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The mycological legacy of Camille Torrend S.J.: a call for recognition

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Camille [Camilo] Torrend (1875–1961), a French Jesuit, became a mycologist while living in Portugal (1894–1910). Immersed in a scientific network facilitated by the Jesuit community and trained by the leading experts of the time, Torrend made significant contributions to mycological collections, published material primarily from Portugal, and described many new species. We describe Torrend's scientific activities until 1914, when he left for Brazil, and analyse his collection that remained in Portugal, the former mycological collection of the College of São Fiel, kept in the Herbarium of the University of Coimbra and available on the online catalogue. It contains 1854 specimens, 60 % from Portugal and 57 % collected by Torrend. However, it also contains material from 24 other countries and 87 other collectors. Most of the specimens have never been revised; the collection currently totals 1550 taxa. The specimens have no collector number, sometimes lack a locality or date of collection, which makes it difficult for specialists to use them. By reviewing Torrend's career and difficulties, we highlight his significant contributions to mycology and shed light on the missing data on many specimens. Today, his material is in many countries, primarily in Portugal and Brazil.

Keywords: Fungi, scientific networks, Jesuit Colleges, Coimbra Herbarium, myxomycetes.

The Herbarium of the University of Coimbra, Portugal, houses the short-lived herbarium (1897–1909) of the Jesuit College of São Fiel, Louriçal do Campo (C. Portugal), an institute of secondary education abruptly closed in 1910 after the revolution that overthrew the Portuguese monarchy, and all religious orders were expelled. The relocation of the São Fiel Herbarium to Coimbra in 1912 was supervised by Prof. Júlio Henriques (1838–1928), Director of the Botanic Garden of the University of Coimbra (Manuscript of Henriques 1912, Tavares 1924, Rodrigues 1992).

The Herbarium of the College of São Fiel included a mycological collection, the result of the initiative of the French Jesuit Camille [Camilo] Torrend (born 21 July 1875, Saint-Privat d'Allier – died 24 June 1961, Brazil; Franco 2003). Most specimens were collected by Torrend and the remaining he obtained through his scientific network.

Torrend's interest in science cannot be dissociated from the intellectual environment surrounding him in the Society of Jesus, which embraced the study of nature from its inception (Romeiras 2019, Udias 2019, Županov 2019). The Society had been banned twice before from Portugal (1759 and 1834) (Fiolhais & Franco 2016), and its return in 1858 was met with latent anti-Jesuit sentiment that stimulated it to excel. The Jesuit colleges established in Portugal in the second half of the 19th century, especially those of Campolide (1858), near Lisbon, and São Fiel (1863), in the rural central country, were remarkable institutes that stood out in the experimental teaching of science. Several teachers were important researchers and naturalists (Cabral 2010, Romeiras 2015, 2018). Torrend had strong ties to the Jesuit colleges as a student and later as a teacher.

The mycological research in Portugal at the end of the 19th century was limited. Aware of this shortage of expertise, Portuguese botanists frequently sent material to reputed foreign specialists for identification. This scenario, described by Henriques (1881), Torrend himself (1902) and Traverso & Spessa (1910), improved gradually during the 20th and 21st centuries at least in some fungal groups (Talhinhas et al. 2019).

Since its arrival in Coimbra in 1912, the São Fiel mycological collection has never been studied as a whole, and only a few specimens have been revised. The recent digitisation of this material available online [Herbarium of the University of Coimbra

(COI) 2025] has (1) revealed a diverse collection pointing to intense scientific activity and (2) uncovered the challenges that some specimens pose to taxonomists mainly due to shortage of information on labels (see Fidalgo 2020).

Torrend's contribution to mycology is manyfold and it goes well beyond the many taxa he described (nearly 150; Azevedo & Caires 2022). We aim to fully highlight Camille Torrend's scientific work during his life in Portugal (1894–1910) and until he departed for Brazil (1914), the national and international scientific network to which he belonged, and his significant contributions to mycology in Portugal. The biographical details provided here clarify aspects of his scientific career and provide clues on relevant data missing on his specimens.

The starting years

Camille Torrend was a short man with a broad face and curly hair (McCullagh 1910) (Fig. 1). He wrote about his background, his family of missionaries, and that since childhood he was inclined to such a life of abnegation (Torrend 1905b). His older brother, Jules Torrend S.J. (1861–1936), a missionary and a reputed linguist in Africa (McCullagh 1910, Maambo 2018), would have inspired Camille to join the Society of Jesus.

At the age of 19, Camille Torrend became a member of the Society of Jesus at the Novitiate of Barro, Torres Vedras (C. Portugal). Three years later, in 1897, he went to the Jesuit College of São Fiel for one year to study philosophy and natural sciences till 1898 (Romeiras 2017). Still a student, Torrend stayed at the Jesuit College of São Francisco in Setúbal, S. Lisbon, from 1900 until the Summer of 1902. At the time, the College's naturalists were taking forays into the surrounding area to study from the higher plants and bryophytes to the insects and minerals and Torrend concentrated on the fungi (Luisier 1902) as he understood how much mycology was un-explored in Portugal. He deposited the specimens then collected in the Jesuit College of Campolide (Torrend 1902), and much later sent some to São Fiel (Tavares 1924). Hence, the first mycological specimen of Torrend we found in Coimbra (COI00095310) is from nearby Setúbal dating from March 1900.

Initially, he struggled without reference books or guidance (Torrend 1902, 1918). Then, he learnt from Frederick Hilling S.J. (St. John's College, Toledo, Ohio) about the Austrian mycologist Johannes Rick S.J. (1869–1946) who, at the time (1899–1902), was studying theology at Valkenburg, Netherlands, a major centre for the Jesuit biologists (Udías 2019). Rick was the first mycologist Torrend sent material to, probably sometime in 1899–1990. He sent him c. 50 specimens of basidiomycetes and ascomycetes that he had collected and identified using the single bibliography he had at hand, the *Flore des Champignons* of Constantin et Dufour from 1891. Discouraged, he expressed his intention of giving up mycol-

