

The *Bollettino della* "Mathesis" (1896-1920): local, national and international aspects



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The *Bollettino della Mathesis* was the official venue of the Mathesis Association of secondary-school mathematics teachers, which was founded in 1895 by

Rodolfo Bettazzi (1861-1941, Liceo, Turin),
Aurelio Lugli (1853-1896, Technical Institute, Rome)
Francesco Giudice (1855-1936, Technical Institute, Genoa)

Mathesis' goal was "*to raise the standards for Italian schools and improve teachers from a scientific and professional point of view*" (Statute, Art. I, BM 1896-97 n.1, p. 61)

Period of reference: 1895-1920

Institutional context was characterised by the Casati Law (1859), the first law to provide an overall educational system for schools in the United Italy, and by various attempts at improving that law which were either unsuccessful, or carried out only in part. One of the main problems to be faced was the **training of secondary teachers**.

I will try to illustrate the two main phases that characterised the *Bollettino* life and to investigate the role played by the international contacts in its evolution from the first phase (a newsletter) to the second (a true journal for teachers)

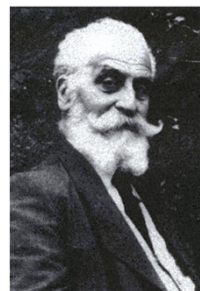
First phase from 1896 to 1904,
period of crisis,
Second phase from 1909 to 1920.

The First Phase: 1896-1904

Period of growth of Mathesis Association.
Bettazzi, who was the president from 1896 to 1900 and then from 1902 to 1904, played the guiding role.

His most pressing objectives were:

- **to promote the exchange of ideas among the mathematics teachers of secondary schools**
- **to create a link between their community and the Ministry of Public Education** in order to influence legislative measures concerning secondary schools.



Rodolfo Bettazzi

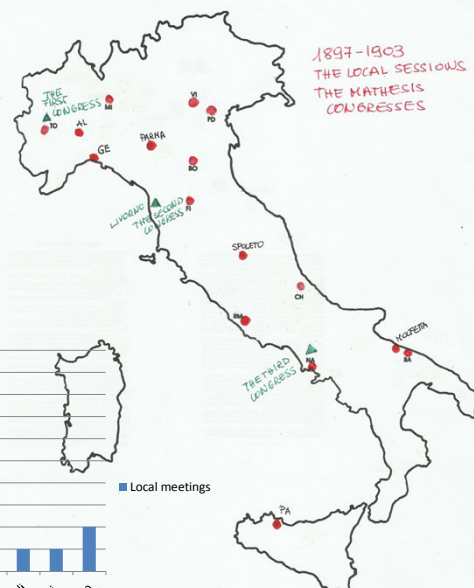
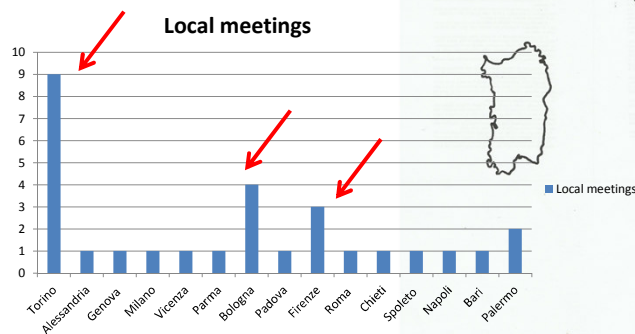
In this phase the *Bollettino* was little more than a **newsletter**.

- From the very beginning Bettazzi made sure that information about the Mathesis Association circulated not only in Italy but also abroad:
 - *L'Intermédiaire des mathématiciens* (3, 1896, p. 221)
 - *Mathematical Gazette* (1, 1897, p. 105, p. 144).

Bettazzi worked fervently together with Executive Committee:

- he proposed the study of **14 questions regarding** the mathematics programs for secondary schools, teacher training, and particular subjects such as the problem of the fusion of plane and solid geometry;
- he presented various *memoranda to the Minister of Education*: BM 1896-97, n.2, n.4; BM 1897-98, n.5, n.6; BM 1898-99, n.3; PM 1899, n.1,2,3.
- he organised **3 national congresses** for secondary-school teachers (**Torino** 1898, 56 participants, **Livorno** 1901, 82, **Napoli** 1903, 47: http://www.mathesistorino.it/?page_id=577), the *Bollettino* published only the minutes of the sessions, while the proceedings were published elsewhere).

