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Circulation of an editorial model:

the case-study of the short-lived *Le Matematiche Pure ed Applicate*

1. Introduction

The interplay between journals can take various forms, including sharing the same editorial model, which one journal may borrow from another. In this paper, we shall focus on an Italian journal, *Le Matematiche Pure ed Applicate*,[1] founded in 1901 at Tempio Pausania, a small Sardinian town far away from university centers. The director was a teacher of mathematics, Cristoforo Alasia de Quesada. As we shall see, despite a good start, *Le Matematiche Pure ed Applicate* was short-lived: the publication was interrupted in 1903 due to economic difficulties of its publisher Scipione Lapi.

Le Matematiche Pure ed Applicate shares some common features with the genre Ortiz labels "*intermediate* journals". These journals dealt with elementary mathematics and addressed mainly teachers and students. Study of Alasia's journal in the context of the Italian intermediate journals will enable us to describe convergences and divergences.

The creation of *Le Matematiche Pure ed Applicate* was encouraged by a group of scholars dealing with triangle geometry, in particular by Henri Brocard, who was also influential in defining Alasia's editorial strategy and editorial model. Brocard promoted an editorial model which was characterized above all by the use of a "Questions/Solutions" section. The model was also able to include many different sections, depending on the editorial project of the journal. This editorial model, as used for *Le Matematiche Pure ed Applicate*, may be referred to as the Brocard model.

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Some French, Spanish, English and Belgian intermediate journals[2] used Brocard editorial model. By focusing on the main actors of *Le Matematiche Pure ed Applicate*, the relationships between them, the type of mathematics transmitted, and the interplay, within the genre, among intermediate periodicals, we aim to show that one can speak of a circulation of the Brocard editorial model in these journals.

1.1 *Le Matematiche Pure ed Applicate* an *intermediate* journal

Let us first ask the question of what was labeled elementary mathematics at the beginning of the 20th century, when Alasia created his journal. To answer that question, we may turn to Felix Klein, who wrote, in 1904, that, in all the different areas of mathematics, "elementary" covered all those parts of the subject accessible "to a person of average talent who has not carried out lengthy specialized studies" [Klein, 1904, 9]. According to Klein, elementary mathematics was all that could be taught at school; this did not mean that everything that was elementary mathematics ought to be taught. Klein argued that it was important to make a selection of content, which ought to be reconsidered from time to time. In fact, the field of elementary mathematics was constantly expanding, thanks to a better representation of mathematics itself.

One example of elementary mathematics, according to Klein, was the infinitesimal calculus, with the progress made by Cauchy and Weierstrass.

In the last third of the 19th century, the new triangle geometry[3], within the field of Euclidean geometry, was generally considered elementary mathematics. In 1888, R.F. Davis presented the *recent* triangle geometry to the members of the Association for the Improvement of Geometric Teaching, as "the most remarkable and interesting of recent additions to elementary mathematics" [Davis, 1888, 35], drawing attention

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[2] This circulation of an editorial model refers to a kind of circulation rarely studied in the history of mathematics. See the introduction to this volume.

[3] See [Alasia, 1900], [Berkhan and Meyer, 1914], [Davis, 1995], [Retali and Biggiogero, 1979], [Romera-Lebret, 2014] and [Vigarié, 1889].

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to the fact that the subject was more closely connected with Euclidean geometry than projective geometry[4] (which he called Modern Geometry).

Triangle geometry as a separate field of elementary mathematics, appeared in France in the 1870s thanks to Émile Lemoine,[5] Brocard[6] and Joseph Neuberg. A group of geometers gathered around them, and gradually the subject grew, principally at the hands of Gaston de Longchamps, Maurice d'Ocagne, Émile Vigarié, John Casey and Robert Tucker [Romera-Lebret, 2014].

Among the journals that supported the spread of the new triangle geometry [Romera-Lebret, 2014] we may cite the following:[7]

-*Nouvelles Annales de mathématiques* (1842-1927), founded by Orly Terquem and Camille Gerono;

- The *Journal de mathématiques élémentaires* (1877-1901), published by Justin Bourge and which became the *Journal de mathématiques élémentaires et spéciales* in 1880 and was subsequently split into two parts: the *Journal de mathématiques élémentaires* and the *Journal de mathématiques spéciales,* in 1882;

- *Mathesis*, *Recueil mathématique* (1880-1965)*,* founded in Ghent by Joseph Neuberg and Paul Mansion, as the continuation of the *Nouvelle Correspondance mathématique* (1874-1880), published by Eugène Catalan and Mansion.

According to [Ortiz, 1996], this genre of mathematical journals can be labeled as *intermediate*.[8] They dealt with elementary mathematics taught in the final years of secondary schools and presented a number of complementary theories with the aim of

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[4] Projective geometry was used to settle the results of the new triangle geometry. See [Poulain 1892].

[5] The papers [Lemoine, 1873] and [Lemoine, 1874] may be regarded as the starting point of the *new* triangle geometry. See [Romera-Lebret, 2014] and [Vigarié, 1889].

[6] See also [Brocard, 1881] and [Brocard, 1883].

[7] The main journals by number of articles published between 1873 and 1905. Among these journals should also be mentioned *L'intermédiaire des mathématiciens* (1894-1925), founded by Lemoine and Laisant. This journal, however, will be excluded from the considerations in this paper, since its editorial project aimed at fostering an international cooperation between mathematicians, on a project shared by the editors and Georg Cantor. See [Auvinet, 2011].

[8] See also Caroline Ehrhardt's contribution in this issue.

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deepening or renewing themes of elementary mathematics. The ultimate goal of the journals was to give students and teachers the tools to tackle entrance exams for professional, polytechnic or normal schools. Since the teachers, and sometimes also the university students, were often engaged in scientific research, without necessarily being in the forefront of original mathematical research, the intermediate journals also dealt with this kind of research in the field of elementary mathematics, even though the questions investigated were often far from elementary.

In this paper, we extend Ortiz' term *intermediate* to include those journals created as an instrument to keep teachers up to date on current scientific debates and offer stimulus regarding their research on elementary mathematics topics, as well as a space for their publications. Intermediate journals in this broader sense thus offered publication space to a large number of academics, people in the military, practitioners and amateurs. Their reading public can thus be considered to extend beyond students and teachers.

The editorial model of the intermediate journal was what we call Brocard model. It was characterized by the presence of the "Questions/Solutions" section devoted to mathematical problems posed by various authors and to the solutions given by the readers of the journals. This model usually also included a section with scientific "Articles" linked to the editorial project, and sections devoted to "Bibliography" and "Book Reviews". Sometimes there were sections containing general information on events, associations and institutions related to mathematics, obituaries, biographies and correspondence.

