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Giulio Cesare Luchini (fl. 1580) : an unknown italian astronomer

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GIULIO CESARE LUCHINI (*fl.* 1580). AN UNKNOWN ITALIAN ASTRONOMER

Giulio Cesare Luchini Bolognese, never mentioned in the history of astronomy nor in the history of the university of Bologna, is the author of a mathematical and astronomical "summa" entitled "Moti celesti". A part of this work, namely the treatises V and VI, as well as a set of the astronomical tables, is still preserved in the Biblioteca Medicea Laurenziana, Florence. Two Luchini's authograph codices, the ms. Ashb. 344 and ms. Ashb. 345, contain the Reinhold's "Tabulae Prutenicae" adapted by Luchini for the Bologna meridian, and Luchini's "Canones tabularum" accompanied by descriptions of six astronomical instruments: "Trattato quinto. Della composizione e dell'uso delle tavole dei moti celesti", "Trattato sesto. Della fabbrica e dell'uso dei sei strumenti astronomici – Quadrato, Armille, Triquetro, Raggio, Armilla equinottiale, Meteoroscopio".

Luchini's works preserved in Florence seem to be a unique source of information on life and work of their author that remains now at the disposal of historians. Both codices were written during the last two decennia of the sixteenth century. Generally, in the astronomical computations, Luchini referred himself to the years 1580–1582 and once to 1593.[1] The "trattati" were written by an experienced astronomer. By the end of the sixteenth century he was an old person: he was worried then about his health and, consequently, about his ability to write another treatise, this time concerning the construction of sundials.[2] Even if he lived till the seventeenth century, the florentine manuscripts are probably his last work.

The "Moti celesti" do not seem to have been studied over the next centuries. The manuscripts are in perfect condition, and the marginal notes were written down exclusively by Luchini. There is not a trace of the seventeenth-century owners of the manuscripts.[3] In the eighteenth century they made a part of Paolino Gianfilippi's of Verona collection, and in 1842 or 1843 they were sold by Gianfilippi's heirs to Gulielmo Libri.[4] From Libri they were bought by Lord Ashburnham. Gianfilippi,

while arranging the manuscripts in his library gave them shelf marks and put some notes on their title pages. One of the notes concerns lack of the name of Luchini on the Orlandi's register of the famous "scrittori" originated from Bologna. The others complete the title pages with information on the contents of the manuscripts. In Gianfilippi's collection the manuscripts had shelf numbers 62 and 63. Furthermore Gianfilippi marked the ms. 63, the present ms. Ashb. 345, with the letter "A", and the ms. 62, the present ms. Ashb. 344, with "B". According to Gianfilippi's annotation on the title page of "A", the manuscript contains: "Giulio Cesare Luchini Bolognese. Trattato quinto della composizione e dell'uso delle Tavole de' moti celesti. Dalla carta 354 in poi v'e il Trattato sesto della Fabbrica e dell'uso dei sei strumenti Astronomici. Codice ms. del secolo XVII [*sic*]. Questo Autore non si trova nei Scrittori Bolognesi dell'Orlandi, forse perche fu un opera inedita".[5] The second manuscript, the present Ashb. 344, marked with the letter "B", contains the "Tavole astronomiche di Giulio Cesare Luchini". As Luchini himself put on the manuscripts his name and the titles of the works, the notes by Gianfilippi only repeated Luchini's statement on the authorship of the "trattati" and tables. Notes by Gianfilippi were transcribed in the inventaries and catalogues. In the Catalogue by E. Rostagno and T. Lodi the manuscripts are referred to as ms. 264(344.-277) and ms. 265(345.-277).[6] On the shelves, however, they are placed according their numbers 344 and 345.

The order given to manuscripts by Gianfilippi by means of letters "A" and "B" was justified by the fact that the original foliation by Luchini, continuous in both manuscripts, begins with f. 171 in the ms. Ashb. 345, and continues with f. 353 in the ms. Ashb. 344. In this way, the foliation not only establishes the order of the codices but also indicates the dimension of the work and the fact that in the period of writing treatises V and VI, treatises I–IV, covering folios 1–170, were ready. The cross-references put by Luchini on the margins indicate that the volumes were meant to be used simultaneously.

The contents of the codices, considered together with the marginal cross-references that accompany it, lead to the hypothetical reconstruction of the Luchini's "Moti celesti". The first treatise dealt with construction of the tables of trigonometric functions and of the "handy tables". The treatises second and third were not referred to on the margins of the extant manuscripts, but according to patterns then used in exposition of astronomy they could concern the eight sphere, and the "theoricae" of the planets, the Sun and the Moon. The treatise four explained the construction and use of the tables contained in the volume Ashb. 344. The explanation was continued in the treatise five, while the treatise six gave descriptions of the astronomical instruments.

The following main sets of astronomical tables still persist in the ms. Ashb. 344: [Tabulae primi mobilis]: Tavola dell'obliquità; Tavola delle declinazioni; Tavola delle ascensioni in sfera retta; [and, NB on f. 419]: Tavola delle radici dei moti uguali calcolata al meridiano di Monteregio; Tavole pertinenti ai moti delle stelle fisse e de' pianeti [for the meridian of Koenigsberg]; Tavole dei moti uguali e dell'equationi del primo cielo e del moto uguale del cielo stellato; Tavole del triangolo ortogonio per trovare le diversita dell'aspetto della Luna al Sole; Tavole

dei moti uguali di 5 pianeti; Tavole distese de' moti uguali computate secondo la riforma dell'anno fatta sotto il pontificato di Gregorio XIII.