30 local meetings
prepared the
congresses,
19 in the North of Italy



- He requested and obtained the exchange with various journals, both Italian and foreign

In 1896-97 (BM a. I 1896-97, n.3, p. 1) Italian and Foreign journals	From 1897 to 1904 Foreign journals
<ul style="list-style-type: none"> - <i>Rivista di Matematica di Peano</i> - <i>Il Pitagora</i> (Avellino) - <i>La Vacanza del Giovedì</i> - <i>La Scuola Nazionale</i> (Torino) - <i>La Scuola Educatrice</i> (Roma) - <i>La Scuola Classica</i> (Ancona) - <i>La Rassegna Scolastica</i> (Firenze) - - <i>Revue de Mathématiques spéciales</i> - <i>Bulletin de Mathématiques élémentaires</i> - <i>Journal de Mathématiques élémentaires</i> - <i>L'Intermédiaire des Mathématiciens</i> - <i>Nouvelles Annales de Mathématiques</i> - <i>Mathesis</i> - <i>L'Enseignement secondaire</i> 	<ul style="list-style-type: none"> - <i>American Mathematical Monthly</i>, - <i>Proceedings Edinburg Math. Society</i>, - <i>The Mathematical Gazette</i>, - <i>Jornal de Sciencias Mathematicas e Astronomicas</i> (Coimbra) (BM 1897-98, n. 2, p. 21); - <i>Wiadomości Matematyczne</i> (Warsaw) (BM 1897-98, n. 4, p. 65), - <i>L'Enseignement mathématique</i> (BM 1898-99, n. 5, p. 2), - <i>Mathematisch-naturwissenschaftliche Mitteilung im Auftrag des mathematisch-naturwissenschaftlichen Vereins in Württemberg</i> (BM 1899-1900, n. 1, p. 2) - <i>El Progreso matemático</i> (BM 1899-1900, n. 2, p. 5)

From 1896-97

- *The Mathematical Gazette* (London)
- *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht* (Leipzig)
- *The American Mathematical Monthly* (in 1897-98 only)
- *Nouvelles Annales de Mathématiques* (in 1897-99 only)
- *Bulletin de sciences mathématiques et physiques élémentaires de Niewenglowski* (in 1897-99 only)
- *Journal de Mathématiques élémentaire*

- Beginning with the third issue of 1896-97 of the journal, more attention was paid to other countries, and the *Bollettino* began to host:
 - **mathematics programs of other nations:** Switzerland BM 1896-97, n. 3, p. 15-17, France, n.3 p. 19-23, German States. BM 1897-98, n. 3, p. 52-56 ;
 - **information about foreign societies and their journals, congresses, and debates:** English Mathematical Association (BM 1897-98, n. 1, p. 20); the German Association *Der Deutsche Verein zur Förderung des Unterrichts in der Math. und Natur.* (BM n. 2. p. 37-39); the **International Congress of Mathematicians, Zurich 1897** (BM 1897-98, n. 4, p. 103); BM 1900-01, n. 4, p. 42-48 (fusion in France) etc.; BM/PM 14, 1899, p. 166-167 (report on the 7th Congress of the *Deutsche Verein zur Förderung des Unterrichts in der Math. und Natur.*); BM 1903-04, n. 3 p. 44 (foundation of the Association of teachers of Mathematics in the Middle States and Maryland, in the United States);
 - **information about competitions for mathematics prizes both Italian and foreign:** BM 1897-98, n. 2, p. 39-40 (*Nouvelles Annales de mathématiques*); n. 3, p. 63-64 (prizes of the Academies of Belgium and Denmark); etc.

- **lists of articles in foreign scientific and didactic journals:**
in 1897-98 the **column** *Publicazioni matematiche tedesche* began: it listed textbooks, articles and books concerning didactics, history and more advanced topics. Publications regarding applied mathematics were explicitly excluded (BM 1897-98 n. 2, p. 30-32, BM 1897-98 n. 3, p. 46-48, BM 1897-98, n. 5, p. 109-112);
- **later the EB decided to add also abstracts of articles in foreign scientific or didactic journals**, in addition to those in Italian journals:
BM 1897-98 n. 2, p. 35-36; n. 3, p. 57-59; BM 1897-98, n. 5, p. 115, BM 1897-98, n. 4, p. 99-103, BM 1897-98, n. 5, p. 115-120, BM 1897-98, n. 6, p. 145-150; BM 1898-99, n. 2 p. 10-14; BM/PM 14, 1899, p. 168-169, 172; BM/PM 14, 1899, p. 269-276 (with ample mathematical comments in the footnotes by Virginio Retali, especially regarding the *Revue de Mathématiques spéciales*).

Information about foreign journals and institutions were due above all to the EB: **Bettazzi, Paolo Gazzaniga** (*Liceo Padova*) and **Virginio Retali** (*Liceo Milano*).

Bettazzi mastered the German language and knew German mathematical literature; **Gazzaniga** had spent a period of post-graduate work in Germany; and **Retali** was a member of the Circolo Matematico di Palermo, and collaborated to journals *Mathesis* and *El progreso matematico*.