For instance, *Mathesis* included a section on "Notes mathématiques", the *Journal de mathématiques élémentaires* included various sections entitled "Mélanges", "Variétés", and "Avis". The *Nouvelles Annales de mathématiques* did not contain such sections.

The intermediate journals often shared the same authors and collaborators, and sometimes they also managed to attract an international editorial board with more or less prestigious names. Indeed the interplay between intermediate journals also took place

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via their actors: Brocard, Casey, Longchamps and d'Ocagne were often among the collaborators of the periodicals mentioned above, as well as of many other intermediate journals from the end of the 19th century (see next paragraphs).

The term "collaborators" often appears in this paper. Unless explicitly stated, we shall use the word to refer to those mathematicians whose work allowed the journals to develop. This means that they were not just authors of scientific articles but also authors of biographical and bibliographic articles or reviews. Collaborators were often active in proposing and solving problems. Brocard was one of the most active collaborators on the intermediate journals, and his scientific commitment was always linked to those with "Questions/Solutions" sections. Of the 127 articles from this author reviewed in the *Jahrbuch*, half are solutions of problems. In 1898, Brocard refused to collaborate with *L'Enseignement mathématique* and explained his decision to Charles-Ange Laisant in these terms: "Le genre auquel je me suis voué est celui des journaux à questions plus ou moins inattendues, tels que les Intermédiaires des mathématiciens. Mon esprit s'y est habitué et je me suis attaché à me rendre utile à ces publications." [9] It should be noted that Brocard and Lemoine were also collaborators on Alasia's journal.

As we will see later, correspondence from Alasia to Brocard[10] highlights the important role played by Brocard in the foundation and in the development of *Le Matematiche Pure ed Applicate*. Its editorial model was suggested by Brocard, and it included a "Questions/Solutions" section.

1.2 The main Italian intermediate journals in the second half of the 19th century

Before studying *Le Matematiche Pure ed Applicate* more thoroughly, let us first give a brief survey of the Italian editorial milieu in which Alasia's journal was founded.

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[9] "The genre to which I have devoted myself is that of journals containing more or less unexpected questions, such as (the issues of) *L'Intermédiaire des mathématiciens*. My mind got used to it and I made a point of making myself useful to these publications." [Auvinet, 2011, 41].

[10] The letters are kept in Brocard's Archive, at the library of the Institut Henri Poincaré in Paris. I would like to thank Pauline Romera-Lebret for informing me about the existence of these letters.

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It was in the second half of the 19th century that in Italy, in addition to the traditional channels used for the circulation of research, such as private correspondence, memoirs and proceedings of academies, journals devoted specifically to mathematics were founded.[11] Among these, the first and best known intermediate Italian journal, *Giornale di Matematiche* (1863-1967),[12] was founded in Naples by Giuseppe Battaglini.[13] It was designed as a tool to direct students at Italian universities towards research issues, as well as offering publication space for the results of their research. In order to give the young reader a general vision of the mathematical issues dealt with, Battaglini proposed the new subjects chiefly by means of papers of an informative nature. The papers were intended to arouse the reader's interest and at the same time provide the essential instruments for carrying out further investigations. This editorial project also attracted many high school and technical institute teachers, and Battaglini published many contributions from them. He even had two secondary school teachers on the editorial board in his journal. At the time, Battaglini's journal also made up for the lack of periodicals aimed at teaching mathematics in secondary schools.

The editorial model of the *Giornale* had the main features of Brocard model: articles, bibliographic announcements, reviews, letters to the editor, and a "Questions/Solutions" section. It sometimes published the solutions to questions from the *Nouvelles Annales de mathématiques*.[14]

Some years later, several periodicals directed more specifically at teachers, began to be published; they dealt with educational problems, subject content, public education and school organization. These were often local journals (for example, those published by educational institutions), and very short-lived. The longer-running journals include the *Rivista di Matematica Elementare* (1874-1885) published by Giovanni Massa first in Alba, and subsequently in Novara, the *Periodico di Matematica per*

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[11] Italy, compared to other European countries, was strongly penalized by the political division of the country. In 1858 the *Annali di Matematica Pura ed Applicata*, managed by Brioschi, was the first journal devoted specifically to mathematics.

[12] The publication was suspended from 1940 to 1947. See [Enea, 2017].

[13] The editorial board included Vincenzo Janni and Nicola Trudi, also from Naples.

[14] See *Giornale di Matematiche* 1, 1863, 218-219; 7, 1879, 202-203.

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l'Insegnamento Secondario (1886-1918) published in Rome by Davide Besso, and *Il Pitagora-Giornale di Matematica per gli Alunni delle Scuole Secondarie* (1895-1919) by Gaetano Fazzari first in Avellino and later in Palermo.

The founders' aim was to introduce elementary mathematics topics of use to teachers in secondary education, with emphasis on the educational and historical aspects. The journals also contained a bibliographical section, and reports on exercises set in examinations for degrees or professional posts. The *Periodico* also borrowed some questions from the Belgian journal *Mathesis*.[15] In 1895 the *Periodico,* working as the official medium for information directed at secondary school teachers, gave immediate support to all the activities of the Italian association 'Mathesis', for secondary school teachers. It became its official organ [Giacardi, 2005] from 1899 until 1903, when the *Bollettino della Mathesis* was founded. Giulio Lazzeri, who taught at the Naval Academy in Livorno, published a *Supplemento al Periodico* (1897-1917), with the same purpose but aimed at middle schools.

At the same time in Turin, the *Rivista di Matematica* (1891-1906) was founded by Giuseppe Peano. This journal may be considered an intermediate journal in its first years of publication. As Peano himself wrote in a Note to his readers, "The *Rivista di Matematica* essentially has an educational purpose, focusing especially on improving teaching methods. It will also contain articles and discussions referring to fundamental principles of science, and to the history of mathematics. Reviews of treatises and all the publications concerning teaching will occupy an important part".[16] Indeed, many of the topics debated were related to the teaching of mathematics and many of the authors, at the time, were secondary school teachers. The journal also published questions (for which few solution were published), letters to the editor, reports on the teaching of mathematics, and obituaries.

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[15] See *Periodico di Matematica* 1894, 129.

[16] "La *Rivista di Matematica* ha scopo essenzialmente didattico, occupandosi specialmente di perfezionare i metodi di insegnamento. Essa conterrà pure articoli e discussioni riferentisi ai principii fondamentali della scienza, e alla storia delle matematiche; vi avrà parte importante la recensione dei trattati, e di tutte le pubblicazioni che riguardano l'insegnamento". See second page of the first volume.