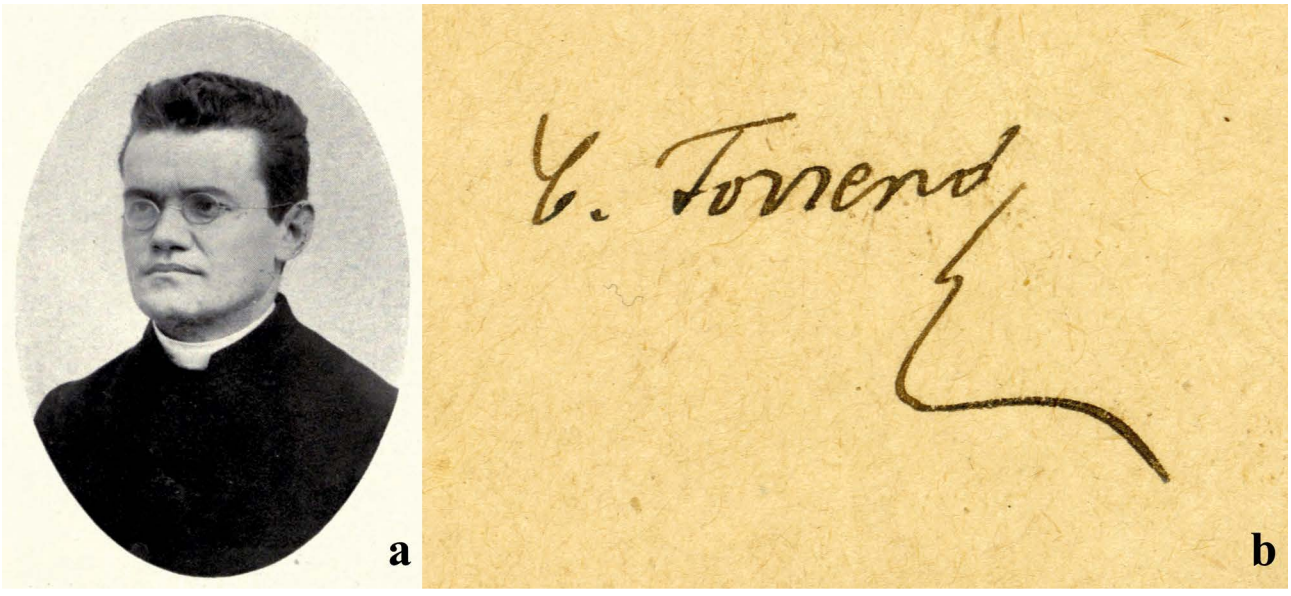


Fig. 1. a. Reverend Camille Torrend in his early 30s (Lloyd 1911). **b.** Signature of Camille Torrend (Letter from Torrend to Henriques, 8 May 1910).

ogy "… que je trouvais trop difficile et impraticable." [… that I found too difficult and impossible] (Torrend 1918). To his surprise, Rick replied that many of his identifications were correct. He strongly encouraged Torrend to pursue mycology, insisting that he was duty-bound to continue such studies now that he had overcome the initial difficulties. Rick also indicated that he should contact Fr. Giacomo Bresadola, a specialist in Trento, Italy (Torrend 1918).

In October 1902 Rick came to Portugal to learn the language before going to Brazil in July 1903. In Brazil, he became a major mycologist who collected and described new species of fungi (Maia et al. 2015). In a tribute to Rick published in 1918, Torrend wrote "… mon excellent maître et ami, le P. Johannes Rick." [… my excellent master and friend, the Fr. Johannes Rick.] as they had become friends.

On Rick's advice, Torrend contacted Bresadola, with fruitful results, as he wrote to Henriques in December 1901 (Letter of Torrend to Henriques 1901). In this letter, Torrend explained that Bresadola had offered to identify material from Setúbal, and by the end of the year, he had already identified 300-400 specimens. Bresadola published the new taxa from Setúbal in 1902 (Bresadola 1902), 12 new species and one new genus dedicated to Torrend, *Torrendia* Bres. Later, Torrend published his first article in *Brotéria – Revista de Sciencias Naturaes* vol. 1 (Torrend 1902). This was the first of three papers he published in this journal on the fungi of the Setúbal area, a major contribution listing 512 species, many identified for the first time for Portugal (Torrend 1902, 1903, 1905a). Torrend reprinted Bresadola's new taxa in the 1902 article and acknowledged Bresadola for his guidance "Sem a sua [Bresadola] dedicação e auxilio intelligente não poderia dar um passo seguro neste vasto campo da Mycologia." [Without his [Bresadola] dedication and wise guidance [I] could not have progressed in the vast field of mycology]. Much later, Torrend renewed his gratitude to Bresadola (Torrend 1912b).

Although without academic titles, the Italian Fr. Giacomo Bresadola (1847–1929) was a major figure in mycology. He had published on the Portuguese fungi such as the material collected by Adolph Möller (1821–1895) in the Coimbra vicinity including the Botanic Garden (Bresadola 1891a) and also on the tropical island of São Tomé (Bresadola 1891b). Bresadola's connection with Torrend strengthened over time. It was very much one of master and pupil and he often took the role of an indefatigable teacher by correspondence as in a "classroom without boundaries" (Siniscalco et al. 2013). On Bresadola's 80th anniversary, Torrend wrote: "For over thirty years this modest priest has been the undisputed master of the new mycological generations, as well as the old" (see Torrend's testimony in Siniscalco et al. 2013).

Júlio Henriques was Professor of Botany and Director of the Botanic Garden of the University of Coimbra (1873–1918), and the founder of the current Herbarium (COI; all herbaria acronyms follow Thiers 2025). He was a major driving force of botany in Portugal and promoted collecting, including fungi, much of it through the botanical society he founded, the *Sociedade Broteriana*. Cosmopolitan, he often sought expertise abroad and sent materials, being, thus, the mentor of many publications based on Portuguese plants and fungi by non-Portuguese specialists. Torrend became a long-term correspondent of Júlio Henriques (Fidalgo 2020).

Teaching at the College of São Fiel

Torrend's collections confirm that he went to the Jesuit College of São Fiel during the academic year 1902–1903. He taught there until 1905. Also from his collections, it is understood that he spent Christmas 1902 at the College of São Francisco, Setúbal. The São Fiel College in Louriçal do Campo, Castelo Branco district (C. Portugal), operated in such rural area for 47 years (1863–1910) during which it became one of the most prestigious educational centres in the country, known for its laboratories, a meteorological station and natural history collections (Salvado 2001, Romeiras & Leitão 2012, Morujão 2017, Romeiras 2018). Among these, the Herbarium initiated by Carlos Zimmermann S.J. in 1897 (Tavares 1924) contained algae, bryophytes, vascular plants and fungi, mostly collected by the Jesuits who taught there (Henriques 1920, 1922). The journal *Brotéria – Revista de Sciencias Naturaes*, the very first Jesuit journal dedicated only to science (Romeiras 2019), was founded here in 1902 by three reputed naturalists and teachers at the college. They were Joaquim da Silva Tavares S.J. (1866–1931), Cândido Azevedo Mendes S.J. (1874–1943) and Carlos Zimmermann S.J. (1871–1950), specialists respectively in plant galls, Lepidoptera and diatoms. The original scope of the journal changed over time, but *Brotéria* remains till today (Romeiras & Leitão 2016, Anonymous 2025).

