Logica demonstrativa [...] — Turin, Dominicus Paulinus, 1699.

First edition, third issue (see below)

Liber rarissimus. See Census below. No copy of any issue of the first edition (nor of the two 18th century editions) has appeared at auction in the past century.

Full title is:

Logica demonstrativa | *Quam* | *Vnà cum Thesibus ex tota Philosophia* | *Decerptis* | *Beato Aloysio* | *Gonzagae* | *Societatis Jesu* | *Carolus Ioseph Sac-* | *carellvs* | *D.D.D.*
Avgvstae Tavrinorvm | *Typis Dominici Paulini 1699* | *Svperiorvm permissv.*

12mo. (140 x 79 mm). A^6 A-L^{12} A^6: 12, 264, 12 pp. Contemporary French calf, spine gilt.
A^6: 6 leaves (A$_1$: half-title, A$_2$: title, A$_{3-4}$: Dedication to Gonzaga, A$_{5-6}$: foreword to the reader „*Lectori*". A$_1$-A$_{5r}$ not numbered, A$_{5v}$ - A$_{6v}$ numbered 10 - 12),
A-L^{12}: 264 pp. (*Logica demonstrativa*),
A^6: 12 pp. (*Theses ex universa Philosophia*). At the end: *Disputabuntur publice in CollegioTaurinensi Societatis Iesu Anno [...] Mense [...] Die [...] Hora [...]*).

¶ In 1889 only Eugenio Beltrami rediscovered Girolamo Saccheri's long time forgotten, but now famous *Euclides ab omni naevo vindicatus*, published in 1733, in which Saccheri laid down the foundations of non-Euclidean geometry.
A few years later the philosopher and mathematician Giovanni Vailati (1863-1909) „rediscovered" the *Logica demonstrativa* and published a pioneering paper on that work in 1903.[1]
In 2009 Paolo Pagli published his article „*Two Unnoticed editions of Girolamo Saccheri's Logica Demonstrativa*"[2], in which he describes two till then unknown editions (more precisely: issues) of that work: the issue of 1699 here present, and an undated issue by the same printer/publisher.

Giovanni Girolamo Saccheri (1667-1733)[3] was a mathematician and philosopher, lectured in Turin and Pavia, and is famous as precursor if not father of non-Euclidean geometry.
100 years of research have documented the outstanding place of Saccheri's *Logica demonstrativa* (LD) in the history of logic [4], and its importance for the development of Saccheri's foundation of non-Euclidean geometry - in the *Euclides vindicatus* he refers several times to the *Logica demonstrativa*, for example when he is discussing the parallel axiom.

Rather than to repeat what is well documented, I would like to make a short bibliographical note to the *LD*.
After Pagli's discovery we know that there have been three „editions" of the *Logica Demonstrativa* in the 17th century: 1697, 1699, and undated.
The online *Catalogo del servizio bibliotecario nazionale* makes a worthwhile addition to the 1697 issue in saying that the printer of this issue is Domenico Paulino (Paulinus), though its title-page says: *Typis Ioannis Baptistae Zappatae.*
A comparison of the setting of the *LD* shows, that Paulino is not only the printer of the 1697 issue, but also that he had used the printed sheets of the *LD* of 1697 for the subsequent issues. A new setting was done only of the preliminaries of the undated and of the 1699 issue, and of the *Theses philosophicae* at the end of the 1699 issue.[5]
In this issue the paper both of preliminaries and of the *Theses* is different from the paper of the *LD*. This is the case with all copies of the 1699 issue listed by Pagli (the census is shown below). Further research - thanks to librarians and friends - has shown, that also the preliminaries of the undated issue are printed on paper different to the rest of the book.
This matches to the fact, that no new setting of the *LD* was done, but that the printed sheets of the 1697 were used for the two subsequent issues, and this is the reason not to speak of three editions but of three issues.
All three issues of the *LD* as well as the *Theses* were used as student's defence books. The names of the candidates are printed on the title-page of the 1697 and the undated issue: ... *Defendendam proponit Ioannes Franciscus Graveriarum Comes* [Johannes Franciscus Caselette, Count of Gravere] and *Marcus Antonius Grondana. Publicè Defendendam proponit.* Though the 1699 issue bears no such entrance on the title-page, it is clear that it had the same function, since at the end of the *Theses* there is space to fill in the date of the public discussion into the following printed text: *Disputabuntur publicè in Collegio Taurinensi Societatis Iesu Anno [...] Mense [...] Die [...] Hora [...].* This showes that the book was still used in Turin while Saccheri already lectured in Pavia.
As Claro Garibaldi has pointed out, the chance of a scientific book to be published was much higher when it was used as a public defense book than without this feature, because the examinee had to pay the printing of the book - or at least parts of it.[6] Again this matches to our convincement, that all quires of the *LD* were printed in 1697 for plural use - *per avvista* - as

defence book and not to be used in 1697 only. Why print 10 copies only for one candidate, when certainly more candidates are still to come?