The Mathesis Association soon acquired reputation outside Italy:

- the journal *Wiadomości Matematyczne* just founded in Warsaw by Samuel Dickstein requested an exchange with the *Bollettino* (BM 1897-98, n. 4, p. 65);
- Laisant and Fehr, announcing the publication of the *L'Enseignement Mathématique*, requested the collaboration of the Mathesis (BM 1898-99, n. 2, p. 15) and the exchange with the *Bollettino* began (BM 1898-99, n. 5, p. 2). The first issue of *L'EM* hosted:
 - a **presentation of Mathesis'** activities by Francesco Giudice (EM, 1, 1899, p. 54-55);
 - a **review by Léon Ripert** of the *Elementi di geometria* of G. Lazzeri and A. Bassani, in which he mentions the Mathesis' discussions on fusionism (EM 1, 1899, p. 62-65);
 - the **paper by Giacomo Candido**, *Sur la fusion en Italie* (EM 1, 1: 204-215)
 - and later inserted references to Mathesis' activities:
EM 2, 1900, p. 14-30; EM 2, 1900, p. 74-75, 6, 1904, p. 71-74); EM 3, 1901, p. 261-278; EM 7, 1905, p. 400-406; EM 11, 1909, p. 475-476.

- In 1899 the Spanish journal *El Progreso matemático* published a presentation of the Mathesis Association in which the *Bollettino* and some of the topics discussed in it were cited.
- In that same year Laisant published the article on fusionism "Une exhumation géométrique" in the journal *L'Enseignement Chretien, Revue d'enseignement Secondaire* (1899, a. III, n. 2) and cited the activities of the Mathesis.

LA SOCIEDAD ITALIANA MATHESIS. Bajo la iniciativa del profesor de la Universidad de Turin, Sr. Bettazzi, se ha constituido la sociedad de estudios entre los profesores de matemáticas de las escuelas medias, denominada *Mathesis*, cuyo objeto es la mejora y el perfeccionamiento de los profesores, bajo el doble punto de vista científico y didáctico, y cuyo órgano es el *Bollettino della Società «Mathesis»*; y hoy gestiona esta Sociedad, con el ministro de Instrucción pública, la adopción en la enseñanza de los dos perfeccionamientos llevados á feliz término por los Sres. Lazzeri y Bassani en sus *Elementi di Geometria*, á saber, la independencia de la Geometría del cálculo, y la fusión sistemática de la Geometría plana y la del espacio, que seguramente darán muy satisfactorios resultados en la enseñanza, retardando á los alumnos de los Institutos ó Liceos el entrar desde luego en las abstracciones del Algebra, cuya aridez no hay que desconocer en los primeros años de los estudios.

Ciertamente que esta mejora se adapta á anteponer ventajosamente el estudio de la Geometría al del Algebra.



El Progreso matemático, a. I, n.1,
1899, p. 26

Bettazzi's account of the first four years of Mathesis' activities

Emphasis is on

- all of the questions discussed
- the requests made to the Minister of Education and all of the partial meetings promoted by Mathesis' members, most of which were sessions in preparation for the congresses. (BM 1900-01, n. 2, p. 25-26).

A few lines are reserved to the circulation of information about Italian and foreign publications and on the reform movements abroad,



Bettazzi's primary concern was to ensure that mathematics played a greater role in the education process by means of the improvement of programs and specific requests to the Minister of Education.

The first genuine article of a methodological nature published by Bettazzi in the *Bollettino* is: "Le applicazioni della matematica"

(BM 1903-04, n. 3, p. 40-44) : he does not mention Klein, which he did in 1900 (*Atti R. Accademia Lucchese*, trans. in EM 2, 1900, p. 14-30).

Factors of weakness

- The entire organisation of Mathesis was strictly centralised in the hands of the Executive Committee, which was also responsible for editing the *Bollettino*; the proposal of setting up a federal organisation of the Association was rejected.
- the Association had not yet developed a well-defined and broad-based project;
- University professors were excluded from the membership of Mathesis Association (Art. 3);
- above all, the relationship with the *Periodico di Matematica*, (Table 1) the most important journal for teachers of that time in Italy, constituted a factor of weakness:
 - scientific or methodological articles appeared in the *Periodico*,
 - the *Bollettino* carried only information about the Mathesis Association's activities.

"Fra il prof. Rodolfo Bettazzi, nella sua qualità di presidente dell'Associazione Mathesis, e il prof. Giulio Lazzeri, proprietario e direttore del Periodico di Matematica è stato convenuto quanto segue:

1°. Il Periodico sarà d'ora in avanti l'organo dell'Associazione, la quale cessa la pubblicazione del Bollettino staccato.