The region of São Fiel was described by the editors of *Brotéria* in the first volume of this journal (Os Redactores 1902) as: "… dos arredores de Castello Branco até Manteigas e Ceia, numa extensão de 70 kilometros de comprimento sobre 15 a 20 de

largura, comprehendendo boa parte da serra da Estrella e toda a da Gardunha, em cujas faldas, ao sul, fica situado este Collegio." [… from the outskirts of Castelo Branco to Manteigas and Seia, over an area of 70 km × 15-20 km, covering a large part of the Estrela and Gardunha mountain ranges, with the College located on the southern slopes.]. Torrend deposited the material collected in this region in the herbarium of São Fiel and it was then that the mycological collection grew the most. Torrend only published this material much later while in exile, in Belgium (Les Basidiomycetes des environs de Lisbonne et de la region de S. Fiel; Torrend 1912b, 1913a).

During his forays, Torrend also collected myxomycetes, which were abundant in the region (Torrend 1907). In Setúbal, he had already collected myxomycetes having published nine new species for Portugal (Torrend 1903). Myxomycetes, known as plasmodial slime moulds, were considered by many as a special group of fungi. Indeed, they are not fungi but Protista (phylum Amoebozoa; Lado & Eliasson 2021).

Researching myxomycetes in Ireland

Torrend left São Fiel for Ireland sometime in 1905 to study theology at Milltown Park, a Jesuit institute of higher education and research, and later the Milltown Institute of Theology and Philosophy (Ranelagh, Co. Dublin). It was during his time in Ireland that Torrend's old interest in myxomycetes flourished, having been sparked by his observations of the abundant material in the São Fiel region (Torrend 1908c). Such an interest developed during his own laboratory experiments, his research in the Museums (London and Dublin) and he learnt a great deal from Arthur Lister and his daughter Gulielma Lister, of the British Museum, London, who published groundbreaking work on this group (Torrend 1907).

However, Torrend's first publication in Ireland, from as early as May 1905 (Torrend 1905b), was most likely prepared in São Fiel. Rather than focusing on myxomycetes, it covered fungal material collected by the Jesuit missionaries Jules Torrend, his brother, and the Austrian Luís Gonzaga Dialer (1866–1943) in the Zumbo district, N. Mozambique. This first contribution to the study of Mozambique fungi had the collaboration of Bresadola. Torrend began this publication with a comprehensive bibliography of the African mycology. Of the 36 taxa identified, two new species were described: *Psalliota dialeri* (*dialerii*) Bres. & Torrend, and *Fomes dialeri* (*dialerii*) Bres. & Torrend. Thirteen specimens that Torrend sent to Bresadola are now at the Swedish Museum of Natural History (S).

By 1906, Torrend was already referring to his work on myxomycetes in a letter he wrote to Júlio Henriques (Letter from Torrend to Henriques 1906) where he mentioned his progress for a general Flora on this group still so little studied in Portugal. Also, Torrend referred to a parcel he sent with *Physarum psittacinum* Ditmar to be distributed by the members of the *Sociedade Broteriana*. Fifteen of these specimens were recently found in the Coimbra Herbarium. Soon after, Torrend published *Les Myxomycètes. Étude des Espèces connues jusqu'ici* in two articles (Torrend 1907, 1908a) followed by the *Supplement* (Torrend 1909a), the latter being the translation into French of the article on myxomycetes by Arthur and Gulielma Lister (Lister & Lister 1907). *Les Myxomycètes* was a major contribution to understanding these organisms, poorly known at the time. It includes a comprehensive revision of the germination, vegetative development, reproduction, classification, species concept, guidance to the novice, a bibliography, and the key to families, genera, and species, plus the species descriptions and, at the end, the illustrations, 230 drawings in nine plates. The drawings are of different sources. Most are by his friend and colleague at Milltown Park, the Australian John Forster S.J. (1870–1964), some are from illustrations in A. Lister (1894) and from Thomas H. Macbride (1899), but there is also material by Torrend himself. Later, Torrend published *Les Myxomycètes* as a single volume (1909f). After his return from Ireland, Torrend published two articles exclusively on Portuguese myxomycetes (Torrend 1909d, 1910a). He listed 97 species and varieties in 1909d and continued this list in 1910a with 19 more taxa providing many notes on his observations. In the *Bulletin de la Société portugaise des sciences naturelles*, Torrend emphasised "… la flore du Portugal, si riche déjà en Myxomycètes (une des plus riches de l'Europe)" […the Portuguese flora, so rich in myxomycetes (one of the richest in Europe)] (Torrend 1909e).

Arthur Lister (1830–1908), wine merchant, and Gulielma Lister (1860–1949), father and daughter, both botanists and mycologists in connection with the British Museum, London, were leading authorities on myxomycetes. A. Lister guided Torrend on his research and Torrend wrote of him "… le savant de nos jours peut-être le plus versé en cette matière." [… probably the present-day most knowledgeable researcher on this subject] (Torrend 1907). Lister gave specimens to Torrend "… de plusieurs

espèces rares de sa précieuse collection …" [of various rare species of his precious collection] but only two are in the São Fiel material at the Coimbra Herbarium, *Hemitrichia clavata* (Pers.) Rostaf., *Lister* s.n. (COI00098118) and *Fuligo cinerea* (Schwein.) Morgan, *Lister* s. n. (COI00097719).

Torrend's interest resulted in one of the few historical collections of myxomycetes in the Iberian Peninsula, which is at the Coimbra Herbarium (Lado & Pando 1989, Lado 1991).

Torrend was finally ordained priest in July 1907, 13 years after he joined the Society of Jesus (Sequeira & Jesus 2015). Later that year, he returned to Portugal and, from here he published a list of Irish fungi and myxomycetes in February 1908 (Torrend 1908c).