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The features of the *Rivista* changed after its first years:[17] questions, obituaries and reviews disappeared, and the authors were almost exclusively members of the Peano School. The journal's main aim at the time was to present the ideas of this school; more specifically, it became one of the means used to publish the *Formulario Mathematico* and spread it on a large scale [Luciano, 2017].[18]

Lastly, the *Rivista di Fisica, Matematica e Scienze Naturali* (1900-1943) was published in Pavia by Cardinal Pietro Maffi and printed by the *Società Cattolica Italiana per gli Studi Scientifici*. This journal was devoted essentially to informing teachers about the progress of science,[19] developing topics only by means of articles and bibliographical sections.

Thus at the start of the 20th century in Italy there were a number of intermediate journals, which were excellent vehicles for the circulation among teachers of news concerning teaching problems, teaching practices and scientific research. Some of these looked to journals such as *Mathesis* and *Nouvelles Annales de mathématiques*, which already had a certain reputation as intermediate journals.

2. Cristoforo Alasia's *Le Matematiche Pure ed Applicate*

In 1901, Cristoforo Alasia De Quesada,[20] a mathematics and physics teacher in a secondary school in Sardinia, founded the journal, *Le Matematiche Pure ed Applicate,* with the subtitle *Pubblicazione periodica di matematiche superiori ed elementari ad uso dell'istruzione media e superiore* (referred to subsequently in this paper as *Le Matematiche*).

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[17] See in particular volume VI, 1896-1899.

[18] On the Peano school see also Erica Luciano's contribution in this issue.

[19] Beginning in 1904, Alasia edited a section entitled *Rassegna Matematica* in the *Rivista di Fisica, Matematica e Scienze Naturali*. See M.R. Enea, Cirmathseminar– mathematics journals and teaching publics, Paris, 2016 (https://cirmath.hypotheses.org/740).

[20] Cristoforo Alasia De Quesada (1869-1918) was born in Sassari. De Quesada was his mother's surname, which he often used in his correspondences. For some biographical notes on Alasia see [Loria, 1919], [Halsted, 1902], [Bozal, 1903].

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In this section, we focus on the foundation, disappearance, editorial model and collaborators of *Le Matematiche.*

2.1 Foundation

The circumstances in which the journal was founded are not clear, although some information can be gathered in Alasia's letters to Brocard. The creation of *Le Matematiche* followed the publication of Alasia's best-known work, *La Recente Geometria del Triangolo* (Lapi, Città di Castello) in 1900; this was a compilation of all the principal research published in France, Germany and England in this branch of elementary mathematics, and it gained him access to a number of different networks.

The first edition of the book contained a brief preface by the publisher Lapi, informing the readership that its publication had the support, in October 1899, of Eugenio Beltrami, the then president of the Reale Accademia dei Lincei. He quotes a letter written to him by Beltrami: "Why do you, who are Alasia's publisher, not ask him for a work on the new geometry of the triangle, on which he has already published a lot in scientific periodicals? It would be very interesting, and the first work in Italy on this subject, which abroad is already part of the official teaching." [21] The presence of the great Italian mathematician, who died just before the work was published, offered a clear recognition of the importance and the educational utility[22] of this area of geometry. Although Alasia does not appear to have published[23] any scientific articles on triangle geometry before 1900, the following letter from Alasia to Brocard, dated De-

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[21] Beltrami wrote: "Perché lei che è l'editore del prof. Alasia non lo prega di un lavoro sulla nuova Geometria del triangolo di cui egli ha già scritto parecchio su periodici scientifici? Sarebbe interessantissimo, il primo lavoro in proposito in Italia e che all'estero fa già parte dell'insegnamento ufficiale." Beltrami's words are reported by Lapi in the preface to the first edition of the book, in the book review [Ripert, 1901, 144], and in a letter from Alasia to Brocard dated November 23, 1900.

[22] Since1880, the new triangle geometry appeared in school textbooks. See [Romera-Lebret, 2014].

[23] From [Loria, 1919], we know that Alasia was the author of about 150 publications on topics concerning pure mathematics, history of mathematics, bibliography of mathematics, teaching methods of the exact sciences, astronomy and physics. Unfortunately, we do not have a complete bibliography of Alasia.

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cember 8, 1899 (only two months after Beltrami's letter to Lapi), shows us how well Alasia knew the founders of the new geometry:

 "Mr.H.Brocard,

I take the boldness to send you this note ask you a favour. As I had the honor of being in contact with Mr Lemoine in Paris and with Mr Neuberg at Liège, I am working on the publication of a book on the New Triangle Geometry, which I believe will be the first in Italy on this topic. As I had asked them, both of them sent me their publications, and Mr. Neuberg was so good to ask Mr. Vigarié and Mr. Gob to do the same, as did Mr. Poulain. But I would need to know all the papers of the founders of this new branch of Geometry, and especially of you who are the most important. I searched here and there for your publications but it was not possible for me to obtain them. Would you be kind enough to tell me what I could do to have them? Or would you be kind enough to send them yourself, under the condition that I will return them immediately to you? I would be very grateful. I beg your pardon for my request. Waiting for your answer, Your sincerely."

Prof. Alasia Cristoforo."[24]

This letter established the beginning of the collaboration between Alasia and those French mathematicians who were working on triangle geometry, and in particular Brocard. The book envisaged by the Italian mathematician represented the possibility of making their research known in Italy.[25]

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[24] "Monsieur H. Brocard,
Je me prends l'hardiesse de vous envoyer ce billet pour vous prier d'une grâce. Comme j'ai eu l'honneur de participer à M. Lemoine à Paris et à M. Neuberg à Liège, je travaille à la publication d'un livre sur la Nouvelle Géométrie du triangle, qui sera, je crois, le premier en Italie sur ce sujet. Comme je les avais priés, tant l'un que l'autre m'ont envoyés leurs publications, et M. Neuberg a été tant bon de prier M. Vigarié et M. Gob de faire de même, comme de même a fait M. Poulain. Mais j'aurais besoin de connaître toutes les ouvrages des fondateurs de cette nouvelle branche de la Géométrie, et en particulier de vous qui en êtes le principal. J'ai cherché çà et là vos publications mais il ne m'a pas été possible de me les procurer. Auriez-vous la bonté de me dire comme je pourrais faire pour les avoir ? Ou bien, voudriez vous avoir la bonté de me les envoyer vous même, aussi à la condition de vous les rendre tout de suite? Je vous en serais très reconnaissant. Je vous prie de pardonner ma demande. En attendant une vôtre réponse, je suis Monsieur Votre dévoué."
[25] Alasia mentioned two letters from Lemoine and Poulain in the preface to his *La Recente Geometria del Triangolo*, in which they expressed their appreciation for the book that he was writing.

