PALÉONTOLOGIE

# The South American Mammal collection at the Museo Geologico Giovanni Capellini (Bologna, Italy)

## *La collection des mammifères d'Amérique du Sud au Museo Geologico Giovanni Capellini (Bologne, Italie)*

VIRGINIA VANNI[1], FEDERICO FANTI[2] & MARIA GIOVANNA BELCASTRO[3]

[1]Dipartimento di Biologia, University of Padova. Via Ugo Bassi 58/B, 35131 Padova, Italy - virginia.vanni@phd.unipd.it

[2]Dipartimento di Scienze Biologiche, Geologiche e Ambientali, University of Bologna. Via Zamboni 67, 40126 Bologna, Italy - federico.fanti@unibo.it

[3]Dipartimento di Scienze Biologiche, Geologiche e Ambientali, University of Bologna. Via Zamboni 67, 40126 Bologna, Italy - maria.belcastro@unibo.it

Citation : Vanni V., Fanti F. & Belcastro M.G., 2020. The South American Mammal collection at the Museo Geologico Giovanni Capellini (Bologna, Italy) *Colligo*, 3(3). https://perma.cc/UF7Y-ZFWQ

*KEY-WORDS*

*Giovanni Capellini*
*Florentino Ameghino*
*Hermann Burmeister*
*19th century*
*historical collection*
*Paleontology*
*correspondence*

*MOTS-CLÉS*

*Giovanni Capellini*
*Florentino Ameghino*
*Hermann Burmeister*
*19e siècle*
*collections historiques*
*Paléontologie*
*correspondance*

**Summary**: Near the end of the 19th century, Professor Giovanni Capellini acquired a rich collection of fossil mammal remains from South America, which became part of the permanent exhibit in the Museum that bears his name. We investigate the private correspondence of G. Capellini, in order to collect historical data on the collection. This correspondence includes a letter from Florentino Ameghino, which proves that he was born in Moneglia (Genova), Italy. Combining results from the letters found and the revision of the taxonomy of the specimens, we conclude that most of the collection was probably sent from Argentina by the German zoologist Carl Hermann Conrad Burmeister between 1863 and 1866.

**Résumé** : Vers la fin du XIXe siècle, le professeur Giovanni Capellini a acquis une riche collection de restes fossiles de mammifères de l'Amérique du Sud, qui sont devenus une partie de l'exposition permanente du Musée qui porte son nom. Nous enquêtons sur la correspondance privée de G. Capellini, afin de recueillir des données historiques sur la collection. Cette correspondance comprend une lettre de Florentino Ameghino qui prouve qu'il est né à Moneglia (Gênes), en Italie. En combinant les contenus des lettres trouvées et la révision de la taxinomie des spécimens, nous concluons que la plupart de la collection a probablement été envoyée d'Argentine par le zoologiste allemand Carl Hermann Conrad Burmeister entre 1863 et 1866.

## Introduction

The Geological Museum Giovanni Capellini in Bologna hosts a rich variety of paleontological and geological collections that have been acquired primarily during the second half of the 19th century. Professor Giovanni Capellini (1833-1922, **Fig. 1**) himself devoted his life to these disciplines and to enrich the city of Bologna with specimens coming from all over the world. Thanks to his relationships with the most influent scientists of his time, Capellini was capable of travelling, collecting, and acquiring specimens that we can appreciate today in the museum that bears his name.

As single collections are represented by hundreds or even thousands of individual objects, several have never been fully catalogued or restored since their arrival in the Museum. Among neglected collections, the South American Mammal Collection is remarkable, including more than 500 fossil vertebrates repre-