Back to Portugal, teaching at the College of Campolide

Once back in Portugal, Torrend went to the Jesuit College of Campolide, near Lisbon, to teach and research. This College was the first to be founded by the Jesuits during the second half of the 19th century. It constituted the model for all the teaching institutes founded after this second return to the country. The College offered high-quality education and enjoyed intense scientific activity, especially in the natural sciences (Romeiras & Leitão 2012, Romeiras 2018). Today, the imposing building is part of the NOVA University Lisbon.

While in Campolide, Torrend's mycological activities continued at a good pace and resumed collecting soon after October 1907 as revealed by his herbarium specimens. He collected in the College's surrounding areas, as well as in Alfeite, Caparica, Pinhal d'El-Rei, Queluz, Sintra, Mafra, etc. (Torrend 1909d) and further afield in Portugal. In 1908 he went to Gerês (N Portugal) and the Royal Estate in Vila Viçosa (S Portugal) during his Christmas holidays. The latter trip resulted in the publication *Résultats d'une excursion à la propriété royale de Villa Viçosa* (Torrend 1910g). In 1909 he visited the Mountain of Monchique (SW Portugal) on a field trip with his students who vividly described their experience (Galrão 1910, Leite 1910; also, Letter from Torrend to Henriques, 1909a). He was well connected to some elite in Portugal as he was invited to the estates of the Marquis of Monserrate (Sintra, W Lisbon), the Royal Estate in Alfeite (Almada, S Lisbon), and of the Dukes of Palmela in Lumiar (Lisbon) (Torrend 1909b) where he had access to exotic material from the gardens.

Despite such collecting activity, he was now more active than ever in publishing scientific papers, 17 between his return from Ireland and 1910. The study of the materials from Madeira Island sent by the local naturalists Fr. Jayme Barreto, Fr. Manuel da Silveira, Adolfo C. de Noronha and Carlos Azevedo Menezes, resulted in the publication of 134 species including six new to science, one together with Bresadola (Torrend 1909c, Sequeira & Jesus 2015). The faraway unexplored Timor did not escape his attention, and he contacted Manuel [Emmanuel] Fernandes Ferreira S.J. who sent him material. Henriques also provided him with specimens from Timor. In the resulting publication, Bresadola described one new species (Torrend 1910c).

During his years in Campolide, Torrend kept new original materials in the Herbarium of Campolide but sent some duplicates to the Herbarium in the São Fiel College (Tavares 1924). The collection at São Fiel expanded then more slowly than it did when Torrend was a teacher there (Fig. 5). The myxomycetes were also deposited in Campolide and Oliveira Pinto S.J., teacher here, mentioned them in 1909 "… alli [Colégio de Campolide] se admira uma das mais completas collecções de fungos de Portugal; e pelo que diz respeito à ordem dos myxomycetes é, seguramente, depois da do British Museum, a mais completa da Europa" [… there [Campolide College] it can be admired one of the most complete collections of fungi of Portugal; myxomycetes are, arguably, after the British Museum, the most complete in Europe] (Pinto 1909) and he added "… contem ella [a coleção de Campolide] 199 espécies; e entre estas algumas muito raras e novas para a sciencia. Accresce a isto o facto de faltarem só quasi exclusivamente espécies criticas ou duvidosas ou algumas raríssimas." [… it [collection in Campolide] contains 199 species; amongst them some very rare and new to science. Missing are only critical or doubtful species or some extremely rare] (Pinto 1909). These 199 species at Campolide are less than the 271 published by Torrend in *Les Myxomycètes* (Torrend 1907, 1908a), the conclusion being that he described other material while in Ireland such as that in the Museum of Botany in Dublin (Torrend 1907). According to Pinto (1910), more than 1500 species were acquired for the mycological collection of Campolide in 1909. We found no reference to the provenance of this material.

Between 1907–1910, Torrend corresponded regularly with Júlio Henriques. Of the total 38 letters and postcards exchanged between the two held in the Archive of Botany of the University of Coimbra, 30 are from this period (Fidalgo 2020). In the last

letter to Henriques, of 8 May 1910, Torrend referred to the preparation of an article on c. 500 new species for the *Flora* [*Micológica de Portugal*] (Letter from Torrend to Henriques 1910).

This intense scientific activity was suddenly interrupted in October 1910.

The end of an era: leaving Portugal and departure to Brazil

The Portuguese monarchy ended abruptly on 5 October 1910 and the republic started with a revolution. The religious orders were banned, and the Jesuits fled the country leaving everything behind, their collections and books being confiscated. The detailed description of events is in *Proscritos* by Luíz Gonzaga de Azevedo S.J. (Azevedo 1911, 1914). Camille Torrend gave details of the events in an interview with the well-known Irish journalist Francis McCullagh, special correspondent for the New York Evening Post. This account was divulged widely by other newspapers (McCullagh 1910). Torrend, at the time in the Novitiate of Barro, was arrested by the authorities in the Caxias prison. He was quickly released on 12 October by the intervention of Georges Saint-René-Taillandier, the French ambassador in Lisbon (1906–1913), who interceded with the recently appointed minister of Justice, Afonso Costa. The minister allowed Torrend to remain in Portugal if he left the Society of Jesus, but Torrend departed straightaway to Fishguard, Wales (21 October 1910) and never returned to Portugal. By 6 November he was in Southampton welcoming other fleeing Jesuits (McCullagh 1910, Azevedo 1914).

Soon after these events, the Portuguese Society of Natural Sciences, of which Torrend was a founding member (Anonymous 1907), decided "… de nommer une commission pour aller demander à Son Excellence le Ministre de la Justice [Afonso Costa], que les collections zoologiques et botaniques des Collèges des Congrégations [Collèges de Campolide et S. Fiel] soient conservées convenablement et même rendues à leurs propriétaires qui seuls pourraient en tirer le plus grand parti au profit de la Science." [… to appoint a committee to contact His Excellency the Minister of Justice [Afonso Costa] and demand that the zoological and botanical collections of the Colleges of the Congregations [Colleges of Campolide and S. Fiel] be properly preserved and even returned to their owners, who are the only ones able to use them for the benefit of science.] (Anonymous 1910). There were similar appeals from intellectuals and scientists in Portugal and abroad (Cabral 2010, Romeiras 2015). Torrend was bluntly critical of the events and was very vocal to friends and in newspapers (Azevedo 1911, 1914). In the introduction to his 1912 publications in exile, he described some of the ordeals his materials went through and expressed: "… mes plus vifs remerciements à la Société Portugaise de Sciences Naturelles pour le courage d'avoir en pleine période révolutionnaire pris la défense de leurs collègues exilés" [... my warmest thanks to the Portuguese Society of Natural Sciences for their courage in defending their exiled colleagues in the midst of the revolution.] (Torrend 1912a) and acknowledged Pereira Coutinho's help: "L'Étude qu'on va lire a été également arrachée au vandalisme révolutionnaire par Dom Xavier Pereira Coutinho, le savant Professeur de Botanique de l'École Polytechnique [Lisboa].". [The following study was also rescued from the revolutionary vandalism by Dom Xavier Pereira Coutinho, the learned Professor of Botany at the Polytechnique School [Lisbon].] (Torrend 1912b).