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The publication of the *La recente Geometria del Triangolo* enabled Alasia not only to gain the esteem of French scholars, but also to attract a small group of Italian colleagues engaged in scientific research. Among them was Virginio Retali, who had graduated in Pisa and was working as a high school teacher in Milan. It was with his support that Alasia decided in September 1900 to create *Le Matematiche*. The first issue was published in February 1901. The brief preface to the first issue of the journal was more concerned with editorial form than with the aims and objectives of the publication. However, on the basis of the few volumes that were printed, it is quite clear that it was created to inform teachers about current research topics and encourage the publications of their contributions.

Le Matematiche presented an element of absolute novelty in the panorama of the Italian intermediate journals: the presence of an international editorial board, comparable to that of the (better known) *L'Enseignement mathématique*[26] founded in Switzerland in 1899 by Charles-Ange Laisant and Henri Fehr. In Italy, the only journal of the same period that could boast of an international editorial board was the *Rendiconti del Circolo Matematico di Palermo*[27] founded by Giovan Battista Guccia in 1885.

A number of letters from Alasia to Ernesto Cesàro,[28] Gösta Mittag-Leffler,[29] and Brocard, inform us of how he had personally solicited the support of several of the most important mathematicians of the time, requesting their collaboration. Thus on November 16, 1900, he wrote to Brocard: " […] At my request of collaboration, I had affirmative answer and complete adhesion with some article, or promised to send it in these days, by several mathematicians. To name only the non-Italians, I cite: Mr. Hermite (a communication), Mr. Poincaré, Mr. Appell, Mr. Lemoine (a communica-

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[26] See [Corey et al., 2003] and also Gispert's contribution to this issue. Alasia was a collaborator on *L'Enseignement Mathématique*. He published a number of book reviews and a paper on Giusto Bellavitis, as requested by Laisant. See [Alasia 1906].

[27] See [Brigaglia and Masotto, 1982], [Brigaglia, 2002] and also Rossana Tazzioli's paper in this issue.

[28] The letters are kept in the Cesàro Archive at the Department of Mathematics and Applications at the University of Naples.

[29] The letters are kept at the Mittag-Leffler Institut in Djursholm. See [Barrow-Green, 2002].

tion), Mr. Vries (a comm.), Mr. Vassiliev, Mr. Halsted, etc. At this moment, Mr. Gelin sent me a study on certain simultaneous equations. As you can see, I already have important names […]".[30]

When the first issue of *Le Matematiche* was published, it had a rather impressive editorial board:

CON LA COLLABORAZIONE DEI PIÙ ILLUSTRI SCIENZIATI ITALIANI E STRANIERI

fra i quali

Amodeo F. - Napoli	De Vries J. - Utrecht	Marcolongo R. - Messina
Appell P. - Parigi	Duran-Loriga - La Coruna	Nannei E. - Bari
Barbarin P. - Bordeaux	Galdeano G. - Saragoza	Peano G. - Torino
Bettazzi R. - Torino	Gelin E. - Huy	Pieri M. - Catania
Brocard H. - Bar le Duc	Halsted B. - Austin-Texas	Pirondini G. - Parma
Burali-Forti C. - Torino	Laisant C. A. - Parigi	Poincaré H. - Parigi
Celoria G. - Milano	Lebon E. - Parigi	Retali V. - Milano
Cesàro E. - Napoli	Lemoine E. - Parigi	Vassilief A. - Kasan

It is possible to identify, among the members of the editorial board, scholars who shared research interests over time and who were already involved in their own collaboration networks.

The most important network, which enabled *Le Matematiche* to be created, shared research on triangle geometry. A complete bibliography of mathematicians who were working on this type of geometry between 1895 and 1905, is due to Alasia himself, and was presented by Brocard to the Congress of the *A.F.A.S.*[31] held in Lyon in 1906 [Brocard, 1906]. From this bibliography we learn that Paul Barbarin, Brocard, Cesàro, Juan Duran-Loriga, Laisant, Ernest Lebon, Lemoine, Retali, and Jan De Vries, were part of the network of mathematicians active in the field of triangle geometry (some of these were not specialists but had written at least one paper).

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[30] " […] À ma demande de collaboration j'ai eu réponse affirmative et complète adhésion avec quelque article, ou promise de l'envoyer dans ces jours, de plusieurs mathématiciens. Pour ne vous citer que les non italiens, je nomine: M. Hermite (une communication), M. Poincaré, M. Appell, M. Lemoine (une communication), M. Vries (une comm.), M. Vassiliev, M. Halsted, etc. M. Gelin m'envoyé dans ce moment une étude sur certaines équations simultanées. Comme vous voyez, j'ai déjà des beaux noms […]".

[31] *Association Française pour l'Avancement des Sciences*. See [Gispert 2002].

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Among the Italians on the board of *Le Matematiche*, Mario Pieri, Cesare Burali-Forti and Roberto Marcolongo belong to the group of mathematicians who gathered around Peano's scientific projects [Luciano-Roero, 2008], and especially the well-known *Formulario Mathematico*. The Peano School was present, however, in *Le Matematiche* with another area of its research: vector calculus.[32]

Some members of the editorial board of Alasia's journal - George Bruce Halsted, Alexander Vassiliev and Barbarin[33] - shared an interest in non-Euclidean geometries. In a biographical note on Halsted included in an annex to the second volume of *Le Matematiche*, Alasia himself described[34] the scientific relations between Halsted and Vassiliev in support of the Lobačevskij Committee founded in Kazan in 1893. Barbarin and Halsted were engaged in the spread of non-Euclidean geometries through their reviewing and translation of fundamental texts [Halsted, 1899].

Finally we point to a network of editors who not only supported Alasia's new journal, but also saw an opportunity there to give a wider diffusion to the research published in their own journals. In addition to Peano, already mentioned in earlier paragraphs, there were Zoel Garcìa de Galdeano, founder of *El Progresso Mathematico* (1891-1895/1899-1900); Vasiliev, editor of the *Bulletin de la Société physico-mathématique de Kazan* in 1891; Laisant and Lemoine, founders of the *Intermédiaire des mathématiciens* (1894-1925). Laisant also was among the editors, from 1896, of *Nouvelles Annales de mathématiques* and founders, with the Swiss Fehr, of *L'Enseignement mathématique* in 1899.

