bengt lay dying, the devil came and mocked her grief: but Christ appeared to her and said 'The sickness of this boy does not come from the position of the stars (*ex constellationibus stell-*

arum), as fools say, nor on account of his sins, but because of his physical condition and so that he may gain a greater crown.' To understand this passage aright, we must remember that Sweden in St Bridget's day was still much addicted to pagan rites and beliefs; she herself, we are told, took measures to win the peasants of her own district away from the snake-worship which they practised. Medieval men would readily perceive in this an allusion to the vain beliefs of those who held that the stars could influence men's destiny independent of the will of God; and without doubt we have another such allusion in the tract which Henry of Langenstein composed, some time in the 1380's, *Adversus Thelephori eremitae vaticinia*: '. . . Now that there is a schism, men are beginning to talk as if they were prophets or seers, but they are only fortune-tellers, to whom those who have a taste for rubbish like to listen, believing in what the stars foretell and that sort of thing: everybody pays attention to their prophecies, or better, to their nonsense, and have their books full of lies expensively and splendidly copied, as if they were composed by the Holy Ghost.' And indeed many of the surviving Telesphorus manuscripts are very splendid, a sad commentary on the distracted age in which they were written, the age for which the author of *Piers Plowman* wrote:

'But I warn you, workmen, work while you may,  
For Hunger is hitherwards hastening fast

And so said Saturn, and sent to warn you:  
When you see the sun out of course, and two monks' heads  
And a maiden have the mastery, and multiplied by eight,  
Then Death shall withdraw and Dearth shall be judge  
And Davy the Ditcher shall die for hunger  
Unless God of his goodness grant us a truce.'

'Your horoscope for this week', that most sardonic of poets is saying, 'says that if you won't work you'll starve.'

Yet there can have been few men of the Middle Ages who did not believe also that the determining influence of the heavenly bodies upon future events could be forecast. 'God alone and no one else', says Duns Scotus, 'can by nature with certainty foresee the *contingentia* which are still to come; and therefore he alone, or one taught by him, can foresee them with certainty. For such is the universal belief of Christians', and St Bernardino of Siena, a



keen Scotist, thought this definition important enough to merit repetition. Again, it is pagan superstition and disbelief which is aimed at here; only those who disbelieve in God as provident creator will believe that all things can be prognosticated by man, and as for what is foreseeable, does that itself not witness to divine prescience and providence? It is in *The Knight's Tale* that Chaucer describes how in those far-off heathen days, in the temple of Mars, such future events as the assassinations of Julius Caesar and Nero were depicted, even though they were yet to come,

‘As is depicted in the stars above  
Who shall be slain, or who shall die for love’.

The enemies of astrology, as might be expected, were to be found among those who deplored all worldly science as merely distracting men from divine contemplation. ‘Do not spend your time in studying geometry, arithmetic, rhetoric, dialectic, grammar, songs, poetry, law or astrology’, says Gerard Groote, ‘for all these things are reproved by Seneca, and a good man should avert his mind from them and despise them.’ But Chaucer would have had little time for the New Devotion, if he had lived to see it. Towards the end of his life, in the epilogue to *The Parson's Tale*, he divides his writings into sheep and goats. His readers are asked to pray for the forgiveness of his sins, ‘and especially of my translations and compositions of worldly vanities, as is the Book of Troilus—’, which is followed by a formidable list of his other works. But he thanks God that he was permitted to write his Boethius translation ‘and other books of legends of saints, and homilies, and works of morality and devotion’. He makes no mention of *The Astrolabe*; on which hand, one wonders, would he have set it, and, if indeed he wrote it, *The Equatorie of the Planetis*?