Various Jesuits from the Portuguese Novitiate of Barro community sought refuge in the Jesuit house in Exaten, Netherlands, and Torrend was amongst them (Lloyd 1911, Azevedo 1914). Torrend likely moved to Alsemberg, Brussels, in August 1911. In 1912, he went to the newly founded Jesuit *Instituto Nun'Alvres* located at the Dieleghem Abbey in Jette, also near Brussels. This institute was established in 1912 by the Jesuits after their expulsion from Portugal. There, they reinstated the educational vocation of the Portuguese Campolide College. Eventually, in 1932 the *Instituto* returned to Portugal where it still is in Santo Tirso (*Colégio das Caldinhas*), N Porto (Cabral 2007). Torrend taught at Dieleghem until the Institute's relocation to Spain in 1914 at the outbreak of World War I. Only then he left for Brazil.

In exile and deprived of his collections, Torrend worked from his notes rescued by Pereira Coutinho from the Campolide College (Torrend 1912a). The first of his eight publications in exile was in 1911 in collaboration with the eminent mycologist Jean Louis Émile Boudier (1828–1920). They published nine new species and one new genus (*Torrendiella* Boud. & Torrend), collected mainly around Lisbon in 1907–08, all illustrated by Boudier (Boudier & Torrend 1911). Next, Torrend published two new articles on the fungi of Madeira Island (Torrend 1912a, 1913c) following on from the article of 1909 (Torrend 1909c). The species are numbered throughout and total 338. He then published on basidiomycetes, based on material he had collected much earlier while in São Fiel and Lisbon. This publication was

divided into two parts (Torrend 1912b, 1913a) and listed 677 taxa, including a few new to science. In the introduction he wrote: "L'Étude qu'on va lire … sert de continuation au beau travail d'ensemble – Flora mycologica del Portogallo – que Mr. le Prof. Traverso a publié [with Carolina Spessa] dans le Boletim da Soc. Broteriana (Coimbra, 1910)." [The following study … follows on from the fine collating work, *Flora mycologica del Portogallo*, that Prof. Traverso published [with Carolina Spessa] (Torrend 1912b) in the *Boletim da Sociedade Broteriana* (Coimbra, 1910)]. In 1913, Torrend was invited by Émile De Wildeman to identify fungi from the Belgian Congo. He described thirteen new African species of fungi (De Wildeman 1914).

The Portuguese Republic returned Torrend's materials between 1912 and sometime in 1913. On the one hand, Torrend explained in February 1912 that "Je viens d'apprendre que la nouvelle Commission … a retrouvé des caisses qui contenaient des livres qui m'appartenaient et qu'elle est décidée à me les render." [I have just learned that the new Commission ... has found some boxes containing books that belonged to me and has decided to return them to me.] (Torrend 1912a). On the other hand, in 1913 he proceeded with the distribution of the second Century of his *exsiccatae*.

The distribution of *exsiccatae* was common among the naturalists of the time. In 1910, just before the revolution, Torrend distributed his first Century (often referred to as Century I), 100 selected specimens from Portugal, Madeira Island, Mozambique and Timor which he supplemented with a numbered list of taxa, assembled in *Just's Botanischer Jahresbericht* (Torrend 1910j; in Stevenson 1971 the reference to this publication of Torrend is not correct). Pinto (1910), a Jesuit teacher at the College of Campolide, confirmed this activity. Of the 10 new species listed here eight were described only in 1913 (Torrend 1913a); the other two, nos. 35 and 36 turned out to be previously described species (Torrend 1913b). Stevenson (1971) gives details on the three Centuries emitted by Torrend.

For Century II and Century III, Torrend published the species list himself (Torrend 1913b, 1914). The material was mostly from mainland Portugal and Madeira Island and some of the new species described from Madeira (Torrend 1913c) had their types distributed this way. Torrend published several new species in the Century III list, especially from Brazil and Mozambique (Torrend 1914). There, he expressed his intention to continue the publication of centuries of material from northern Brazil, in collaboration with Bresadola. World War I certainly disrupted these plans.

While in Belgium, Torrend learnt about farming and fertilisers in Carlsbourg, in "… uma das melhores escolas de Agricultura dos nossos tempos." [one of the best schools of agriculture of our time] and even published on such matters in *Brotéria Vulgarização Científica* (Torrend 1913d). Later in Brazil, he used this knowledge on various occasions (Britto & Menezes 2020).

World War I would have played a role in Torrend's plan to go to Brazil, but it seems that back in 1911 he already had such an intention (Lloyd 1911). He departed at the age of thirty-nine and he spent the rest of his life there. He established himself in Bahia and was deeply involved in the Brazilian society as a teacher (*Colégio Antônio Vieira*), consultant in farming and researcher. He published mainly on Polyporaceae (see Góes-Neto 1999), myxomycetes (Góes-Neto & Cavalcanti 2002) and phytopathology. His work was, and still is, much recognised there and among other distinctions he was awarded an honorary doctorate by the University of Recife (e.g. Britto & Menezes 2020). Herbarium Pe. Camille Torrend (HURM, previously URM) at the Federal University of Pernambuco, dedicated exclusively to Fungi and one of the largest of its kind in South America, is named after him, a tribute from his student and one of Brazil's most renowned mycologists, Augusto Chaves Batista (1916–1967) (Maia & Gibertoni 2015).