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Treatises I–IV, not found till now, occupied the first 170 folios, while the preserved treatises V and VI, together with the astronomical tables cover folios 171–518, what is equal to about two third of the whole work.

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Giulio Cesare Luchini's "Moti celesti" is a curious mixture of two traditions in astronomy. On one hand the fifteenth-century tradition of Peurbach, Bianchini and Regiomontanus, astronomers that discovered original Ptolemean achievement, were fascinated by its mathematical finesse, and continued to observe in the style of Ptolemean astronomical observations, on the other the post-Copernican and post-Reinhold astronomy with its strong interest in the astronomical tables and lack of discussion of cosmological problems as posed by the "De revolutionibus". Luchini tried to construct his mathematical astronomy on the base of Copernicus' astronomical tables developed by Reinhold and recalculated by him on the meridian of Koenigsberg (published in 1551). Although I did not find Copernicus' name in Luchini's treatises, he certainly was an attentive reader of the "De revolutionibus": he uses some elements of Copernicus' geometrical constructions, such as the "Tusi couple", while reconsidering the tabulation of the movement of the eight sphere and of the Moon.[7]

Giulio Cesare Luchini was contemporary of Egnazio Danti, professor at the university of Bologna from 1576 on. About the half of the sixteenth century Giovanni Battista Ricioli, Gian Domenico Cassini and Giuseppe Biancani worked in Bologna.[8] As for Luchini called "Bolognese", he certainly was among the first astronomers that taught to adapt the astronomical tables to the computations based on the Gregorian calendar.

Descriptions of six astronomical instruments by Luchini are to be placed, together with somewhat later descriptions by Tycho Brahe (published in 1602), among the last in the western tradition descriptions of the "preoptical" instruments. Some ten years later Galileo will use the first lunettes.

The "Moti celesti del Luchini" do not seem to be the unique Luchini's astronomical work. While discussing the movement of the eighth sphere he referred himself to another work by him, entitled "Libro delle revolutioni celesti" [*sic*].[9] Furthermore, as it was mentioned above, he planned to write a book on gnomonic.

Annotations

* I am grateful to the Institute of History of Science of the Polish Academy of Sciences, Warsaw, for bearing the costs of my trip to Italy in September 1993. The stay in Florence (September 18th-25th) enabled me to review and correct my notes on Luchini taken some years ago, at the occasion of earlier stages, above all in 1985–1986, as a fellow of The Harvard University Center for Italian Renaissance Studies, Villa I Tatti, Florence. This time, apart from the research on Luchini, I could complete materials on Giovanni Bianchini's life, and prepare a paper concerning the evolution of Copernicus' script for publication. I express my gratitude to the Staff of the biblioteca Medicea Laurenziana for the kind and competent assistance.

[1] Ashb. 345, f. 175r: ... principiando dal concilio Niceno, che fu l'anno del Signore 322 sino all'anno della correttione 1582... Text concerning the table: "Tavola delle conversioni de gli anni, et mesi Giuliani et Gregoriani in sessagesima di giorni". F. 392v: Esempio. L'anno 1580, nel solstitio estivo, che fu alli 11 di giugno trovai nell'hora meridiana mentre il raggio del Sole passava per i buchi della pinole, che la riga segna con la linea della fiducia il lato dell'ombra retta in parti 456, con il qual numero entro nella tavola gnomonica...; f. 273r: L'esempio fara questo piu chiaro. Pigliamo il novilunio dell'anno 1593 corrente adi 30 di maggio...

[2] Ashb. 345, f. 353v: Solo mi resta pregar Dio che mi concedi tanto di sanità, et quiete, ch'io possa dar compimento alla fabrica, et pratica de gli horologii solari, il fundamento theoricale della quale nel quarto trattato della presente opera gia habbiamo dimostrato. Il fine.

[3] The old shelf marks V: 245 and numbers 533 and 533bis. The hypothesis that Luchini's work belonged to Giulio Saibanti (or Saibante) before it passed to Gianfilippi seems to be without foundation. I examined the *Indice delli libri che se ritrovano nella raccolta del nobile signor Giulio Saibanti, Patrizio Veronese*. In Verona MDCCXXXIV (manuscript copy by E. Rostagno preserved in the biblioteca Medicea Laurenziana). On p. 27 of Rostano's copy of the "indice" one finds "Tavole astronomiche delle direzioni ed ascendenti". It is the unique reference to an astronomical work in Saibanti's collection. The information given in it do not correspond to Luchini's volumes.

[4] L. V. Delisle: *Notice sur des manuscrits du fonds Libri conservés à la Laurentienne à Florence*. Paris 1885, (Notices et extraits des manuscrits de la Bibliotheque Nationale, etc. tome 32, première partie).

[5] Pellegrino Antonio Orlandi da Bologna: *Notizie degli scrittori bolognesi e dell'opere loro stampate e manoscritte*. Bologna 1714.

[6] E. Rostagno, T. Lodi: *Codici Ashburnhamiani della Biblioteca Medicea Laurenziana di Firenze*. Roma 1948 pp. 440, 441, (Indici e Cataloghi, VIII, vol. 1, fasc. 6).

[7] Ashb. 345, f. 176r: Cap. 5. Come si calcolano le equationi tanto della declinatione quanto degli equinoctii per la compositione delle tavole di esse equationi.

[8] G. Tabarroni: *Copernico e gli Aristotelici Bolognesi*, in: *L'Universita a Bologna. Personaggi, momenti, luoghi. Dalle origini al XVI secolo*. Bologna 1985 pp. 185–190.

[9] Ashb. 345, f. 176r: Quali siano equationi della declinatione e degli equinoctii l'habbiamo detto nel septimo capitolo del primo libro delle revolutioni delle sfere celesti.