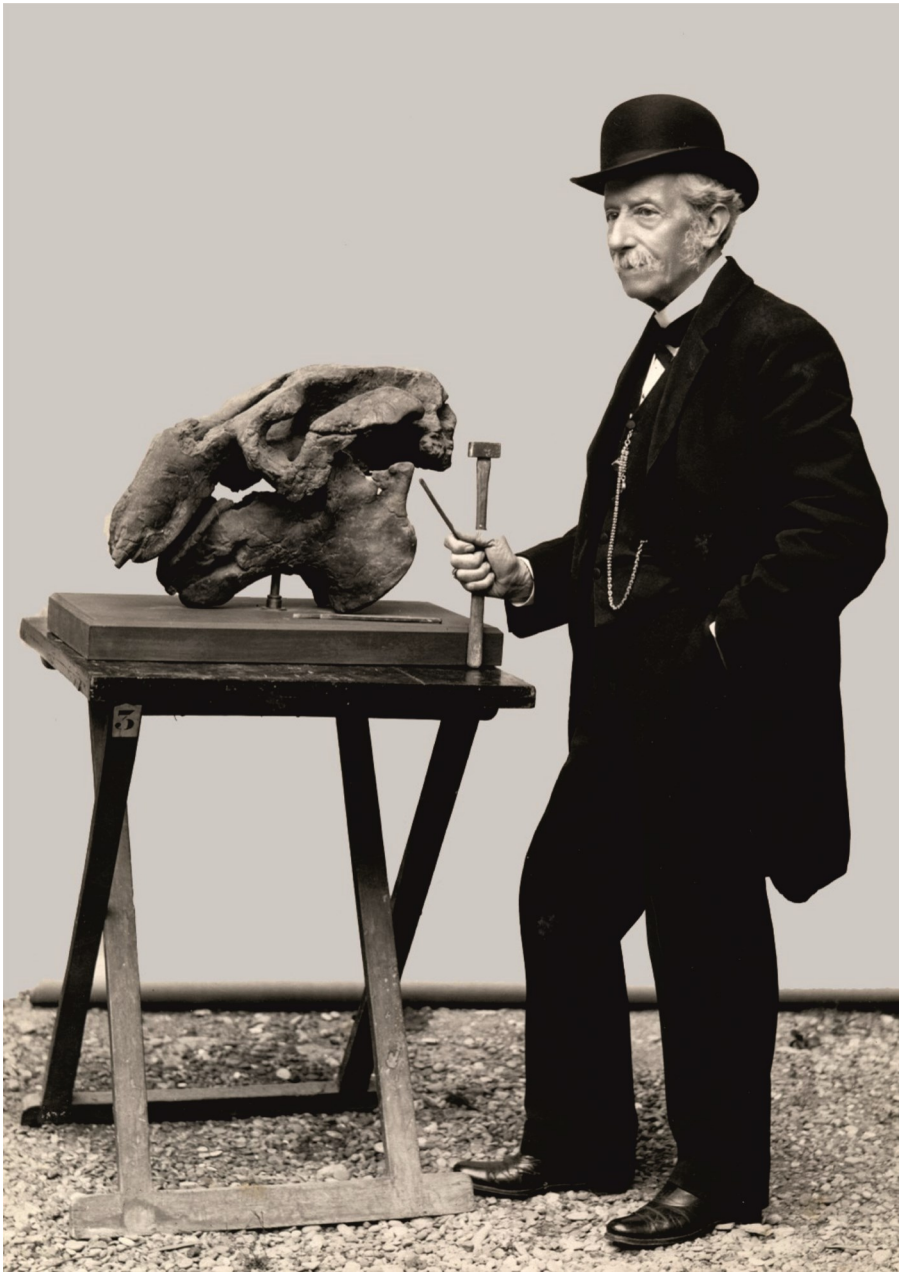


**Fig. 1.** Giovanni Capellini with a remarkably preserved skull of *Felsinotherium forestii* (today a synonym of *Metaxytherium subapenninum*). This Mediterranean sirenian species was described by Capellini in 1872. The specimen is currently on display at the Museo G. Capellini in Bologna. From the archive of the Museo Geologico G.Capellini, Bologna (Italy).

senting several xenarthran taxa from the Pampas, Argentina (**Figs 2-3**). A taxonomical revision that took place in 2016 allowed for a first comprehensive survey of the material. Glyptodonts (Glyptodontoidea Gray, 1869), and ground sloths (Megatheriidae Gray, 1821, and Mylodontidae, Gill, 1872) constitute the vast majority of the collection. A single tooth has been assigned to *Toxodon* sp., and several specimens to *Cuvieronius humboldtii* (Fischer, 1814). Surprisingly, very little data on when and how this material was acquired was available. Therefore, systematic revision of specimens was coupled with historical research in the Museum archive, and in the Biblioteca Comunale dell'Archiginnasio di Bologna (BCAB) in order to acquire detailed information on the year of acquisition, excavation locality, and inferred geological context of the specimens. Besides the fact that these researches revealed a few details on the provenance of this collection, we surprisingly found newsworthy information regarding the lives, connections and exchanges of paleontologists during the second half of the 19$^{th}$ century.

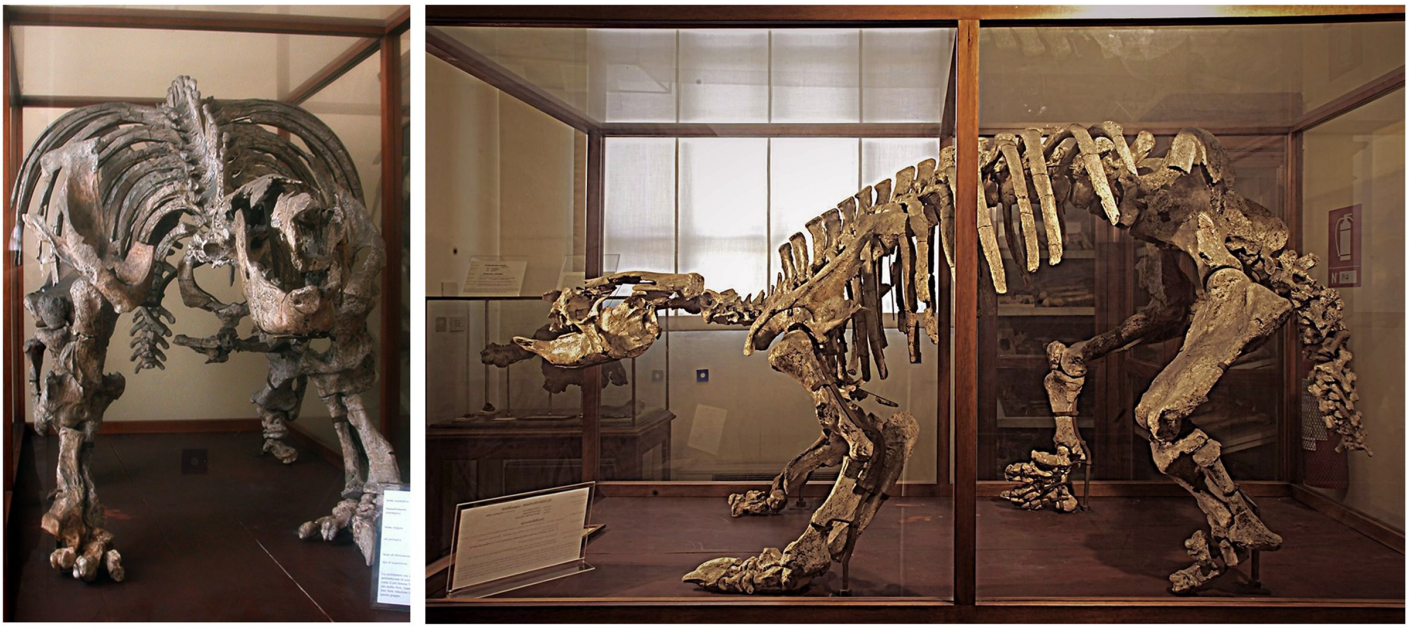


**Fig. 2.** The skeleton of a ground sloth labelled as *Scelidotherium capellinii* on display at the Museo G. Capellini in Bologna believed to be a gift from Florentino Ameghino. Photo of P. Ferrieri (MGGC).

