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(*b*. London, England, 17 November 1597; *d*. London, 16 February l636)

navigation, mathematics.

Gellibrand was the son of a graduate of All Souls College, Oxford. He became a commoner of Trinity College, Oxford, in 1615, a few weeks after his father's death. After graduating in arts (B.A., 1619, M.A., 1623) he took holy orders and before 1623 he held a curacy at Chiddingstone, Kent. Gellibrand was introduced to mathematics by one of Sir Henry Savile's lectures, and he had al least enough geometry to set up a sundial on the east side of his college quadrangle. When the professorship of astronomy at Gresham College, London, was vacated following the death of Edmund Gunter, Gellibrand was elected to the chair on 21 January 1627. He completed the second volume of his sponsor Henry Briggs's *Trigonometria Britannica* (left unfinished at his death in 1630) and saw it through the press in 1633.

By this time Gellibrand's Puritanism had brought him into conflict with William Laud, then bishop of London. Gellibrand and his servant were cited by Laud before the Court of High Commission in 1631 for the publication of an almanac in which the saints and martyrs from John Foxe's *Book of Martyrs* replaced those permitted by the Church of England. They were acquitted on the grounds that this was not the first almanac of its kind, and the case was later cited against Laud at his own trial in 1643.

Gellibrand's most widely appreciated scientific discovery, which he should share with John Marr, was that of the secular change in the magnetic variation (declination). It was announced, without much comment, in *A Discourse Mathematical) on the Variation of the Magneticall Needle, Together With Its Admirable Diminution Lately Discovered* (1635). His predecessor, Gunter, had noticed that the variation at Limehouse in 1622 differed from the value found by William Borough in 1580, but he ascribed the difference to an error on Borough's part. In 1633 some rough observations of his own and John Marr's convinced Gellibrand that the value was now even less, but not until 1634 was he sufficiently confident to make a categorical assertion of its secular change. As his main evidence he referred to an appendix to Edward Wright's *Certaine Errors in Navigation…* (1599, 1610). This contains a compendium of recorded values of variation at various places made by a number of physicists and navigators the world over. (Henry Bond, editor of *Tapp's Seaman's Kalendar*, spent many years elaborating upon Gellibrand's findings and argued that despite its change, variation could even now be used by sailors to determine terrestrial longitudes. This would have been easier, of course, granted constant variation.)

Gellibrand's position at Gresham College drew him into matters of mathematical navigation, and an example of his attempts at solving the problem of longitude is a three-page appendix to *The Strange and Dangerous Voyage of Captain Thomas James (1633)*. James, a gentleman mariner who voyaged in 1631 to seek the Northwest Passage, had by prior arrangement observed at Charlton Island, James Bay, a lunar eclipse also observed by Gellibrand at Gresham. James's position in longitude was thus calculated (79° 30' west of Gresham, being 15' too low).

The essentially practical quality of Gellibrand's work, which is of very slight mathematical interest, may also be judged from four works: his "Treatise of Building of Ships," a manuscript mentioned by Anthony a Wood as belonging to Edward, Lord Conway; his textbook *An Institution Trigonometrical*; a longer Latin work translated by John Newton, *An Institution Trigonometrical… With the Application … to Questions of Astronomy and Navigation* (1652); and *An Epitome of Navigation … (1674)*. This last and posthumous book (written after 1631 and before 1634) contains a number of logarithmic tables, including trigonometrical ones, and has an appendix on the use of the cross-staff, quadrant, and nocturnal in navigation. That it was found valuable is suggested by the appearance of later editions, in 1698 (by Euclid Speidell), 1706 and subsequently (by J. Atkinson), and 1759 (by William Mountaine under the title *A Short and Methodical Way to Become a Complete, Navigator*).

Gellibrand's work was mainly derivative, leading influences on it having been Wright's *Certaine Errors* and Richard Norwood's *Trigonometriica* (1631). It can be said that he was a reasonably good calculator and a competent writer of textbooks which helped to raise English standards of navigation to new heights.

BIBLIOGRAPHY

I. Original Works, Besides works mentioned in the text, Gellibrand wrote "Astronomia lunaris …," composed between 20 December 1634 and 22 January 1635. This belonged to Sir Hans Sloane but is not indexed in the catalog of the Sloane Collection in the British Museum. He also added a preface to and published *Sciographia, or the Art of Shadows* (London,

1635), written by J(ohn) W(ells), a Roman Catholic of Hampshire. A Latin oration, "In laudem Gassendi astronomiae," delivered in Christ Church Hall, Oxford, is now Brit. Mus. Add. MS 6193, f. 96.

II. Secondary Literature. The two main sources for Gellibrand's life are Anthony á Wood. *Athenae Oxonienses*, rev. and enl. ed. (Oxford, 1721); and John Ward, *The Lives of the Professors of Gresham College* (London, 1740), pp. 81–85, 336. Gellibrand's work on navigation has received little attention from historians, but for some discussion of navigation in his time see D. W. Waters, *The Art of Navigation in England in Elizabethan and Early Stuart Times (London, 1958), passim;* and E.G.R. Taylor, *The Mathematical Practitioners of Tudor and Stuart England* (Cambridge, 1954), pp. 138, 164, 165, 175.

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