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(*b*. Colmore, Hampshire, England, 1602; *d*. London, England, 8 October 1652),

observational astronomy, historical astronomy, mensuration, textual scholarship.

Greaves, an observational astronomer and orientalist, was one of the leading English figures of the middle of the seventeenth-century effort to recover learning and scholarship from eastern sources.

Early Years and Education . John Greaves was the eldest of four talented sons of the Reverend John Greaves, an Oxford graduate. All pursued professional and academic careers. The younger John Greaves matriculated at Balliol College, Oxford, on 12 December 1617 and was admitted to the BA from St Mary Hall on 6 July 1621. In 1624, he came first in the fellowship examinations at Merton College, where he remained for nearly the whole of his career. He proceeded to the MA on 25 June 1628. He was never ordained.

Like his close friend and mentor, John Bainbridge (1582–1643), and other contemporary English astronomers, Greaves left no evidence to explain whence his interest in astronomy and mathematics arose. It would have been nourished at Merton, where the late warden, Sir Henry Savile (1549–1622), had endowed chairs in astronomy and geometry. As early as 1629, Greaves was recording astronomical observations in Oxford, perhaps made with Bainbridge, the first Savilian professor of astronomy at Oxford and a fellow of Merton. At Merton, Greaves became acquainted also with Peter Turner (1586– 1651/1652), then the professor of geometry at Gresham College in London, and this connection seems a plausible partial explanation for Greaves's election to the same position on 22 February 1630/1631 as Turner's immediate successor, when Turner came to Oxford as the second Savilian professor of geometry. The letters of support Greaves received for this position, including one from Bainbridge, testified to his competence in mathematics as shown for some years in "private conferences" and "daily conversation." He remained a member of this close Oxford circle throughout his life, and it was in part through this Oxford circle that he arranged his extensive travels and determined their purposes.

Travels . There is, similarly, little evidence of when Greaves began to study the oriental languages, but in 1633, when he undertook his first visit overseas, he went to Leiden and enrolled as a student, almost certainly studying Arabic with Jacobus Golius (1596–1667), a leading scholar of the language. He later acquired a knowledge of Persian and possibly Turkish.

This was the first of three long trips abroad. In 1635, on his second trip, he traveled to Paris, Padua, Rome, and Leiden again, and returned to Oxford by late 1636. This first sojourn in Rome and Greaves's concern with mensuration led to his publication, more than ten years later, of *A Discourse on the Roman Foot and the Denarius*(1647).

In 1637, at first in the company of Edward Pococke (1604–1691), the first professor of Arabic at Oxford, and later on his own, Greaves traveled to Leghorn, Rome, Constantinople, Rhodes, Alexandria, Cairo, various cities in Italy, and in 1640, back to Oxford. During their absence, Greaves's brother Thomas was deputed to take Pococke's place at Oxford, and his brother Nicholas evidently delivered the Gresham geometry lectures in London.

This third tour, funded in part by himself with an allowance from his mother, was under the patronage of William Laud (1573–1644/1645), archbishop of Canterbury and chancellor of Oxford (and founder of the university's chair in Arabic), and with difficulty Greaves collected Arabic books and a very large number of Arabic and other manuscripts that he sent to Archbishop Laud and Oxford. One of these was evidently a very fine Arabic copy of Ptolemy's *Almagest*, which unfortunately seems to have vanished some time after its arrival in England.

Astronomical Work . Continuing his practice begun in Oxford, Greaves made precise astronomical observations all the while that he traveled. In particular, he repeatedly made precise observations of latitude, which he compared with existing records, in an attempt to check the reliability of the long-established sources. In Rhodes, for example, he compared his observations with the latitude given by Ptolemy. In addition, he attempted to arrange for simultaneous eclipse observations in order to improve determinations of differences in longitude. His instruments, which he sometimes describes, had nontelescopic sights but permitted a high level of precision. He did not publish this work.