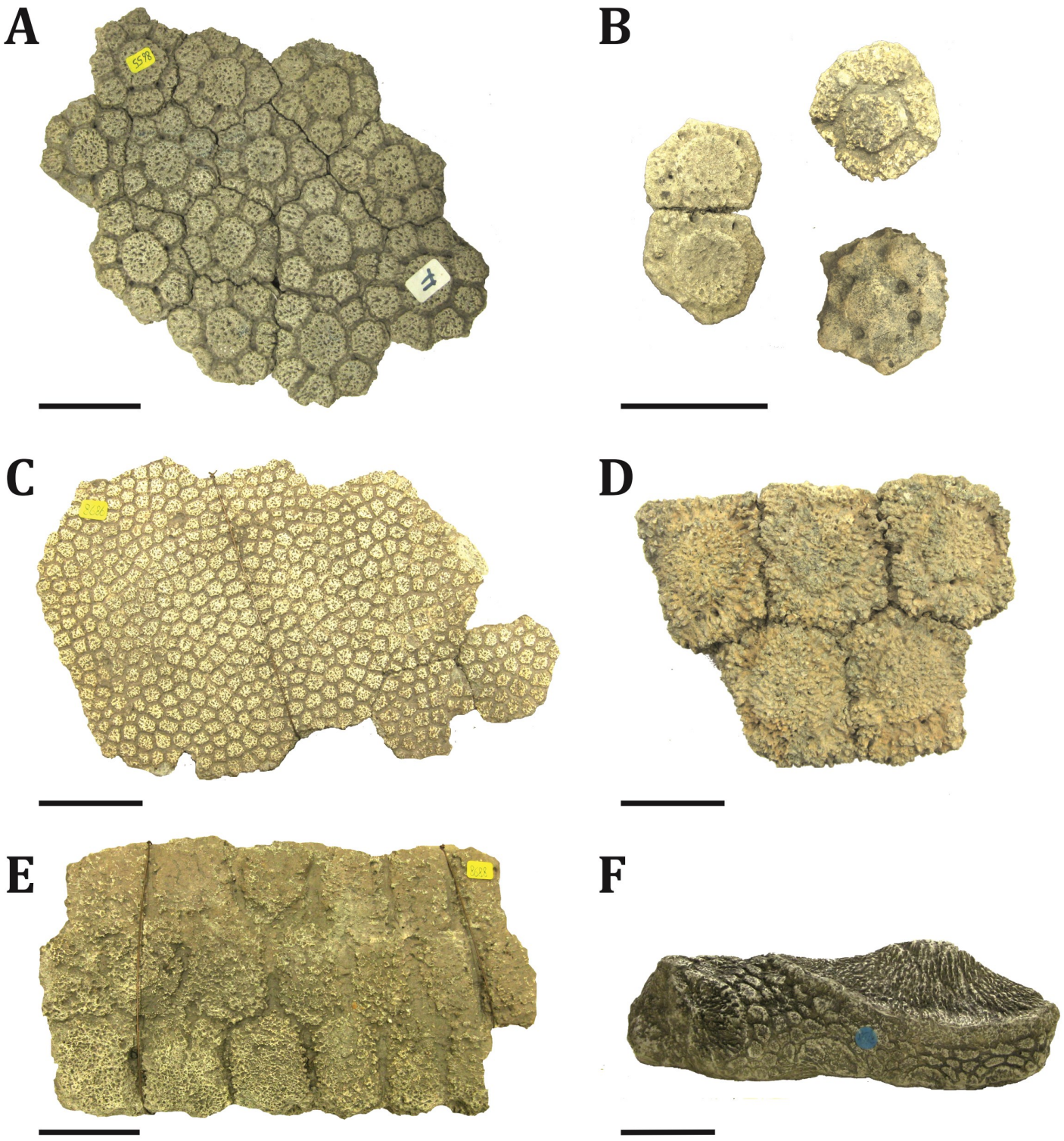



**Fig. 3.** Different osteoderm morphologies of glyptodont carapace documented in the 'South American Fossil Mammals collection' at the Museo G. Capellini. **A** - *Glyptodon clavipes*, dorsal portion of the carapace; **B** - Single osteoderms pertaining to: an unidentified species (left), the lateral carapace portion of *Glyptodon reticulatus* (upper right), *Doedicurus* sp. (upper left); **C** - *Panochtus tuberculatus*; **D** - *G. reticulatus*, juvenile; **E** - *Neuryurus* sp.; **F** - *Panochtus* sp., cast of a caudal tube's fragment. Scale bar: 50 mm (Identification follows Vanni, 2016)

## Facts and beliefs on the history of South American Mammals Collection

From the 1984 Museum inventory, little information can be obtained. Indeed, the South American material is reported to be a gift, received in 1863. As collection locality, geological age, and deposit, is indicated: "*Pampas, Pampean, Pleistocene-Bonaerense-Lujanense*". Unluckily, the source of this information remains unknown, although it most likely resulted from a transcription of older catalogues. Moreover, the donor is not mentioned in the Museum inventory. For a few specimens, this information can be recovered by reading their descriptions.

1. MGGC 8673

2. MGGC 8664

An entire, partially restored carapace of a glyptodont is on permanent exhibition in the "*Tipi di Vertebrati*" room [1]. The description under the carapace mentions:

> "*Glyptodon typus, Nodot Buenos Aires province*
> *Restored by the technician Antonio Pozzi from Milan*"

It was donated by the King Umberto I in 1879 (Vai, 2009), probably to honor the second International Geological Congress held in Bologna in 1881, as he was the Protector of the Congress (Vai, 2004).