Since we find the same quality of paper throughout the book in the 1697 issue, but different papers in the two subsequent issues, and since we find the same text and setting of the *Theses* in the 1697 and the undated issue, but a new text of the *Theses* in the 1699 issue, I suggest a different chronology of issues than Pagli (Undated, 1697, 1699):

	1st issue	2nd issue	3rd issue
author	anonymous	anonymous	„Carolus Joseph Saccarellus"
date	1697	(1698)	1699
place	Turin	Turin	Turin
publisher	Zappata	Paulino	Paulino
printer	Paulino	Paulino	Paulino
dedicatee	Victor Amadeus II.	Idem	Aloysius Gonzaga
examinee	J. F. Caselette	M. A. Grondana	n. n.
format	12mo	12mo	12mo
signatures	✝^{6} A-L^{12} M^{12}	¶^{6} A-L^{12} M^{12}	A^6 A-L^{12} A^6
pagination:			
preliminaries	12 (1-4 nn)	12 (1-8 nn)	12 (1-9 nn)
Log. demonstr.	1-264	1-264	1-264
Theses philos.	265-287	265-287	12
P(aper)	P1: throughout	P2: prelims P1: LD, Theses	P3: Prelims, Theses P1: LD

Census following Pagli [7]:

1697: 3 copies
Bibl. del Seminario vescovile - Asti
Bibl. del Seminario vescovile - Biella
Bibl. Naz. Braidense - Milano

(1698): 7 copies
Bibl. del Seminario vescovile - Asti
Convento di S. Giuseppe - Asti
Bibl. del Sem. arcisvescovile - Turin
Bibl. provinciale dei Fratri Minori Capuccini - Turin
Bibl. Naz. Centrale ... - Roma (2 copies)
Bibl. Nacional de Espana - Madrid

1699: 3 copies & 1 incomplete copy
Bibl. del Sem. arcisvescovile - Turin
Bibl. Universitaria di Cagliari
Médiathèque J.-J. Rousseau - Chambéry
Bibl. del Seminario vescovile - Asti (incomplete: lacking first and last quires)

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[1] Vailati, G. *Di un'opera dimenticata del P. Girolamo Saccheri ('Logica demonstrativa' 1697)*, Rivista Filosofica, 1909, 6, n. 4. Republished in Vailati, *Scritta*, Bologna 1987, vol. 2, pp. 212-219.

[2] P. Pagli, *Two Unnoticed Editions ...*, in: *History and Philosophy of Logic*, 30 (Nov. 2009), pp. 331-340. Please note, that Pagli has the correct pagination of the 1699 issue on page 336 only.

[3] 1667 - 1733
   1667, 5th Sept., born near San Remo
   1685, entered the Jesuit order
   1690, terminated his novitiate in Genova, was sent to the *Collegio de Brera* in Milan to teach grammar and to study philosophy and theology; amongst his most influential teachers were the mathematicians Tommaso and Giovanni Ceva
   1694, was commanded to teach philosophy and polemic theology in the *Collegio dei Gesuiti* of Turin
   1697, *Logica demonstrativa* was published in Turin; S. was sent to Pavia to lecture philosophy and theology, and since 1699 mathematics

1733, published *Euclides vindicatus*, died October 25th in Milan.

[4] The following is a short summarize kindly sent to me by Prof. Angelleli (Univ. of Texas, author of several papers on Saccheri): „Three jewels, at least, have been contributed to logical theory by Saccheri in the *Logica Demonstrativa*. 1) His statement of a postulate stipulating the existence of various types of predicates (normally, logicians only debate whether to postulate or not the existence of individuals, not of predicates); the existence of such predicates was 'taken for granted' in the preceding Aristotelian-scholastic logic. 2) Saccheri's proposal of a 'nobler' method for achieving, without the postulate, the same results as obtained with the postulate. 3) A brilliant use of the so-called *consequentia mirabilis* in at least some of the applications of the nobler method. The first and second of these contributions have been rather neglected, or overshadowed by the 'glamour' of the third point: the admirable consequence. Saccheri was deeply impressed by this type of reasoning and became its 'champion' in the history of logical theory. The three contributions together, and even separately, secure an outstanding place for Saccheri in the history of logic."

[5] Technically possible Paulino may have used a „Stehsatz" or „standing type" for the undated and the 1699 issues, but this is impossible in practice: he should have had spared the use of about 310.000 printing types - which were needed for the 264 pages of *LD* - in the course of one or two years. This would have been far beyond the equipment of a printing shop as small as Paulino's producing only five pamphlets of 8 to 36 pages between 1684 and 1705; he also printed for different bookdealers and the Camera Apostolica.

[6] C. Garibaldi, *Il Contributo dei Gesuiti alla didattica e alla critica dei principi della matematica da Clavio a Saccheri*, p. 198, and note 15, in: *Atti del convegno Il pensiero matematico nella ricerca storica italiana*, Anncona 1992

[7] G. Saccheri, *Logica demonstrativa*. A cura di P. Pagli e C. Mangione. Milano 2011. 732f.