The presence of Paul Appell and Henri Poincaré comes as no surprise, as they were considered to be among the most noteworthy mathematicians of the era. As Alasia pointed out "It is the name of the collaborators that makes the name of the journal in

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[32] Burali-Forti and Marcolongo were involved in the spread of vector calculus in Italy. See *Le Matematiche* I, 1901, 269-279; II, 1902, 26-30; *Le Matematiche* II, 1902, 160 198-200, 217-220.

[33] Two articles by Barbarin on these topics were published in *Le Matematiche* I, 1901, 85-87; II, 1902, 137-145.

[34] The second volume contained in Annex a biography of Halsted written by Alasia.

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the scientific world *"[35]* and so their endorsement signaled the excellent beginnings of the journal to the readership.

The first article published in *Le Matematiche*, in support of Alasia's work, was a brief note on continued fractions by Charles Hermite, the last written by the celebrated French mathematician, just before his death in January 1901. The article was sent to Alasia with a letter full of encouragement and advice for the new journal, as well as promises of further papers [Hermite, 1917]. *Le Matematiche* published two obituaries of Hermite: the first, sent by Brocard to Alasia, was a speech given by Camille Jordan to the Paris *Académie des sciences*;[36] the second was written by Dùran-Loriga,[37] a friend of Hermite, for *Le Matematiche*, in response to a request from Alasia. This second obituary was also translated into English by Halsted for *The American Mathematical Monthly*[38] and for *Science*.[39] Clearly, *Le Matematiche* had been involved in a network of international exchanges from the outset.

2.2 The end of the publications

For the publication of his journal, Alasia chose the publisher Scipione Lapi, who at that time was well known in Italy for both his high level of professional skills and the low prices practiced.[40] The printing press was located at Città di Castello in Umbria, but Lapi must have had international contacts, as *Le Matematiche* was also distributed in France by Gauthier-Villars.

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[35] "C'est le nom des collaborateurs qui fait le nom du journal dans le monde scientifique ". These words are found in the letters written by Alasia to mathematicians to ask for their collaboration, in particular see that to Mittag-Leffler dated April 10, 1900.

[36] See *Le Matematiche* I, 1901, 2-5.

[37] See *Le Matematiche*, 1901, 30-32.

[38] See vol. 8, n. 6-7, 1901, 130-133.

[39] See vol. 13, 1901, 883-885.

[40] See Dizionario Biografico degli Italiani, vol. 63, entry edited by M.I. Palazzolo.

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As said before, Lapi was famous for his professional skills, but some ambitious initiative[41] undertaken by him at the end of the nineteenth century caused serious economic difficulties. In 1903 these difficulties worsened by a general strike of the workers in the Roman typographies[42]: during the strike, the Ministry of Education commissioned Lapi to print part of its publications[43]. So due to an overload of work, Alasia announced the temporary interruption of *Le Matematiche* in the February 1903 issue.[44] After Lapi's premature death in September 1903, the publication of Alasia's journal was never resumed.

We conjecture that Alasia might have attempted to publish his journal by the publisher Laterza in February 1903, when Lapi's difficulties had become evident. This attempt is documented by a draft of a letter addressed to Alasia, kept at the Laterza archive[45], in which the editor does not accept to print new publications, mainly because of too many other commitments. The refusal was also motivated by the difficulty of printing mathematics. Indeed printing mathematical journals presupposed also high investments and costs, which neither the publisher nor Alasia, high school teacher in Sardinia, could take over.

2.3 The editorial model

In October 1900, Alasia obtained Brocard's agreement to collaboration on *Le Matematiche*. Thanks to his experience and his interest in intermediate journals, Brocard provided a wealth of advice and suggestions. Although he declined the position of co-director, offered to him several times by Alasia, he effectively carried out some of the

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[41] For instance, in 1893 Lapi began to collaborate with Giosuè Carducci for the reprint of *Rerum Italicarum Scriptores*, a historical collection written by L.A.Muratori in the first half of the 18th century; this publication ended in 1903.

[42] On this strike, see [Turi, 1997]. It illustrates the role played by the printing business in the circulation of mathematics, mentioned in the introduction to this volume.

[43] See letter from Alasia to Brocard dated April 13, 1903. The printers were also committed to publishing some volumes for the Third International Congress of Historical Sciences (Rome, 1-9 April 1903).

[44] See "Avviso ai signori abbonati e lettori", Le Matematiche, II, 1902, n.12.

[45] Registro copia lettere n.3, settembre 1902-agosto1903.
(http://www.pugliadigitallibrary.it/media/00/00/56/2245.pdf).

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corresponding responsibilities, deciding on the content of each monthly issue with Alasia. As already mentioned, the editorial model for *Le Matematiche* was also suggested by Brocard.

The monthly issues opened with research articles in pure and applied mathematics. Geometry was the privileged topic, especially the study of curves, surfaces and triangle geometry; applied mathematics related to mechanics, astronomy, physics and engineering. These articles were followed by a section entitled "Note" containing brief news dealing with mathematics, as in *Mathesis* published in Ghent. Sometimes in this "Note" section Alasia enunciated properties relating to curves and surfaces extracted from articles published in *The Mathematical Gazette* or *The American Mathematical Monthly*. The choice of these periodicals should be considered in the wider context of collaboration between intermediate journals (see next paragraph).

The sections aimed at stimulating further studies were: "Questioni da Risolvere", "Soluzioni delle Questioni" and "Soggetti di Ricerca". The sections entitled "Questioni da Risolvere" and "Soluzioni delle Questioni", which Brocard actively handled with Alasia, were devoted to problems and their solutions. In the first two issues there were some questions taken from *The American Mathematical Monthly* or put forward by St. John's College. The latter, marked by an asterisk, were part of a series of questions taken from examination sessions for school courses. However, from the third issue onwards only "Questioni" posed specifically for *Le Matematiche* were published. The topics in the questions concerned geometry for 80%, while the remaining 20% dealt with number theory and differential calculus (only two questions related to mechanics). Solutions were published for only half of the 102 "Questioni". The participation of scholars in the "Questions/Solutions" section, which should not be confused with the number of solved questions, can be considered an indication that makes it possible to assess the spread and success of a journal. In the case of *Le Matematiche* (see Annex 1), there was considerable participation, with the publication of several solutions for the same problem: the section developed into a forum of ideas exchanged between the authors themselves.

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The "Soggetti di Ricerca" section was also proposed by Brocard, in accordance with Alasia's editorial scheme. A similar section also existed in *L'Intermédiaire des Mathématiciens,* where Brocard was a collaborator, and where some questions, marked with the Greek letter Σ, were considered "sujets de recherche ou d'études".

L'Intermédiaire, aimed mostly at establishing direct relationships between mathematicians, developed its editorial project exclusively through "Questions/Solutions", sometimes borrowing them from other journals.