A remarkable specimen pertaining to the South American collection is represented by a complete skeleton that is on permanent display [2] (**Fig. 2**). The specimen is labeled as *Scelidotherium capellinii* Gervais and Ameghino (1880) and represents the sole, complete skeleton of a xenarthran in the Museum. In the description of this specimen we find written: "*Assembled by G. Capellini in 1887, who recognized it from material donated by the paleontologist Ameghino from Argentina*". Historically, and probably due to this latter description, it was believed that the collection represented a gift of the renowned Argentinian scientist Florentino Ameghino (1853-1911) to Giovanni Capellini. Nevertheless, in 1880 this skeleton had already been assembled in the Museum, as supported by the fact that Capellini published a volume regarding the Geological Congress of 1881, in which a drawing of this specimen can be found (Capellini, 1882; **Fig. 4**). Moreover, in their comprehensive description of South American fossil mammals published in 1880, Henri Gervais (1845-1915) and Ameghino erected the species *Scelidotherium capellinii* on the basis of a single mandibular fragment, while they mention a complete skeleton of *Scelidotherium leptocephalum* restored by Capellini that can be found at the Museum of Bologna (Gervais and Ameghino, 1880).

This suggests that some information is wrong in the museum description of the specimen, which for decades led to suppose that the collection was donated by Florentino Ameghino. Therefore, we decided to conduct additional researches in Professor Capellini's personal correspondence.

## The correspondence of Professor Giovanni Capellini

One of the last requests of Giovanni Capellini was to leave to the academic community his personal correspondence with some of the most influent scientists of the 19th century (Sorbelli & Markbreiter, 1928; Caciagli & Ferrari, 2009). This rich archive is hosted in the "*Manoscritti e rari*" section of the Archiginnasio Library of Bologna. Relevant data on the South American collection came from the correspondence between Capellini and Florentino Ameghino, the Prussian entomologist Carl Hermann Conrad Burmeister (1807-1892), director of the Public/National Museum in Buenos Aires from 1862 to 1892, Emilio Cornalia (1824-1882), the director of the Natural History museum of Milano between 1866 and 1882), and Antonio Pozzi (1822-1898), a taxidermist from the same museum.

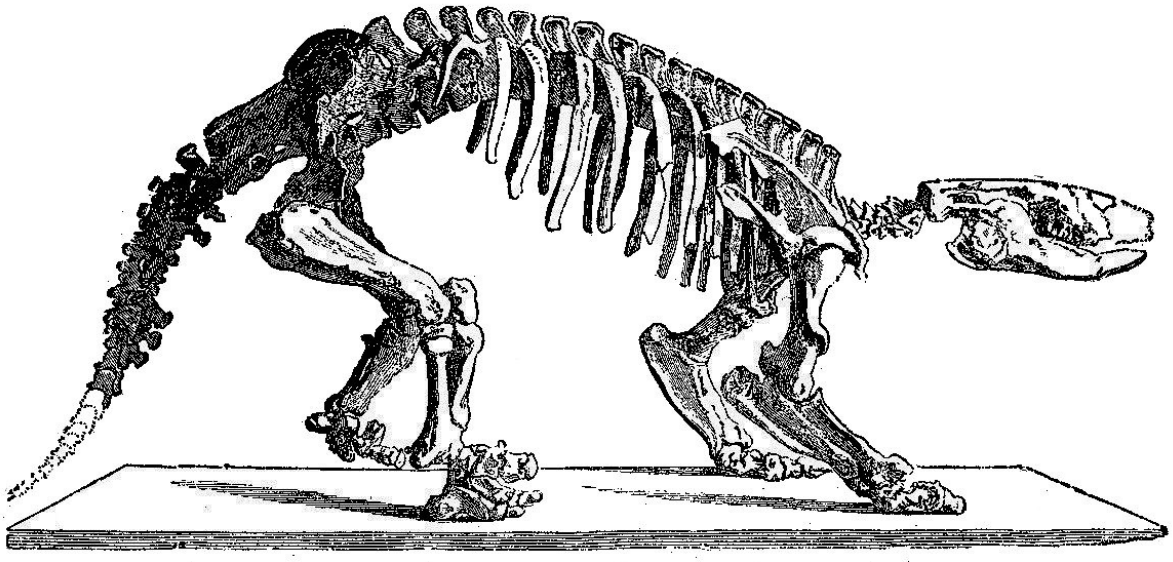


**Fig 4.** A reproduction of the *Scelidotherium* skeleton on display at the Museo G. Capellini, published in the volume of the Geological Congress (Capellini, 1882).

The correspondence with Hermann Burmeister starts in 1855, when Burmeister was ordinary professor in charge of the Zoological Museum at the University of Halle-Wittenberg. At that time, Capellini was still a student but he already had the opportunity to meet researchers from the international scientific community, as he was elected as corresponding member of the German Society of Naturalists of Halle (Fanti, 2010). The letters sent by Burmeister are rich in personal details. In a letter of 1856, the German entomologist asked Capellini, although he had just graduated (he was 23 years old), to translate in Italian his most recent zoology book [3], thus documenting his high opinion of Capellini already in that period, but also the necessity for Burmeister to publicize his work: since, according to a ministerial decree, medical students were free to attend science lectures, his lectures remained almost empty (Nyhart, 1995). The good and long relationship between these two scientists, which can be inferred from their letters and from the fact that they were on a first-name basis, could have influenced a recurring exchange of specimens, which is sometimes cited in their correspondence. In particular, in a letter dated March 1863, Burmeister wrote from Buenos Aires expressing his astonishment that he had been appointed director of the future (and non-existent) paleontological museum in Buenos Aires, a field which was not, in fact, his own (see Podgorny and Lopes, 2008 on Burmeister's career in Buenos Aires):

> "(...) *m'a fait professeur de zoologie et de !!!! paléontologie et directeur de l'institut et musée de Zoologie et de !! Paléontologie (qu'il faut encore créer )*"
> '(...) I've been nominated professor of zoology and !!!! Palaeontology and director of the museum and institute of Zoology and !! Palaeontology (which has to be created)'

> "*Je voudrais te demander, si tu me pourrais provenez des choses de votre pays, qui nous manquent presque tout à fait.*" [4]
> 'I want to ask you if you could send me some things from your country that we miss almost completely.'

At the end of this letter, Burmeister wrote that he was sending specimens for Capellini's collection, but unfortunately this part of the missive is ripped, and the objects that were sent remain unknown. However, since he was asking specimens from Capellini, and he was writing from Buenos Aires, it seems probable that he was sending South American specimens in exchange, but further evidences are needed to confirm this hypothesis.