2°. Il Periodico si pubblicherà in fascicoli bimestrali di almeno 48 pagine ciascuno [...] **Esso conterrà inoltre gli Atti dell'Associazione, con numerazione a parte, i quali occuperanno non più di 60 pagine annuali.**

3°. Negli Atti dell'Associazione saranno pubblicati i verbali delle adunanze generali e parziali, le relazioni sulle risposte pervenute a questioni proposte dall'Associazione, e tutto ciò che si riferisce all'amministrazione ed organizzazione della società. **Le rubriche bibliografiche e gli articoli di indole didattica, che sinora si pubblicavano sul Bollettino, passeranno nella parte generale del Periodico.** [...] (Periodico di Matematica, a. XIV, 1899, fasc. II, p. 11).

Table 1

Bollettino dell'Associazione Mathesis fra gli insegnanti di Matematica delle Scuole Medie						
Presidente	Annata	Fascicoli	Pag.	Città di pubblicazione	Dove viene pubblicato	Comitato di redazione
R. Bettazzi	1896-97	n° 1-2		Roma	BM in Periodico di Matematica	Giovanni Frattini
		n° 3-4	71	Torino	BM Autonomo	
R. Bettazzi	1897-98	n° 1-2-3-4-5-6	160	Torino	BM Autonomo	R. Bettazzi, P. Gazzaniga, V. Retali
R. Bettazzi	1898-99	n° 1-2		Torino	BM Autonomo	E. De Amicis, P. Gazzaniga, V. Retali
		n° 3-4-5	63	Livorno	BM in Periodico di Matematica (dal 1899, a. XIV il PM diventa Organo dell'Associazione Mathesis)	
R. Bettazzi	1899-900	n° 1-2-3-4-5-6	54	Livorno	BM in Periodico di Matematica (Organo dell'Associazione Mathesis)	C. Burati-Forti, E. De Amicis, V. Retali
G. Frattini	1900-01	n° 1-2-3-4	59	Livorno	BM in Periodico di Matematica (Organo dell'Associazione Mathesis)	
G. Frattini	1901-02	n° 1-2-3-4		Livorno	BM in Periodico di Matematica (Organo dell'Associazione Mathesis)	
R. Bettazzi	1902-03	n° 1-2-3-4-5-6	76	Torino	BM in Periodico di Matematica (Organo dell'Associazione Mathesis)	A. de Zolt, G. Frattini, V. Retali
R. Bettazzi	1903-04	n° 1-2-3-4-5-6	80	Torino	Autonomo	A. de Zolt, G. Frattini, V. Retali
E. De Amicis	1904-05	n° 1		Torino	Autonomo	E. De Amicis, G. Vailati
		n° 2-3-4-5-6	87	Milano	Autonomo	De Amicis E., De Zolt A., Vailati G.
E. De Amicis	1905-06	n° 1-2	40	Milano		
	1907	Numero straordinario				

So far I've failed to find the issues of 1901-02 and of 1907.

The Crisis

► Bettazzi was elected again as president on June 1904, but he did not accept due to real “serious and painful family reasons”.

► In the following elections, Antonio de Zolt was elected president twice, and twice refused to be president.

► De Amicis, elected as president on March 1905, took no interest at all in the association.

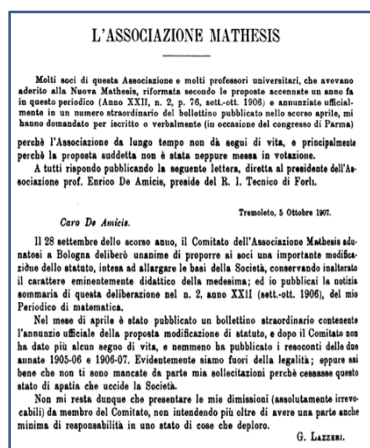
(Giacardi, Roero 1996, Guerraggio 2002)

► The *Bollettino* no longer came out regularly, and its place was in someway taken by the *Periodico di Matematica* (directed by Lazzeri) and *Il Bollettino di Matematica* (directed by Conti) that published the financial reports of Mathesis, letters from members, circulars reporting the phases of the passage from the old to the new Mathesis, and the lists of members of the new society:

Periodico di Matematica : 1904 (3) p. 102-104, 233-240, 287; 1907 (3) p. 96-97, 1908 (3) p. 95-96, 135-140, 186-187, 232-235; 1909 (3) p. 97-104, 183-184; 1910 (3), p. 44-45, 74-79; 1913 (3) p. 143-144.

Il Bollettino di Matematica 1902, p. 191-194; 1903, p. 15-16, 38-41, 75, 95-86, 121, 150, 174, 181; 1904, p. 128, Fuori testo, p. VI, XIII, XXI; 1905, Fuori testo, p. VI; 1906, Fuori testo, p. III-XIII, XV; 1908, p. 29-33, 196-216; 1909, p. 51, 201-205, 264-271.

PM a. XXIII (3) 5, 1908, p. 95-96



The new Society

1 February 1908 - a circular was sent to all the members of the old Mathesis by a **group of mathematics teachers** (Conti, Lazzeri, Bettazzi, etc.), who made the **proposal to create a new society** and expressed hopes for a **collaboration between university professors and secondary-school teachers**.