The fate of Torrend's collections

Torrend distributed many of his specimens before leaving for Brazil. Some were disseminated in the centuries and were traced in the U.S.A., herbaria BPI and FH (Stevenson 1971). Many others were exchanged or offered to other mycologists. Those sent to Bresadola, Torrend's most significant collaborator, are now in the herbaria S and BPI. Part of Bresadola's materials were purchased by the Swedish mycologist Lars Romell who later presented it to the herbarium of the Swedish Museum of Natural History (S) (Coker 1927, pers. comm. A. Anderberg). Other material was bought by the U.S. National Fungus Collections in 1924 (U.S. Department of Agriculture, Agricultural Research Service 2016). Some of his myxomycetes are in the herbaria BM, K, and NY (Lado 1991). Those in Herbarium HURM were published recently (Agra et al. 2014) and include material from Portugal. Through various routes, Torrend specimens found homes in many different herbaria (61; Bionomia 2025).

When Torrend left Portugal in 1910 his collections remained behind, as did all the materials of the Jesuits. The Portuguese Republic returned Torrend's collection at Campolide in 1912–13, and he took only this one with him to Brazil in 1914. Today, Torrend specimens in Brazil (Campolide's collection plus the material he later collected in Brazil) are mainly in the Herbarium HURM, but also in ALCB (see Bionomia 2025, Maia & Gibertoni 2025, MyCoPortal 2025, *species*Link 2025).

The mycological collection in São Fiel remained in Portugal. After some controversy at the highest level and pressure to keep the materials of the São Fiel College together (Salvado 2001, Romeiras 2015, Tavares 1924), it was decided in 1912, on Henriques' counsel (Rodrigues 1992), to entrust the scientific collections to the Faculty of Sciences of the University of Coimbra. The items most suitable for secondary teaching should go to the nearby High School in Castelo Branco (Decreto de 9 de abril do Ministério da Justiça, Direcção Geral dos Negócios de Justiça, Comissão Jurisdicional dos Bens das Extintas Congregações Religiosas 1912).

As representatives of the Faculty of Sciences, Prof. Júlio Henriques and Prof. Geraldino Brites went to São Fiel and assisted with the handover of these materials to Coimbra (Barroso 2019), the herbarium included (Manuscript of Henriques 1912, Tavares 1924, Rodrigues 1992). When Cândido A. Mendes S.J., a teacher at São Fiel and founder of *Brotéria* learnt that the College of São Fiel collections would go to the University of Coimbra he wrote to Júlio Henriques (Letter from Mendes to Henriques, 1912). Though Mendes was an expert in Lepidoptera, he was committed to all São Fiel collections entrusted to him by their authors when they left for exile. He pleaded with Henriques to return the collections if the opportunity arose.

The mycological collection of the São Fiel College in Coimbra

Júlio Henriques maintained the São Fiel College Herbarium as it arrived, ready to be returned to their former owners, "… como era de justiça …" […as it was only fair …] (Henriques 1922) would such

Fig. 2. a. One of the 20 cardboard boxes divided into four compartments containing the original envelopes with the printed heading *Herbário do Collégio de S. Fiel*. Many envelopes needed restoration. **b.** Original envelope post-restoration, and the three matchboxes within it containing myxomycetes; the information on the label is handwritten by Torrend and it was added the revision of Lado & Pando in 1989. The original envelope is now protected inside the larger capsule attached to the herbarium sheet. The specimen has been digitised, and its identification barcode is COI00097692.

instructions be received, but this never happened. Eventually, all the collections except the fungi were incorporated into the Coimbra Herbarium.

Torrend explained the preparation and organisation of mycological specimens in a paper on the materials and methods for the general public (Torrend 1910e). We found his specimens as described there, in the original packaging, the individual envelopes in 20 cardboard boxes, each divided into four compartments (Fig. 2a). The specimens were arranged by families and genera following Engler & Prantl (1897); the myxomycetes followed the classification of Lister translated by Torrend (1909a). The specimens were either loose in the envelopes or, mainly the myxomycetes, in small matchboxes (Fig. 2b). Each envelope has the printed heading *Herbário do Collégio de São Fiel* and the form for the label. Most of the information is handwritten by Torrend himself, the calligraphy being compared with Torrend's letters in the Archive of Botany. The mycological collection of São Fiel at Coimbra includes (1) material collected by Torrend while teaching at São Fiel (1902–1905), (2) material from 87 other mycologists and collectors who supplied Torrend with original material or duplicates, and (3) duplicates of materials at Campolide. The latter included (1) duplicates of material collected while at Campolide (1907–1910) (Torrend 1902, Tavares 1924), (2) duplicates of c. half of the material he had collected in the Setúbal area – 217 specimens out of the 512 listed in the *região setubalense* publications, (3) duplicates of the myxomycetes collected while he was in Ireland, and (4) gifts from other mycologists.

In 2020 the entire mycological collection of São Fiel was restored according to Bridson & Forman (2010). Rice paper and acid-free glue were applied to the many tears on envelopes. The matchboxes were protected by rice paper. Each original envelope was placed inside a large new one and mounted in individual herbarium sheets, as are all the cryptogams in the Coimbra Herbarium (Fig. 2b). The specimens were databased, and the information is now available in the online Catalogue, "Fungi - São Fiel" [Herbarium of the University of Coimbra (COI) 2025]. These totals 1854 specimens brought in by Henriques from São Fiel.

There are also 62 separate specimens that were packed together. They have old labels of the Coimbra Herbarium and, although they are stamped HCSF (*Herbário do Collégio de S. Fiel*) (Fig. 3), they must have arrived in Coimbra much earlier. For that reason, they are now included in the general Fungi collection. They were collected in 1901–03, 35 by Torrend, and three by Zimmermann, the remaining 24 have no collector mentioned. They are from the provinces of Beira Baixa (Castelo Branco, Covilhã, Fundão) and Beira Alta (Serra da Estrela), the area of the São Fiel College; 26 have no reference to locality and were collected by Torrend. It is possible that these specimens were those that Torrend referred to in a letter of 1903 to Henriques: "… tenciono enviar alguns exemplares repetidos para o Herbário da Universidade de Coimbra." [… I intend to post some repeated specimens to the Herbarium of the University of Coimbra] (Letter from Torrend to Henriques 1903).