From the correspondence between Capellini and Emilio Cornalia, we found another clue about the presence in the museum of the *Scelidotherium* skeleton, as early as 1872. The director of the Natural History Museum of Milano, writes:

> "*Il viaggio del Beagle- Fossili e Mammiferi* [5] *lo posseggo, ma troverai tu ben poco. Un cranio rotto di* Scelidotherium, *qualche ossa* (...) *di arti, ma poco ti può servire per montare, però se lo vuoi te lo manderò* (...)." [6]
> 'I do own "viaggio del Beagle – Fossili e Mammiferi", but you will find there really few (things). A broken skull of *Scelidotherium*, some limb bones (...), but little can be useful to you to assemble, but if you want it I will send it to you (...).'

From these few lines, it seems clear that in 1872 Capellini was assembling a skeleton to place on display at the Museum in Bologna, probably of a *Scelidotherium*, and he was asking the director of the Museum of Milano for a copy of the book published by Richard Owen and Charles Darwin, apparently searching for some illustrations that could help him in the process of mounting the specimen. This supports again that the information written in the description of the *Scelidotherium skeleton* is wrong.

Antonio Pozzi is the same name that can be read under the *Glyptodon* typus carapace donated by King Umberto I. The Pozzis were a family of naturalist-preparators. Antonio Pozzi had worked for several European museums and in 1866 he was hired as a taxidermist at the Public Museum of Buenos Aires, where his son Santiago was incorporated as an assistant taxidermist and collector of Ornithology. Shortly afterwards, due to disagreements with Burmeister, they were exonerated from their positions and devoted themselves to the private sale of collections (García *et al.*, 2015). The letter kept in Capellini's archive gives an account of that activity and of Antonio's activity in Italy, where he took several Argentinean collections for sale (Podgorny, 2009).

As mentioned by García *et al.*, the Pozzis had connections with Florentino Ameghino, teaching him techniques for extracting fossils. At the 1882 South American Continental Exhibition, Santiago was awarded a prize for his pre-

3. Burmeister to Capellini, 1856. Biblioteca Comunale dell'Archiginnasio di Bologna (BCAB). Fondo Speciale "Giovanni Capellini" (FSGC), busta XXII, fascicolo 22.

4. Burmeister to Capellini, 1863. BCAB, FSGC, b. XXII, f. 22.

5. It refers to the book "Zoology of the Voyage of H.M.S. Beagle - Fossil Mammalia" by Richard Owen/ Charles Darwin (1840), where indeed images of *Scelidotherium* specimens can be found (see Lister, 2018).

6. Cornalia to Capellini, 1872. BCAB, FSCG, b. XXXVI, f. 10.

parations and two years later he was called to work at the museum in La Plata, the new capital of the Province of Buenos Aires. The Pozzi family settled there and opened a taxidermy and art dealer business. Santiago, as the first preparator of the La Plata Museum, was initially assigned to the arrangement of the paleontological collections and to participate in expeditions in the Province of Buenos Aires and Patagonia, being accompanied by his son Antonio. He -an accomplished taxidermist- also assembled animal skeletons for the Comparative Anatomy Hall and mounted birds. In 1902, he retired from the museum in La Plata and shortly afterwards he was called by Ameghino to work at the museum in Buenos Aires, where he would work for over two decades together with his sons Antonio and Aurelio. (García *et al.*, 2015) Antonio (father) died in La Plata in 1898 but in the 1870s, he was a technician in the Natural History Museum of Milano, and in his correspondence with Capellini it is clear that he travelled and excavated fossils in Argentina. In his letter of 1874 to Capellini, the former was leaving for Argentina with something for the director of the museum of Buenos Aires (who was Burmeister at that time) sent by Capellini:

> "(...) *le sia noto, che se lui o On.mo Sig.re Capellini desidera inviarmi ciò che crede (come me ne parlò verbalmente in Bologna) per il Sig. Direttore del Museo di Buenosayres, potrebbe fare la spedizione in Milano* (...)"
> "(...) If you Hon Sir Capellini want to send me what you deem (as you verbally told me in Bologna) for the Director of the Museum in Buenos Ayres, you could send to Milano (...)" [7]

Two other letters dated 1881 confirm that Antonio Pozzi, not only restored the carapace, but is actually the person who brought it to Italy and donated it to King Umberto I, who in turn donated it to the Geological Museum of Bologna. He also sent to Capellini a tibia and a fibula he found with it, four other carapace fragments and a single osteoderm. However, he writes:

> "*Sono alquanto spiaciuto a non poterle dare quelle strette ed elette relazioni riguardo alla località dove si è scoperta la corazza del* Gliptodon *Rubusto da me regalato a sua Maestà il Re Umberto. Da Buenos Aires, un giorno di cammino con le ferrovie del* (...) *e poi un giorno di cavallo inclinando a sud*" [8]
> 'I'm sorry I can't give you the precise information about the locality where the *Glyptodon* carapace that I donated to King Umberto I came from. From Buenos Aires, one day by train (...) and a day by horse going south'

He was not able to provide additional information on the locality where the specimens had been collected but promised to elucidate this in future correspondence with Capellini. Unfortunately, no additional subsequent letters are preserved in the Bologna archive.

To summarize, in 1862 Hermann Burmeister was appointed as Professor and Director in the Museo Público of Buenos Aires; he asked specimens from Capellini, and he sent something to Capellini too (though the objects still remain unknown). In 1872 Capellini was already assembling a *Scelidotherium* skeleton, and two years later he sent something to Burmeister in Buenos Aires with the help of Antonio Pozzi, who was travelling in South America. Pozzi returned before 1881 to Italy, with an entire glyptodont carapace1 (which he gave to king Umberto I, whom in turn donated it to Capellini) and some other fossils that he sent to Capellini. Therefore, from the information acquired until now, we know that the collection of South American fossil mammals probably represents two or more acquisitions: one presumably from Burmeister, and one from Antonio Pozzi.