For example, Cesàro, collaborator on many intermediate journals, proposed in *Le Matematiche,* a "Soggetto di ricerca*"* similar to one published in *L'Intermédiaire* by Rosace:[46] "Compile, discuss and put forward the principal applications of the mathematical sciences to geology."[47] Cesàro himself invited readers to consult the references indicated by Rosace. Brocard also gave certain references in both journals.[48]

Topics in the "Soggetti di Ricerca", calling for a discussion of the principal applications of mathematics to the sciences[49] were also published. Some also asked for a survey: Brocard proposed that the reader should "Start a list of issues related to algebraic curves –loci of particular points derived from transcendent curves."[50]

 The "Soggetti di Ricerca", 29 in all, were above all proposed by the collaborators: Alasia, Brocard, Ernest Barisien, Cesàro, and Retali.[51] Solutions to only eight "Sog-

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[46]*L'Intermédiaire des Mathématiciens* 1, 1894, 53: *Question* 108.

[47] "Raccogliere, discutere ed esporre con indirizzo uniforme le principali applicazioni delle scienze matematiche alla Geologia." *Soggetto di Ricerca* IX by Cesàro - *Le Matematiche* I, 1901, 67.

[48]The references were texts and journals on geology. See *L'Intermédiaire des Mathématiciens* 1, 1894, 251, and *Le Matematiche* I, 1901, 178-179.

[49] Some examples: *Soggetto di Ricerca* X by Brocard- *Le Matematiche* I, 1901, 95.
Soggetto di Ricerca XI by Brocard: *Contribute in some way to theories regarding Topology. Put forward and study new applications which could be utilized for games and recreational mathematics - Le Matematiche* I, 1901, 119.

[50] "Iniziare una lista di questioni relative a curve algebriche – luogo di punti particolari derivati da curve trascendenti." *Soggetto di Ricerca* I by Brocard: - *Le Matematiche* I, 1901, 23.

[51] Among the proponents we also have: Baldonini, Gambioli, Loria, Burali-Forti, Joriny and Mcleo. We do not know the authors of two *Soggetti di Ricerca*, which were probably taken from *The Educational Times.*

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getti di Ricerca" were published.[52] The question with most solutions was No.VI, proposed by Brocard, requesting the determination of a fifth degree curve.[53] Solutions came from Retali,[54] Barisien[55] and Brocard[56] himself: three different constructions resulting from independent research. Indeed Barisien's solution was proposed by Brocard, who casually observed that his curve fulfilled the conditions of a "Question" proposed by Barisien[57] in the *Revue de mathématiques spéciales*.

Each issue closed with a "Bibliografia" section (here in the sense of "Book Reviews") containing reviews of both Italian and foreign books (the greater part, about 60%) that supplemented the subjects investigated in the articles.

2.4 Collaborations

Le Matematiche, in only two years of publication, had active contributions from 50 mathematicians from twelve different countries (see Annex 2): Italy (25), France (9), Spain (2), Belgium (4), England (2), Netherlands (2), Denmark, Turkey, Romania, Switzerland, and the United States (2 each). All papers were published in Italian; French was the only foreign language allowed, at the author's request.[58] The presence of so many different nationalities can be considered as another indication of the extensive spread of Alasia's journal.

This spread is also confirmed by the fact that twenty of the mathematicians who proposed or solved questions were authors of a number of contributions, ranging from one to five each. *Le Matematiche* could rely on a network of international collabora-

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[52] The authors of the solutions were: Brocard, Retali, Barozzini, Burali-Forti, Lo Monaco and Longhi.

[53] "They are given: a line XOX', a point O on the line and a circle of radius *a* tangent to XX' in A and rolling on XX'. Draw the tangent OB to the circle in B. Determine the loci of the projections M of A on OB. Can the tangent in M be determined by geometric construction?" *Le Matematiche* I, 1901, 46.

[54]*Le Matematiche* I, 1901, 62-63.

[55]*Le Matematiche* II, 1902, 36-38.

[56]*Le Matematiche* I, 1901, 63-65.

[57]*Revue de Mathématiques Spéciales* VI, 1900-1901 & 1901-1902, 56.

[58] We find only seven articles in French, by Barbarin (1), Brocard (3), De Savignac (1), Ripert (1), Servais (1).

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tors, which appeared to have been firmly consolidated, with many members connected by solid relationships of mutual esteem and friendship. Among the most active collaborators there were Barisien, De Vries, Arnold Droz-Farny, Retali, and Léon Ripert. Another assiduous collaborator on *Le Matematiche* was also Cesàro. His research [Alasia, 1907] led him to topics in elementary mathematics that included triangle geometry, properties of natural numbers, and algebraic equations, which were considered at length in all the journals, regardless of nationality, that we have mentioned.

An important contribution was also made by the teachers, A. Antonelli (Arezzo), A. Barozzini (Treviso), S. Composto (Napoli) and G. Delitala (Sassari). They also published[59] articles in the *Giornale di Matematiche* and *Periodico di Matematica*. Their presence proves that *Le Matematiche* immediately took its place among the most important Italian intermediate journals.

A central role in the group of collaborators was played by Brocard. As we have already said, he proposed that Alasia follow an editorial model with the same features as the intermediate journals on which he collaborated.

Previously we pointed out the presence of editors of other journals among the members of the editorial board of Alasia's journals. Their presence among the authors is also significant[60]. The editors were often leaders of groups of teachers committed in improving teaching practices in their countries and engaged in other intermediate journals in order to compare and debate methods and to stimulate their readers in solving "Questions". We have seen that Alasia initially borrowed questions already published in *The American Mathematical Monthly* and *The Educational Times* for his journal. He also took a number of subjects for short notes from *The Mathematical Gazette*. So it was not a coincidence that the authors present in *Le Matematiche* in-

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[59] See [Barozzini, 1898], [Barozzini, 1900], [Composto, 1902], [Composto, 1904], [Delitala, 1901] and [Delitala, 1902].

[60] For a similar finding, see Ehrhardt's paper.

clude Benjamin Finkel,[61] the founder of *The American Mathematical Monthly*, and William Greenstreet who began in 1894 to publish *The Mathematical Gazette*, dedicated to the promotion of good teaching methods. This periodical developed from a series of annual reports published by the *Association for the Improvement of Geometrical Teaching* since 1871. Greenstreet was also an active collaborator on *The Educational Times* (1846-1923),[62] which was closely linked to the College of Preceptors in London, a national body dealing with the supervision of standards of teaching and teacher training in the public service. All these intermediate journals shared the Brocard editorial model.