He combined his visits to Cairo with visits to Saqqara, and he made very precise measurements of the Great Pyramid, which, although it was original work, was not quite as original as he portrayed it, as other Europeans had measured its dimensions and spaces in the preceding century. Ten years later, he published the results of his investigations of the structure, the *Pyramidographia*(1646). He reported on his systematic measurements, inside and out, and provided an organized conspectus of scholarly accounts of the pyramids from antiquity to his own time. The book contains hardly any speculation, and Greaves therefore cannot be recruited into the later occult tradition of "pyramidology."

Greaves wrote next to nothing on planetary theory, or indeed on any theoretical considerations. He did own a copy of the first edition of Nicolaus Copernicus's *De Revolutionibus* (1543), which he annotated extensively. His notes refer primarily to chronology and spherical astronomy, with one elaboration on Chapter 11 and its "triple motion of the earth." Other notes that he wrote into the book, however, refer to matters entirely apart from Copernicus and astronomy, such as experiments with mercury and someone else's eastern travels.

Last Years and Publications . Greaves was embroiled in the Oxford politics that followed from the turmoil of the civil wars in the 1640s. He evidently tried to negotiate a passage between the factions, but he failed; his close association with Archbishop Laud, though not explicitly noted by the Parliamentary Visitors, could not have helped. On 14 November 1643, shortly after Bainbridge's death, he succeeded his friend as Savilian Professor of Astronomy (and his brother Edward succeeded Bainbridge as senior reader of the Linacre lecture in physic (the term *physic* covered the modern fields of medicine and psychology), but he was also removed one day later from his position as Gresham professor, ostensibly for nonattendance at his lectures, but possibly for being too supportive of King Charles. In 1648, he was ejected from the professorship of astronomy and obliged to leave Merton College. After arranging that Seth Ward (1617–1688/1689) be appointed professor of astronomy in his place, he retired with his books and papers to London, where he married.

Greaves had published very little up to this point, but beginning in the years of Oxford turmoil and through the few years in London remaining to him, he published a number of bilingual editions of astronomical and geographical texts, in Latin and Arabic, and Latin and Persian. Among these were several texts derived from tables of Ulugh Beg (1394–1449), and extracts from Abu'l-Fida' (1273–1331) and Nasir al-Din al-Tusi (1201–1274). He also published the first English grammar of Persian, as well as the two English books cited earlier, and he was preparing more texts for publication at the time of his sudden death in London, on 8 October 1652. Some were subsequently seen through the press, along with such miscellaneous pieces as his observations on "The Manner of Hatching Chicken at Cairo," and "An Account of Some Experiments for Trying the Force of Great Guns," which dates from his last years in London. The Bodleian Library at Oxford owes a large part of its early collection of Arabic and Persian texts to Greaves.

Greaves's astronomical research bears a strong resemblance to the modern field of historical astronomy, which is historical research—frequently, as it happens, in oriental sources—on early astronomical observations. In contrast to the modern field, however, which has the explicit purpose of recovering data in order to establish a long observational baseline, Greaves's textual researches have no explicit purpose, except in the field of chronology, though he may have expected the knowledge contained in the old texts to be of contemporary value. Greaves's career is not easily categorized. One modern historian attempts the description "scientific-antiquarian," which serves to indicate similarities with some contemporaries, but does not really summarize his life's work. He more nearly resembles a textual scholar than an astronomer. As an astronomer, however, he was an observer and measurer, not a theoretician.

BIBLIOGRAPHY

The fullest bibliography of Greaves's work appears at the end of the life of Greaves given by John Ward, cited below. Ward's bibliography includes eighteen works published before and after his death, and a number of unpublished books, textual editions, and collections of papers.

WORKS BY GREAVES

Miscellaneous Works of Mr. John Greaves, Professor of Astronomy in the University of Oxford. Edited by Thomas Birch. 2 vols. London: J. Brindley and C. Corbett, 1737. Contains the principal works in English, including the two cited above, as well as some correspondence and short Latin pieces.

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Adam Jared Apt