This Society would be called

Mathesis Società Italiana di Matematica

(BMat, 1908, p. 29-31 e PM 5, 1908, p. 235-237)

The first university professors who declared their intention to join were **Federigo Enriques and Salvatore Pincherle in Bologna, Francesco Severi and Giuseppe Veronese in Padua, Luigi Berzolari in Pavia** (PM 5, 1908, p. 240).

Other mathematicians (Peano, Castelnuovo, Segre, Volterra) **feared conflicts between the New Society and the already-existing scientific societies** such as the *Circolo matematico di Palermo* (Guccia) and the *Italian Society for the Progress of Sciences* (Volterra) (*Atti Firenze*, p. 23).

► The meeting to organise the new Society was held in Rome in 1908 in the Accademia dei Lincei on the occasion of the **Fourth International Congress of Mathematicians (Rome 6-11 April 1908)**, during which the **International Commission on the teaching of Mathematics** (CIEM, later ICMI) was founded, under the presidency of Felix Klein.

► The statute of the new Society was approved during the **First national Congress of the “Mathesis” Società Italiana di Matematica held in Florence from 16 to 23 October 1908**.

The two most important innovations were:

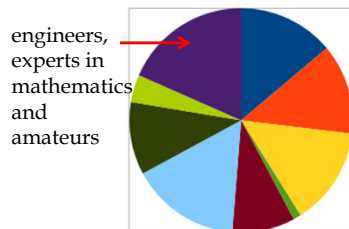
- the admission of university professors, experts and amateurs in mathematics as members
- the institution of regional branches, each of which with its own president (*Atti Firenze*, p. 41)

The second phase 1909-1920: the new *Bolletino* The geometers

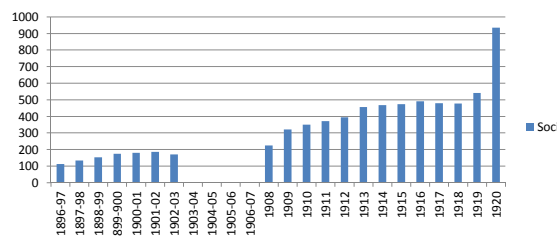
F. Severi, G. Castelnuovo, L. Berzolari and F. Enriques

- a broadening of the kind of readership due to the significant increase in membership which now included, according to the Statute, engineers, experts in mathematics and amateurs ;

Distribution of the members
by School 1911



Mathesis' Members



- a more active participation, a greater autonomy of the regional branches

The minutes of their meetings often give evidence on 'an elevated exchange of ideas' (Castelnuovo BM 1914, p. 156), and show a whole community at work

- a more interaction between the Executive Committee and the regional branches:

- the Committee clearly outlined the program of work ;
- promoted inquiries;
- established prizes for members ;
- commented on the proposals put forward from time to time

- more space given to different points of view on questions of methodology and debates: 11 articles by Peano and Padoa are published, and others by other members of Peano's School (Vacca, Boggio, Catania, Viriglio);

The minutes of the *Conferenze matematiche torinesi* inaugurated by Peano in 1915 are also published (BM 1915, p. 42-44; BM 1916, p. 46-47; BM 1917, 35-41, 73-74; BM 1918, p. 77-81; BM 1920, p. 114-115)

▪ **particular attention to the *Bollettino* on the part of the presidents**

Severi: "... reform of the *Bollettino*, which up to now had mostly an administrative nature. I believe that it should accept didactic and scientific articles as well" (BM 1909, p. 31-32); **"it is necessary ... to gradually raise the level of the *Bollettino*, which constitutes and will constitute an excellent element of cohesion"** (BM 1910, p. 93);

Castelnuovo: "... we will publish in the *Bollettino* ... various articles of **history and of philosophy of science, and papers on applications of mathematics** that may in some way interest our colleagues, and we will try to keep them up-to-date with short notices of the rapid movement of ideas, so difficult to follow for those who live far from the great centres of culture" (BM 1911, p. 2); **"I would like to keep the level of the *Bollettino* high, reducing to a minimum the Byzantine discussions in which secondary teachers too often delight"** (G. Castelnuovo to G. Vacca, Rome, January 27, 1911)

Berzolari : "In the *Bottettino* will be continued the publication of articles containing brief views on the various parts of **pure or applied mathematics**, or summaries of scientific theories, especially those pertaining to **elementary mathematics or studies that are of particular interest for teachers**" (BM 1915, p.2);

Enriques: "we will pay attention to the refinement and to **circulation of the *Bollettino* by starting relationships abroad as well**, which are important for making known our scientific and methodological contributions and our ideas in mathematics education. To that end ... **the publication will be entrusted to the publishing house Nicola Zanichelli"**

(BM 1919 p. 65)

- **an educational project whose essential points were shared**, a project clearly influenced by Klein's reform movement

Attention to: elementary mathematics from an advanced standpoint; the introduction of infinitesimal analysis in secondary schools; the connections between pure and applied mathematics and between mathematics and the other sciences; the history of mathematics.