Finkel proposed two questions to *Le Matematiche* and sent the solutions to a problem that had been published in his own journal.[63] Greenstreet sent eighteen *Questions* and one article.[64] The publication of *Le Matematiche* was also announced to readers of *The Mathematical Gazette* in the *Bibliographic* section; *The American Mathematical Monthly* devoted some space to the new title in publishing a biographic sketch of Alasia by Halsted [Halsted, 1902].

Another author for Alasia's journal was Mansion,[65] co-editor with Neuberg of *Mathesis*, which was one of the journals that dealt more actively with triangle geometry.

Finally we point out the presence of Robert Allardice,[66] editor in 1884 of *Proceedings of the Edinburgh Mathematical Society*, and Gino Loria[67] of the *Bollettino di Bibliografia e Storia delle Scienze Matematiche* (1898-1916).

3. Circulation of editorial forms: Iberian intermediate journals[68]

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[61] A problem proposed and solved by Finkel in *The American Mathematical Monthly* 7, 1900, 172-173, was published in *Le Matematiche* I, 1901, 135-138.

[62] See [Despeaux, 2014] and [Grattan-Guinnes, 1992].

[63] In *The American Mathematical Monthly* 7, 1900, 172-173, in *Le Matematiche* I, 1901, 135-138.

[64] *Le Matematiche* I, 1901, 32-34.

[65] *Le Matematiche* I, 1901, 105-106.

[66] *Le Matematiche* I, 1901, 132-135.

[67] *Le Matematiche* II, 1902, 73-96.

[68] We consider Spanish *intermediate* journals published before the creation in 1911 of the Mathematical Spanish Society.

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Let us take a quick look at those Iberian intermediate journals which in some way were parallel to *Le Matematiche*. They did indeed share its objectives, namely to make known the progress of mathematics and to stimulate research among young scholars and teachers. But interestingly they also shared its editorial model, as well as part of its network of collaborators and authors. In particular, Brocard played a role in shaping some of these journals and engaged in the promotion of the "Questions/ Solutions" sections.

Yet intermediate journals, with a Brocard editorial model containing "Articles", "Notes" and "Questions" and "Solutions", had already been present in the Iberian Peninsula since the second half of the 19th century. In 1877, Francisco Gomes Teixeira founded the *Journal de Sciencias Mathematicas e Astronomicas* [Kharlamova, 2013], intending to break the isolation suffered by Portuguese mathematicians. Teixeira was successful thanks to the contributions of many foreign scholars, including Barisien, Cesàro, d'Ocagne, Lemoine, Loria, Marcolongo and Pirondini. These mathematicians, already engaged in various intermediate journals, such as *Mathesis*, the *Giornale di Matematiche* and the *Journal de mathématiques élémentaires*, were part of the same network of authors and collaborators that, a few years later, supported *Le Matematiche* and the *El Progreso*.

Galdeano published the first issue of his periodical on pure and applied mathematics, *El Progreso Mathematico* (1891-1895/1899-1900), in Zaragoza [Hormigon, 1981]. His goal was to stimulate the renewal of mathematical studies in Spain, where its development had been impeded by a long period of political and social instability. His editorial project was based on facilitating the circulation of mathematical research through reviews and articles, and publishing original papers written especially by Spanish mathematicians. From the letters from Galdeano to Brocard,[69] we learn that the French mathematician was active, here again, in defining the editorial model of *El Progreso*. At the outset it had four sections: articles in all mathematical disciplines; memoirs on philosophy, pedagogy and history of mathematics; bibliography; and

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[69] The letters are kept in Brocard's Archive, at the library of the Institut Henri Poincaré in Paris.

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lastly announcements and notes. Then, at Brocard's suggestion, Galdeano introduced, in the August 1891 issue, a new section dedicated to "Questions", as an incentive to increase interaction between the journal and its readership. Like Alasia, Galdeano proposed "Questions" taken from other journals, the *Nouvelle Correspondance mathématique*, the *Journal de mathématiques élémentaires* and *Nouvelles Annales de mathématiques.* Eventually, in the January 1892 issue, Spanish scholars, through Duràn Loriga, began proposing new "Questions".[70]

In a letter to the reader, in 1893, Galdeano manifested great satisfaction at the results his journal had achieved, as "evidenced by the various memoirs, notes, articles, etc…with signatures of great respect and fame such as those of the journal's foreign collaborators Battaglini, Brocard, Cesàro, Teixeira, Guimaraes, Lampe, Lemoine, Longchamps, Peano, Pirondini, Poulain, Retali, Schiappa Monteiro, Schlegel and Vigarié".[71] However, the most important result was the involvement of many national scholars. Comparing *Le Matematiche* and *El Progreso*, in particular the lists of the mathematicians who proposed "Questions" for them, we note that they still shared the same collaborators: Droz-Farny, Cesàro, Lemoine, Retali and Ripert.

Two other Spanish journals, which were inspired by *El Progreso*, shared the same Brocard editorial model: the *Revista Trimestral de Matematicas* (1901-1906) published by Josè Rius y Casas [Vidal, 1980] and the *Gaceta de Matemáticas Elementales* (1903-1906) founded by Angel Bozal y Obejero in the Basque Country [Palet, 1989]. Galdeano himself gave to y Casas several unpublished questions proposed by Brocard.[72]

To underline the atmosphere of mutual cooperation that existed among all these periodicals, we notice that y Casas solved a number of "Questions" proposed in *Le Ma-*

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[70] See also Antonio Oller, Cirmath seminar– session devoted to the "Questions/Solutions" form, Paris, 2016, http://cirmath.hypotheses.org/101-2.

[71] See *El Progreso* III, n. 25, 1893, 4.

[72] See letter from Galdeano to Brocard dated March 23, 1901.

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tematiche, and that, Galdeano and Duràn Loriga were also members of the editorial board of the latter journal.

Conclusions

Although short-lived, *Le Matematiche* had vivid interplay with many other journals. This was possible thanks to a network which facilitated direct correspondence not only between consolidated and emerging scientific groups, but also with isolated communities of scholars. The case of Alasia's journal shows that the most active scholars in the network were also involved in spreading the new triangle geometry. In this respect, the role played by Henri Brocard was pivotal.

What we have called the "Brocard editorial model" spread, with the experience of journals such as the *Nouvelles Annales de mathématiques*, throughout a network in which Brocard was an important hub.