## The correspondence between Florentino Ameghino and Giovanni Capellini

Florentino Ameghino was an Argentinean paleontologist, anthropologist, and zoologist whose date and place of birth have been debated for decades. He was the son of Italian immigrants, and a few years after his death in 1911, it was claimed that he had been born in 1854 in Luján, rather than in Moneglia in 1853 (Podgorny, 1997; 2020). The correspondence between Ameghino and Capellini consists of two letters. In the first one, Ameghino introduces himself to Capellini (therefore it represents the first in chronological order, although the date is missing), and he explains that he wants to obtain exemption from Italian military service in order to visit Italian museums (at that time he was residing in France) and asks for Capellini's intervention in return for gifts for his Museum. In this letter Ameghino also writes:

> "*Sono nato del 53 nella comuna di Moneglia,*

7. Pozzi to Capellini, 1874. BCAB, FSGC. b. CXIII, f. 32.

8. Pozzi to Capellini, 1881. BCAB, FSGC. b.CXIII, f. 32.

> *presso Chiavari. Il 55, a l'età di 18 mesi venivo trasportato a Buenos Aires dai miei genitori, dove mi sono educato, dedicandomi particolarmenti allo studio dell'antropologia, geologia e paleontologia."* [9]
> 'I was born in '53 in the district of Moneglia, Chiavari. In '55, at the age of 18 months, I was taken by my parents to Buenos Aires, where I have studied, particularly I dedicate myself to the study of anthropology, geology and palaeontology.'

This short message is of extreme historical relevance as it is the first direct evidence of Ameghino's place of birth, written by Ameghino himself. In addition, it suggests that as he was an Italian citizen and could not get an exemption from military service in Italy, he could not visit his home country but would have to acquire Agentinean citizenship once he was back in Buenos Aires if he wanted to travel to Italy, as he adds:

> "(...) *se non ce* (...) *per ottenere la mia escepzione non andrei in Italia, e che di ritorno a Buenos Aires, sarei obligato a condiscendere ai desideri della popolazione di Mercedes che di fatto mi considera come uno dei suoi prediletti cittadini, prendendo carta di cittadinanza argentina*"
> '(...) and if there's no (...) to obtain an exemption, I shall not go to Italy, and back in Buenos Aires, I shall have to follow the will of the inhabitants of Mercedes (...) and take the Argentinean citizenship'

The second missive dates from 1881; Ameghino sent to Capellini a copy of one of his new book: "*La antigüedad del hombre en el Plata*" [10]. However, in the correspondence between Capellini and Ameghino the dispatch of South American fossil specimens is never mentioned.

In a letter dated 1881, found in the *Obras Completas de Florentino Ameghino*, Capellini answers to both letters, specifying that there was no way to obtain exemption from military service, and at the end adding:

> "*Una casa di commercio di Genova (certi signori Hoefer) mi ha offerto di acquistare una ricca collezione di fossili dei Pampas, ma il Museo non ha mezzi e il Governo non è disposto a darne*." [11]
> "A commerce house of Genoa (a certain Mr Hoefer) offered me to buy a rich fossil collection from the Pampas, but the museum doesn't have the means and the government isn't willing to give any."

We still don't know if this collection was bought later on by Capellini, or donated to the museum, becoming part of the South American Mammals collection that we can appreciate today.

## Further clues: the taxonomy of glyptodont specimens

Some evidence about the period of acquisition has been found during the revision of the taxonomy of glyptodont fossils. In fact, all glyptodont specimens in the Museo Capellini collection have been historically referred to the genus *Glyptodon*. Although incorrect, this taxonomic decision reflects the first description of glyptodonts (Owen, 1858), and, in particular, the classification proposed by Burmeister in 1863, as well as in the first volume of the "*Anales del Museo de Buenos Aires*" written by the latter author in 1864. With the discovery of additional fossil material, in 1870 Burmeister published another revision of the taxa, erecting the genus *Panochtus*.