The dataset of the São Fiel collection in the online Catalogue reveals 1550 names (species and subspecies) in 219 families (Agaricaceae and Pucciniaceae with the highest presence); 155 specimens could not be attributed to a family in *Index Fungorum* (Index Fungorum Partnership 2024). These totals refer mostly to the original determinations which will probably change with future work. In fact, only 197 specimens have been taxonomically revised, their identification ascertained, and nomenclature updated by F. D. Calonge, P. P. Daniels, V. Demoulin, M. Dueñas, R. A. M. Geesteranus, C. Lado & F. Pando, I. Melo, A. de Mendonça & M. de Sequeira, and J. E. Wright.

In 1922, Henriques published the species numbers of the whole Herbarium of São Fiel but, at least for the fungi, his 521 Portuguese species (surely, he included the myxomycetes) were much underestimated (Fidalgo 2020).

Most of the collection consists of Portuguese material (1113; 60 %), and 24 other countries are represented. Torrend collected more than half of the specimens (1050; 57 %). The five most represented collectors (Torrend, Rick, Bresadola, Jaap and Zimmermann) account for 84 % of the collection; 16 % refer to the other 83 collectors plus the specimens without information on collector (Fig. 4).

Torrend began collecting in 1900, but 11 specimens are dated prior that year (Fig. 5). These must have been sent directly to the Herbarium of São Fiel or much later to Torrend. They are from Brazil (coll. Fritz Noack), Portugal (coll. João Gualberto de Barros e Cunha), Saxony (coll. Karl W. Krieger) and France (coll. Louis Brevière).

There is no information about the substrate on 29 % of the specimens, 25 % do not provide the collecting date, 6 % do not have locality information and the collector number is always absent. Such specimens are potentially problematic when full information is required, particularly when lectotypification is needed for the correct application of names. These are the instances in which it is funda-

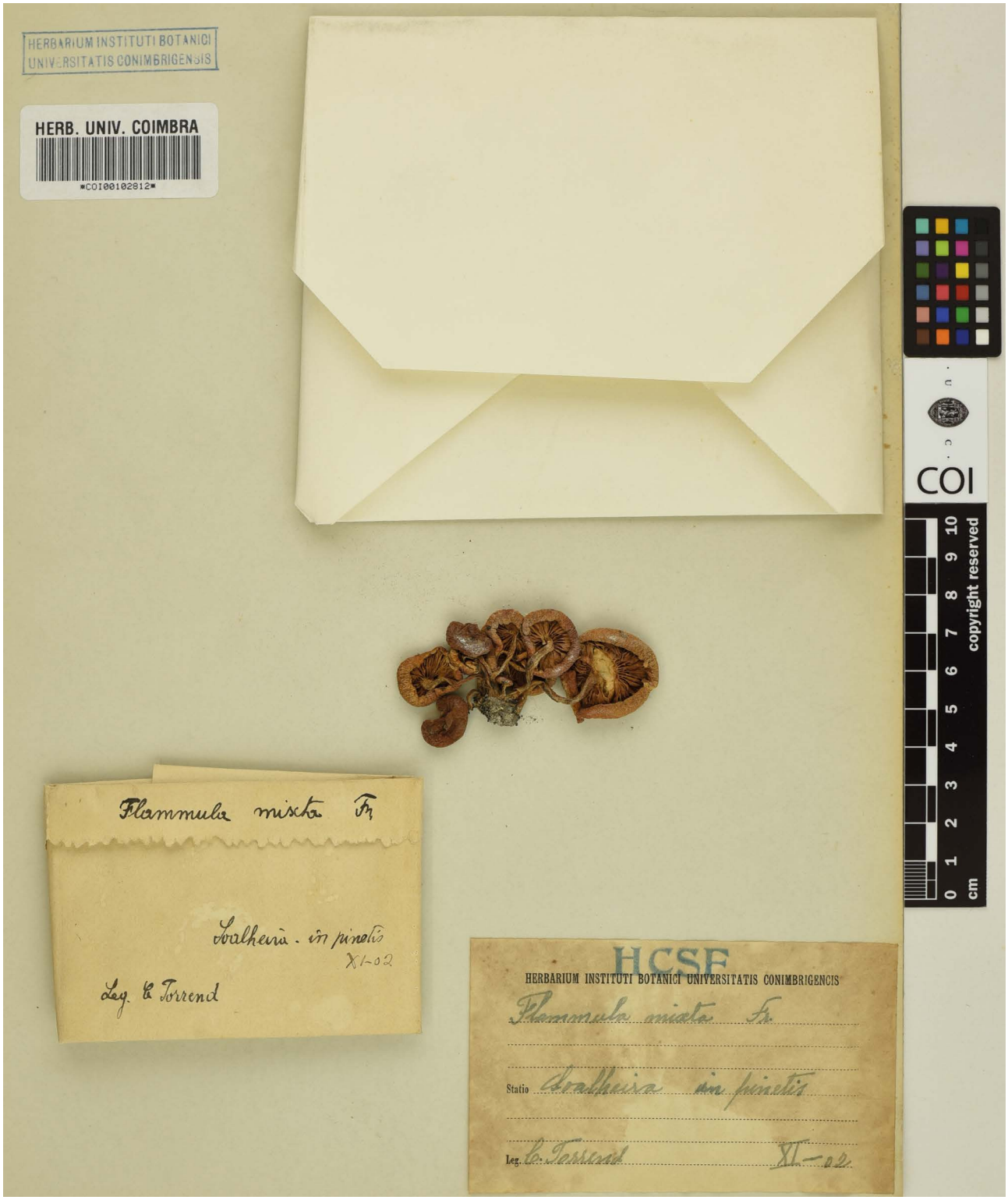


Fig. 3. Specimen COI00102812 with an old label of the Coimbra Herbarium stamped HCSF (*Herbário do Collégio de S. Fiel*) collected by Torrend in Soalheira [*c.* 3 km from São Fiel] in 1902, the envelope being annotated by himself. It is possible that this material was part of the set that Torrend referred to in a letter to Henriques in 1903.