Review by Scorza of volumes I and II (arithmetic, algebra, analysis, geometry) of Klein's *Elementarmathematik vom Höheren Standpunkte aus* (BM 1910, p. 130-146, 1911, p. 48-52), which came out in 1908 and 1909.

- **the section of *Articles* was created:**

- the **foundations** of geometry, arithmetic, analysis (Fano, Amodeo, Padoa, Giorgi,...), important concepts and **topics in elementary mathematics** (Padoa, Vacca, Enriques, Loria, Vitali, ...),
- **history of mathematics** (Vacca, Castelnuovo, Loria, Natucci, Bortolotti...)

- relationships between **pure and applied mathematics**, and between **mathematics and physics**
(Articles by Severi (BM 1910, p. 94-111), Castelnuovo (BM 1911, p. 152-171) and by C. Poli (BM 1916, p. 17-32) that present competently Einstein's research on relativity).
- **topics concerning mathematics education:** teacher training, mathematics programs of all levels of pre-university schools, methods, the introduction of infinitesimal analysis in schools, etc. Castelnuovo said: teachers shouldn't *"deal with statistical data alone; they should carry out an investigation in higher areas and deal with pedagogical and psychological questions"* (Atti Padova 1909, F 2)

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- **relationships with other scientific institutions:**
 - **Italian institutions** with similar aims:
the **Italian Society for the Progress of Sciences** (3 Congresses); the **Italian Electro-technical Association**; the **Italian Physical Society**; the **Mathematics Seminar** in Rome; the **Society for Classical Studies**; the **Italian National Association of University Professors**, of which Enriques was president from 1912 to 1915.
 - **international institutions:**
the **International Commission on the Teaching of Mathematics** (Italian delegates: Castelnuovo and Enriques), and consequently with *L'Enseignement Mathématique*, the official journal of the **Commission**.

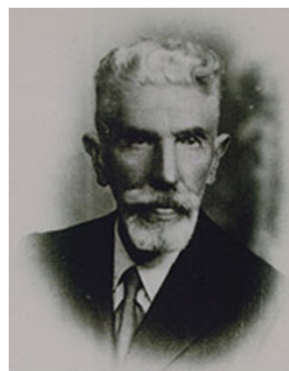
SUPPLEMENTO

Atti della Sottocommissione italiana
per l'insegnamento matematico

- A special section of the *Bollettino* was created: *Atti della Sottocommissione Italiana della Commissione Internazionale dell'insegnamento matematico*.
- From 1911 to 1912 11 [reports](#) of the Italian sub-commission were published, and information on the activities of CIEM appeared:
(BM 1911, 56-59, 131-132, 172-184; BM 1912, 131-139, 215- 234; BM 1914, 85-88, BM 1915, 45-52; *Atti Padova* 1909, Allegato F)
- Abstracts of the Italian reports (EM 1912) and information on the work of the Italian sub-commission were published in *L'EM*:
<http://www.icmihistory.unito.it/circulaires.php>

▪ **greater success in the relationship with the Ministry for Public Instruction :**

- the Orlando Decree was abolished in 1911 (which gave second-year liceo students the option of choosing between Greek and mathematics),
- the modern secondary-school (*liceo moderno*) was established and Castelnuovo prepared the programs of mathematics (1913) and related instructions, inserting the concepts of function, derivative and integral.



Guido Castelnuovo
1865-1952

(articles: BM 1912, p. 120-130, BM 1913, p. 86-88, 89-94, 148-149, BM 1914, 72-73; discussion in the meetings of the regional branches: Piedmont 26 March 1913, Padova 1 May 1913, Genoa, 30 April 1913, 21 December 1913).

- Castelnuovo presented the new programs in CIEM Congress in Paris 1914
- G. Loria, *Les Gymnases-lycées "modernes" en Italie*, Zeitschrift für math. und natur. Unterricht aller Schulgattungen, 1914, pp. 188-193