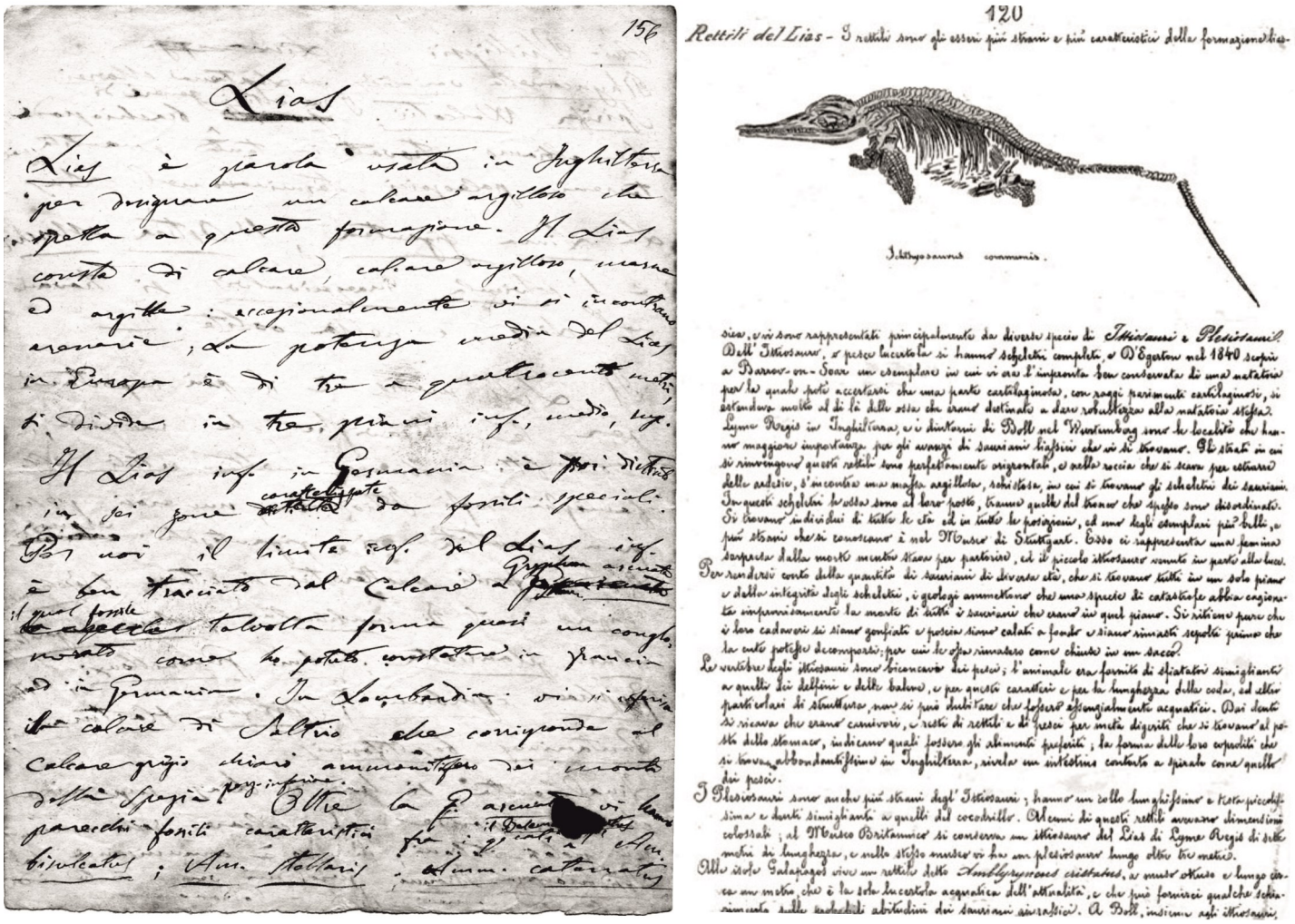
For example, some osteoderms on display in the Museum are labeled as "*Glyptodon asper* Burmeister", but the same osteoderms are assigned to *Glyptodon typus* Nodot in the official catalogue. The species *Glyptodon asper* was erected by Burmeister in 1863; in 1864 he recognized the synonymy with *Glyptodon typus* erected by Nodot but decided to maintain the name "*asper*" for this species (Burmeister, 1864); in 1866 he re-assigned the species to the genus *Hoplophorus*, and called the species *H. asper* (Burmeister, 1866). Finally, in 1880 Gervais and Ameghino referred all specimens to *Glyptodon* maintaining the name assigned by Nodot, *Glyptodon typus*, the same that is written in the catalogue (Gervais and Ameghino, 1880). Nowadays this species is no longer considered valid, as in 1889, Ameghino re-assigned this species to *Glyptodon reticulatus*, together with *Glyptodon/Hoplophorus pumilio* and *Glyptodon/Panochtus tuberculatus* (Ameghino, 1889), also found in G. Capellini's collection (**Fig. 3**).

Therefore, the nomenclature indicated in the labels is based upon the classification used by Burmeister in 1863; as in 1866 this classification was modified, it is possible that the majority of these fossils were acquired between 1863 and 1866.

9. Ameghino to Capellini, unknown year. BCAB, FSGC. b. II, f. 35.

10. Ameghino to Capellini, 1881. BCAB, FSGC. b. II, f. 35.

11. Capellini to Ameghino, 1881. In: Obras Completa de Florentino Ameghino, Florentino Ameghino 1853 -1911. Vol. 20: Correspondencia científica.



Two examples of Giovanni Capellini handwriting, taken from his notes (**left**) and from a lecture of 1863 (**right**).
From the archive of the Museo Geologico G. Capellini, Bologna (Italy).

## Conclusion

The Museo Geologico Giovanni Capellini of Bologna hosts a remarkable number of fossils, coming from numerous different localities in the world. Recently, a restoration of the South American Mammals historical collection, together with a taxonomical revision of glyptodont specimens took place. We recognized that the history of acquisition of this rich collection was dubious, and details on the excavation localities and geological context were missing. Therefore, trying to understand the story of these specimens, we conducted research in Capellini's private correspondence. We found letters from the most important paleontologists of the last decades of the 19th century. These letters not only revealed the history (although still incomplete) of the South American Mammal Collection, but also gave us some unexpected information about the figures of that time. An original letter from the Argentinian scientist Florentino Ameghino turned out to be very significant for the biography of this famous scientist. In fact, his missive prove that he was born in Italy, precisely in Moneglia, Genova, in 1853, this being the first direct evidence about his place of birth, long debated among his biographers. Moreover, as Ameghino writes in his missive, probably he came back to Argentina in order to avoid the military service in Italy (See also Podgorny, 2020b). The Prussian scientist Carl Hermann Conrad Burmeister is most likely the person that sent the material to Capellini. Even if direct evidence in his letters is missing, the long scientific and personal relationship between these Professors could have encouraged the exchange of specimens for their museums. Burmeister was the Director of Buenos Aires Museum from 1862 and produced many publications regarding glyptodonts. Moreover, the classification followed in the Museum coincides with the first published by Burmeister, also suggesting that the major part of this material was acquired between 1863 and 1864, and classified following his publications.

A few specimens pertaining to the South Ame-

rican Fossil Mammals collection were sent in 1881 by Antonio Pozzi, a technician of the Museum in Milan. Pozzi apparently participated to excavations near Buenos Aires, he also restored and donated the entire Glyptodon carapace (MGGC 8673) to King Umberto I, who in turn donated it to G. Capellini. Unluckily, the collection localities of specimens of the entire collection still remain unknown.

The possibility remains open that part of this collection comes from the offer Capellini received in 1881 from a commerce house in Genoa, and which he mentions in his letter to Ameghino of 1881. We need to do more researches in Capellini's correspondence to exclude or confirm this possibility. However, in 1874 Capellini was already assembling a skeleton of *Scelidotherium*. As a result, the collection could be a set of gifts and purchases which, thanks to the work of Giovanni Capellini, have enriched the Geological Museum of Bologna.