Before the publication of *Le Matematiche*, the Brocard editorial model had already spread in Italy among the intermediate journals, due to the impact of *Mathesis, The Educational Time,* and the same *Nouvelles Annales de mathématiques*. The *Journal de Sciencias Mathematicas e Astronomicas* and *El Progreso* in the Iberia Peninsula also used the Brocard model. Later in Spain *El Progreso* became the example of an editorial model to be emulated. The Brocard editorial model was in fact shared by all the Italian, French, Spanish, English and Belgian intermediate journals, but also by the American intermediate journals which we came across when studying *Le Matematiche*.

The editors of intermediate journals included the sections of the Brocard editorial model that best served the purposes of their journal.

Alasia conceived his journal within the framework provided by this network, and built it on the impact *Mathesis*, *Nouvelles Annales de mathématiques* and *The Educational Times* had in Italy, taking over elements of their contents and editorial model.

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ANNEX 1

QUESTIONS AND SOLUTIONS
I VOLUME

	QUESTIONS	SOLUTIONS
1	J. De Vries	J. De Vries, C. Alasia
2	E. Lemoine	C. Alasia.
3	C. A. Laisant	V. Retali.
4	G. B. M. Zerr	G. Zerr
5-6	C. Alasia	Gaskin C.Alasia
7	L. Ripert	L.Ripert, C.Alasia
8	L. Ripert	C.Alasia
9	L. Ripert	A.Droz·Farny
10	L. Ripert	C.Alasia
11-12	E. Lemoine	A.Barozzini
13	A. Newton	C.Alasia.
14	Ch. Hermite	----
15	C. Alasia	C.Alasia.
16	C. Alasia	G.Delitala.
17	V. Retali	A. Droz·Farny
18-20	V. Retali	----
21	A.Droz·Farny	----
22	E. N. Barisien	A. Droz·Farny V. Retali, C. Alasia
23	E. N. Barisien	A. Droz·Farny V. Retali
24	C. Servais	A.Droz·Farny
25	J. De Vries	J. De Vries
26	E. N. Barisien	V. Retali, A Antonelli
27	W.Greenstreet	G. B. M. Zerr
28	W.Greenstreet	A.Pepoli, V.Strazzeri E. N.Barisien, V.Retali A.Droz·Farny.
29	E. Lemoine	A. Barozzini
30	H. Brocard	J.Rius y Casas
31	V. Retali	A.Antonelli, V.Retali
32	B. F. Finckel	----
33	C. Alasia	E. Cesàro C. Burali·Forti V. Retali
34	C. Servais	A. Antonelli
35	E. N. Barisien	----
36	W.Greenstreet	----
37	V. Retali	E.Barisien V.Retali
38	E. Fers	J. De Vries
39	W.M'Colaught	----
40	H. G. Mein	----
41	H. Brocard	V.Retali, A. Antonelli J. Rius y Casas E. Barisien
42	H. Brocard	----
43	H. Brocard	J. Rius y Casas
44-45	W. Greenstreet	----
46	G. Pirondini	----
47	E. Cesàro	----
48	W. Greenstreet	C. Alasia
49	B. F. Finkel	----
50	E. Lemoine	A. Barozzini
51	A. Barozzini	----
52	W. Greenstreet	E.Cesàro V. Retali
53	E. Barisien	----
54	W.Greenstreet	E.Cesàro V.Retali
55	H. Brocard	E.Barisien V.Retali
56	E. N.Barisien	----
57	C. Alasia	----
58-59	W. Greenstreet	----
60	E. Lemoine	----

II VOLUME

61	E. Cesàro	----
62	G. Loria	V. Retali
63	S. Composto	----
64	A. Barozzini	----
65	W. Greenstreet	E. N. Barisien V. Retali
66	W. Greenstreet	----
67	W. Greenstreet	E. Cesàro
68	A. Droz·Farny	A. Antonelli V. Retali
69	H. Fuhrmann	----
70	B. F. Finkel	C. Mineo, C. Alasia
71	G. Biasi	----
72	G. Biasi	G. Russo L. Ripert
73	W. Greenstreet	L. Ripert.
74	W. Greenstreet	----
75	H. Besant	----
76	A. De Quesada	----
77-78	W. Greenstreet	----
79	E. N. Barisien	----
80 -81	S. Composto	----
82	L. Rice	E. Cesàro
83	H. Besant	----
84-87	E. Cesàro	J. Rius Casas E. Cesàro
88	S. Composto	----
89	E. N. Barisien	----

90	E. Lemoine	V. Retali.
91	G. Loria	----
92-93	I. M. Peirce	----
94	E. Lemoine	----
95	G. Biasi	----
96	C. Alasia	----
97	----	----
98	----	E. Cesàro.
99	E. N. Barisien	----
100	W.Greenstreet	----
101	H. Besant	----
102	C. Alasia	----

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ANNEX 2

AUTORS
(with number of contributions)

Alasia C. – Sassari (12)
Alfa - - (1)
Allardice R. – Edimburg (1)
Amodeo F.- Napoli (1)
Antonelli A. – Arezzo (1)
Barbarin P. – Bordeaux (2)
Barisien E.N.- Costantinopoli (5)
Barozzini A.-Treviso (1)
Biasi G. – Sassari (1)
Bourget H. – Toulouse (1)
Brocard H.M. - Bar Le Duc (5)
Burali-Forti C. – Torino (3)
Burgatti P. – Roma (1)
Calegari A. – Genova (1)
Cesàro E. – Napoli (1)
Composto S. -- (1)
D'Ocagne M. P. – Paris (1)
De Savignac A. -- (1)
Delitala G. – Sassari (2)
Droz-Farny A.- Porrentruy (1)
Duran-Loriga J. - La Coruna (3)
Gamboli D. – Arezzo (1)
Gelin E. – Huy (1)
Giudice F. – Pavia (2)
Greenstreet W.- Londra (1)
Hermite Ch. – Paris (1)
Krahe A.-Madrid (1)
Lebon E. – Paris   (2)
Lemoine E. – Paris (2)
Lo Monaco-Aprile L. (1)
Longhi L. – Genova (1)
Loria G.- Genova (1)

Mansion P. – Ghent (1)
Marcolongo R. – Messina (2)
Mathy E. – Anversa (1)
Miller G. A. – California (2)
Mineo C. – Palermo (1)
Nielsen N. – Copenhague (1)
Pirondini G. – Parma (2)
Repetto G. – Sassari (1)
Retali V. – Milano (6)
Ripert L. -- (2)
Servais C. J. – Ghent (1)
Severi F. – Arezzo (1)
Strazzeri V. - Palermo (2)
Tzitzéica G. – Bucarest (1)
Van Uven M.J. – Utrecht (1)
Vivanti G. – Messina (1)
Vries de J.- Utrecht (5)
Zerr G. B. – Philadelphia (1)