Information circulated more widely

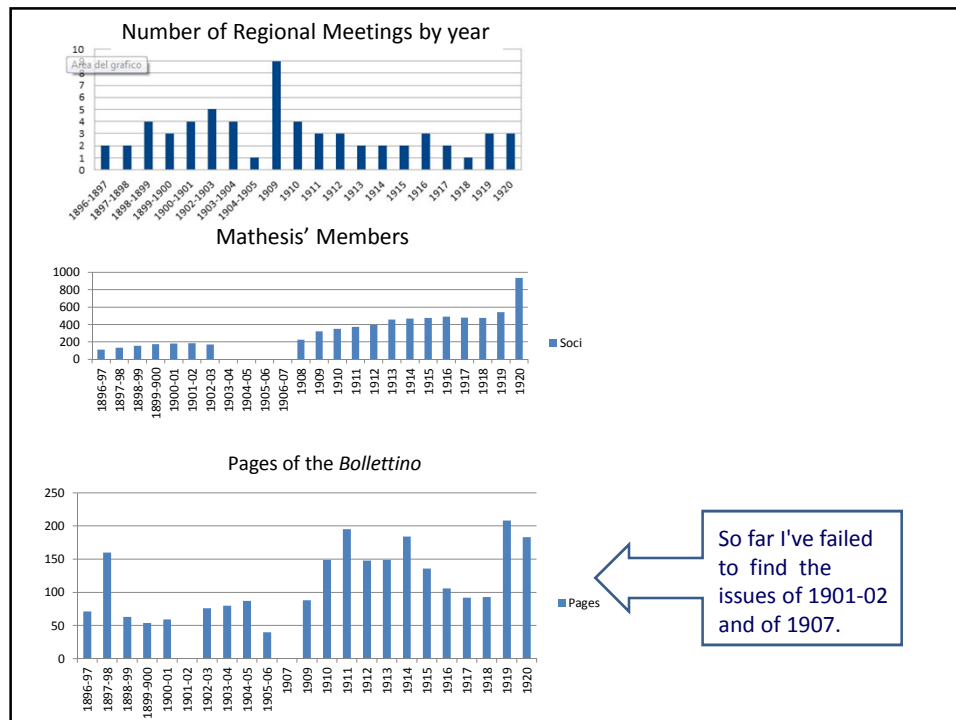
- **longer and more detailed reports on articles in foreign journals and on scientific events** thanks to a group of willing mathematicians: **Ugo Amaldi** (co-author with Enriques of various textbooks), **Alfredo Perna** (a ministerial supervisor), **Aldo Finzi** (teacher at the IT of Naples), and later **Cristoforo Alasia** (who died in 1918) whose reports are wide-ranging: articles, books, mathematics prizes, societies, national sub-commissions of CIEM, the theses discussed in European and American Universities.

- **reports on mathematics teaching in other countries**, thanks mainly to Gino Loria, considered abroad as a kind of spokesman for the reform movement in Italy (Lietzmann, 1908, p. 181; Cajori, 1910, p. 192):

(BM 1911, p. 185-190 (in Hungary); BM 1912, p. 60-65 (Lemoine); BM 1912, p. 140-142 (USA), BM 1914, p. 72-73 (French and German books); BM 1918, p. 66-76 (technical and industrial schools in Denmark, Sweden, Germany, France, Great Britain and the United States).

- **translations of articles and reviews:**

BM 1911, p. 75-87 (Bourlet on the interactions between pure and applied mathematics); BM 1912, p. 134-139 (translation by Bompiani of Smith's report on intuition and experiment), BM 1910, p. 130-146 (review of Klein EMHS), BM 1911, p. 48- 52, BM 1911, p. 185-190, BM 1912, p. 140-142 (review of Syllabus of Mathematics USA); BM 1913, p. 56- 85 (trans. O. Stolz e di J.A. Gmeiner); etc.



In addition to the others, a general factor played an important role in the evolution of the *Bollettino* from the first to the second phase: **the emergence of the international communication and cooperation concerning mathematics education**, that developed only in the early years of the twentieth century:

- *L'Enseignement Mathématique* (Laisant, Fehr) published its first issue in **1899**

Nous avons voulu, par la publication de notre Revue, renverser les obstacles qui s'opposent à ces communications réciproques et créer une sorte de correspondance mutuelle, EM 1899, p. 2
continue, entre les hommes qui ont consacré leur vie à cette noble mission : l'éducation mathématique de la jeunesse.

- A section devoted to mathematics education appeared in the International Congresses of Mathematicians only the ICM in **1900** in Paris (Section VI. *Enseignement et Méthodes*)
- the International Commission on the Teaching of Mathematics was born in **1908**.



Francesco Severi



Guido Castelnuovo



Federigo Enriques

It was natural that in Italy geometers took control of the *Mathesis* and its journal, for several reasons:

- They were a group of high-level, internationally known researchers;
- Geometry offered a particularly suitable *terrain* for reflections on didactics and methodology;
- They were in close contact with Klein and shared his principal ideas about didactics;
- They played an active role in the International Commission on Mathematics teaching.