In historical paleontological collections, it often happens that details regarding the acquisition of specimens are not clear or even wrong, and documents about their inferred age or excavation locality are missing. When the specimens pertaining to these collections are subjected to scientific analyses, the lack of such information prevents from giving important biological remarks about the specimens. Therefore, questioning the history of the collections is of fundamental importance in order to be able to further analyze them. In our case, this approach brought few results regarding the collection localities of specimens pertaining to the South American fossil mammals collection of Bologna Geological Museum G. Capellini. Nevertheless, thanks to our researches, we uncovered some unexpected information regarding the biography of scientists, their relationships, and exchanges for their museums, during the last part of the 19$^{th}$ century, which resulted in the great diversity of fossil collections that we can still appreciate nowadays.

## Acknowledgements

The authors want to kindly thank Irina Podgorny and Eric Buffetaut for the advices offered, and the fundamental comments to this work. We also thank Angela Vanni and Letizia Barbagli for the help with letter translation.

## References

AMEGHINO F., 1889. Contribución al conocimiento de los mamíferos fósiles de la República Argentina. *Actas de la Academia Nacional de Ciencias de Córdoba*, 6: 1–1027.

AMEGHINO F., 1853-1911. *Obras completas y correspondencia científica de Florentino Ameghino*. Vol 20: Correspondencia científica.

BURMEISTER H., 1864. Noticias preliminaries sobre las diferentes especies de Glyptodon en el Museo Pùblico de Buenos Aires. *Anales del Museo Publico de Buenos Aires*, 1: 71-85.

BURMEISTER H., 1866. On Glyptodon and its allies. *Annals and Magazine of Natural History* (3), xviii: 299-304.

BURMEISTER H., 1874. Monografia de los Glyptodontes en el Museo Publico de Buenos Aires. *Anales del Museo Público de Buenos Aires*, 2: 1-412.

CACIAGLI M. & FERRARI G., 2009. The earth sciences in the scientific letters of Giovanni Capellini *Annals of Geophysics*, 52(6): 667-671.

CAPELLINI G., 1882. Historique du Congrès, in *Congrès Géologique International, Compte Rendu de la 2me Session*, Bologne, 1881. Bologne, Imp. Fava et Garagnani, p. 3-54.

FANTI F., 2010. Life and ideas of Giovanni Capellini (1833–1922): a palaeontological revolution in Italy. *Geological Society, London, Special Publications*, 343: 79-87.

GARCÍA S.V., LÓPEZ, H.L., ETCHEVERRY E.F., PONTE GÓMEZ J., 2015. El Taller de Taxidermia en la historia del Museo de La Plata. *Revista Museo*, 27: 33-40.

GERVAIS H. & AMEGHINO F., 1880. *Los mamíferos fósiles de la América del Sud*. Sabih and Igon, Paris-Buenos Aires, 225 p.

LISTER A., 2018. *Darwin's Fossils: The Collection that Shaped the Theory of Evolution*. London, Natural History Museum, 160 p.

NYHART L.K., 1995. *Biology takes form: animal morphology and the German universities, 1800-1900*. Chicago, University of Chicago Press, 414 p.

OWEN R., 1839. Description of a tooth and part of the skeleton of the Glyptodon, a large quadruped of the edentate order, to which belongs the tessellated bony armour figured by Mr Clift in his memoir on the remains of the Megatherium, brought to England by Sir Woodbine Parish, F.G.S. *Proceedings of the*

*Geological Society of London*, 3: 108–113.

PODGORNY I., 1997. De la santidad laica del científico: Florentino Ameghino y el espectáculo de la ciencia en la Argentina moderna. *Entrepasados*, 13: 37–61.

PODGORNY I., 2009. *El sendero del tiempo y de las causas accidentales. Los espacios de la prehistoria en la Argentina*. Rosario. Prohistoria, 331 p.

PODGORNY I., 2020a. *Florentino Ameghino & Hermanos. Empresa argentina de paleontología ILIMITADA*. BUENOS AIRES, EDHASA, 269 P.

PODGORNY I., 2020b. *Los argentinos vienen de los peces. Ensayo de filogenia nacional*. Universidad de Rosario.

PODGORNY I. & LOPES M.M., 2008. *El desierto en una vitrina. Museos e historia natural en la Argentina*. Mexico, Limusa, (Second edition Rosario, Prohistoria, 2014), 280 p.

SORBELLI A. & MARKBREITER E., 1929. Giovanni Capellini e il suo carteggio. Inventario del carteggio Capellini. *L'Archiginnasio*, 24: 29-74.

VAI G.B., 2004. The Second International Geological Congress, Bologna, 1881. *Episodes*, 27: 13–20.

VAI G.B., 2009. *Museo Geologico Giovanni Capellini - Guida breve per immagini, Short Picture Guide*. Labanti e Nanni. Bologna, Crespellano, 236 p.

VANNI V., 2016. *Revision and restoration of the fossils of Glyptodonts (Xenarthra; Glyptodontia) pertaining to the South American fossil Mammals Collection of the Museo Geologico Giovanni Capellini*. Unpublished Master's Thesis, University of Bologna, Italy.

## Archives

The letters of Florentino Ameghino are housed in the Biblioteca Comunale Archiginnasio of Bologna in the *Fondo Speciale"Giovanni Capellini"*, busta II, fascicolo 35.

The letters of Hermann Burmeister are housed in the Biblioteca Comunale Archiginnasio of Bologna in the *Fondo Speciale "Giovanni Capellini"*, busta XXII, fasc. 22.

The letters of Emilio Cornalia are housed in the Biblioteca Comunale Archiginnasio of Bologna in the *Fondo Speciale "Giovanni Capellini"*, busta XXXVI, fasc. 10.

The letters of Antonio Pozzi are housed in the Biblioteca Comunale Archiginnasio of Bologna in the *Fondo Speciale "Giovanni Capellini"*, busta CXIII, fasc. 32.