References

- L. Giacardi, C. S. Roero 1996, *La nascita della Mathesis (1895-1907)* in *Dal compasso al computer* (L. Giacardi, C.S. Roero eds.), Torino, Associazione Mathesis, p. 7-49.
- F. Furinghetti 2002, *Il Bollettino della Mathesis dal 1909 al 1920: pulsioni fra temi didattici internazionali e internazionali*, in G. Bolondi (ed.) *La Mathesis. La prima metà del Novecento nella "Società Italiana di Scienze matematiche e fisiche"*, PRISTEM Storia, 5, p. 31-58.
- L. Giacardi 2005, *L'insegnamento della matematica in Italia dal 1895 al 1923. Il ruolo della Mathesis*, in *Conoscere attraverso la matematica: linguaggio, applicazioni e connessioni interdisciplinari*, Atti del Congresso Nazionale Mathesis, Anzio-Nettuno, 18-21.11.2004, Roma, 2005, p. 303-344
- L. Giacardi 2009, *The Italian contribution to the International Commission on Mathematical Instruction from its founding to the 1950s*, in Bjarnadóttir, K. Furinghetti, F., & Schubring, G. (Eds.), *Dig where you stand. Proceedings of the Conference on On-going Research in the History of Mathematics Education*, University of Iceland, Reykjavik, pp. 47-64.

Websites

- Mathesis' Congresses (by L. Giacardi): http://www.mathesistorino.it/?page_id=577
- ICMI's Timeline (by L. Giacardi): <http://www.icmihistory.unito.it/timeline.php>

Appendix

From 1896-97

- *The Mathematical Gazette* (London)
- *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht* (Leipzig)
- *The American Mathematical Monthly* (in 1897-98 only)
- *Nouvelles Annales de Mathématiques* (in 1897-99 only)
- *Bulletin de sciences mathématiques et physiques élémentaires* de Niewenglowski (in 1897-99 only)
- *Journal de Mathématiques élémentaire*

After 1909

- *Proceedings Edinburgh Math. Society* (Edinburgh)
- *The Mathematical Gazette* (London)
- *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht* (Leipzig)
- *Bulletin de Mathématiques élémentaires* (Paris)
- *Journal de Mathématiques élémentaires* (Paris)



Table 2

Bollettino della "Mathesis" Società Italiana di Matematica							
F. Severi	1909	n° 1-2-3-4-5-6-7-8-9	88	Padova	Autonomo	Direttore responsabile Francesco Severi	Padova, Premiata Società cooperative tipografiche
F. Severi	1910	n° 1-2-3-4-5-6-7-8-9	149	Padova	Autonomo	Francesco Severi	Padova, Premiata Società cooperative tipografiche
G. Castelnuovo	1911	n° 1-2-3-4-5-6-7-8-9-10-11-12	195	Roma	Autonomo	Guido Castelnuovo	Roma, Cooperative Tip. Manuzio, Via Porta Salaria, 23-a
G. Castelnuovo	1912	n° 1-2-3-4-5-6-7-8-9	148	Roma	Autonomo	Guido Castelnuovo	Roma, Cooperative Tip. Manuzio, Via Porta Salaria, 23-a
G. Castelnuovo	1913	n° 1-2-3	149	Roma	Autonomo	Guido Castelnuovo	Roma, Cooperative Tip. Manuzio, Via Porta Salaria, 23-a
G. Castelnuovo	1914	n° 1-2-3	184	Roma	Autonomo	Guido Castelnuovo	Roma, Cooperative Tip. Manuzio, Via Porta Salaria, 23-a
L. Berzolari	1915	n° 1-2-3	136	Pavia	Autonomo	Luigi Berzolari	Pavia, Premiata Tipografia Successori Fratelli Fusi, Largo di via Roma, 7
L. Berzolari	1916	n° 1-2-3	106	Pavia	Autonomo	Luigi Berzolari	Pavia, Premiata Tipografia Successori Fratelli Fusi, Largo di via Roma, 7
L. Berzolari	1917	n° 1-2	92	Pavia	Autonomo	Luigi Berzolari	Pavia, Premiata Tipografia Successori Fratelli Fusi, Largo di via Roma, 7
L. Berzolari	1918	n° 1-2	93	Pavia	Autonomo	Luigi Berzolari	Pavia, Premiata Tipografia Successori Fratelli Fusi, Largo di via Roma, 7
F. Enriques	1919	n° 1-2-3-4-5-6-7-8-9-10-11-12	208	Bologna	Autonomo	Federigo Enriques	Bologna, Nicola Zanichelli
F. Enriques	1920	n° 1-2-3-4-5-6-7-8-9-10-11-12	183	Bologna	Autonomo	Federigo Enriques	Bologna, Nicola Zanichelli

Other Aspects

- The regular publication of the *Bollettino* during the years of the war, thanks to the president Berzolari and the local branches of Torino (*Conferenze matematiche torinesi*) and Genoa (under Loria's presidency), which also provided articles. This is important given that other similar journals, such as the *Periodico di Matematica* and *Il Pitagora*, ceased publication.
- The progressive increase in the number of women members of the Mathesis, who in 1920 come to number 201 of the 935 members. This is significant when we take into account that women could not teach in *ginnasi* and *licei* (upper and lower humanistic secondary schools), or in technical institutes.

Women in Mathesis