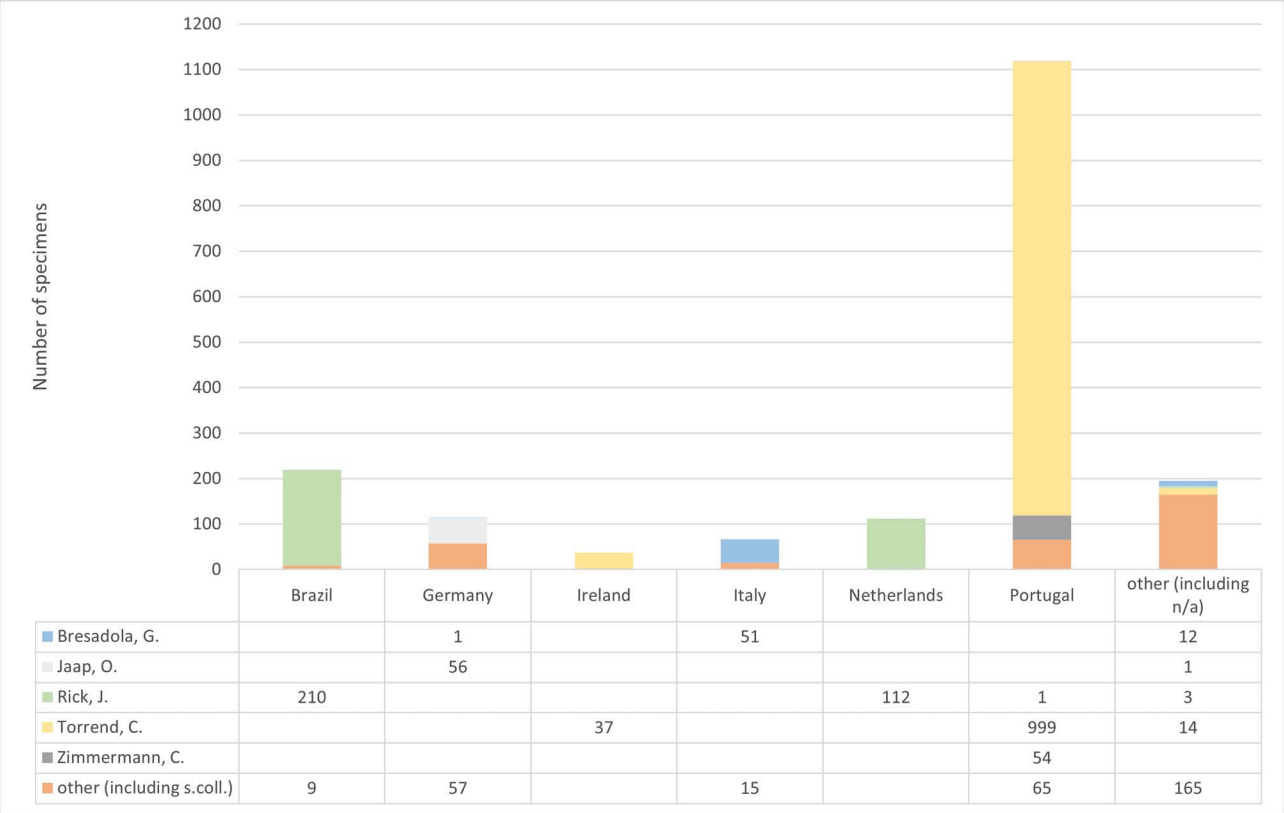


Fig. 4. Summary of the mycological collection of the São Fiel Herbarium, based on the specimen labels: the six most represented countries in the collection, the five main collectors and the number of specimens they collected in those countries. Portugal was by far the most represented country. NOTE: there are eight specimens with two collectors, which means the total number of specimens shown on the graph is higher than the actual number in the collection (1862 *vs* 1854).

mental to know the scientific activities of the collectors and their wanderings, e.g., where they were on a certain date or when they collaborated with a particular colleague.

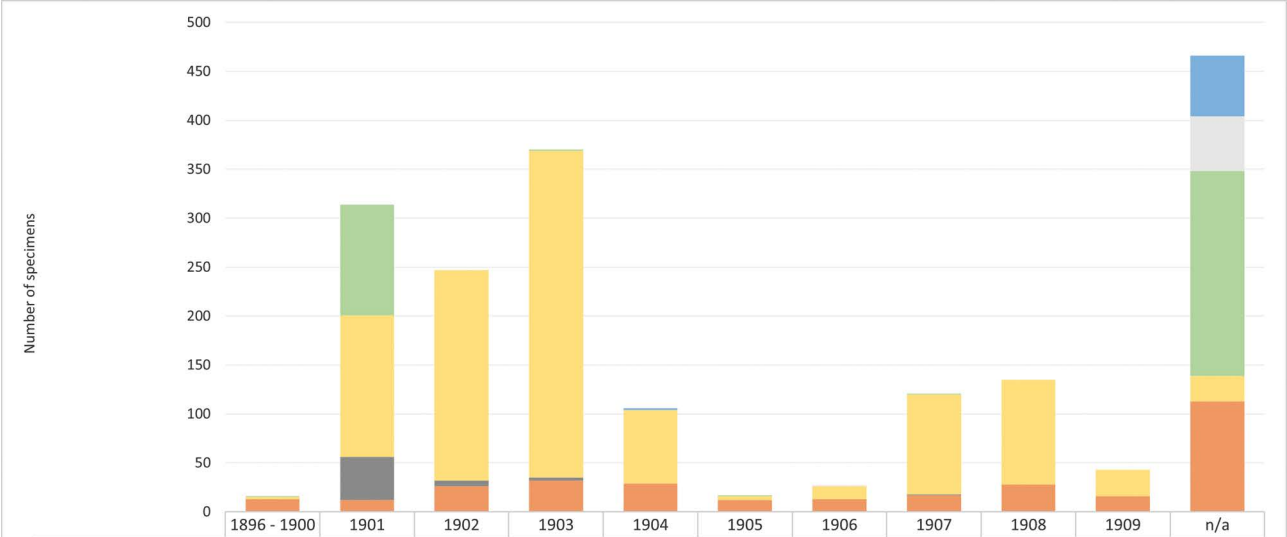
The specimens stamped HCSF with no information on the label can benefit from this kind of cross-referencing. The 23 HCSF specimens collected by Torrend without locality are, as we understand it, from the wide vicinity of São Fiel because they date from 1901–1903, the period he was there. Three specimens with no locality nor date are impossible to trace.

The myxomycetes in the collection are rare historical material of this group in the Iberian Peninsula and were investigated by Lado and Pando (1989) and Lado (1991). There are 86 specimens, including one extra of *Arcyria nutans* (Bull.) Grev. that we found since their revision. The material includes 21 genera.

Full information on all these specimens can be extracted from the online Catalogue [Herbarium of the University of Coimbra (COI) 2025].

Torrend's thoughts on myxomycetes

Torrend's collections and publications are a window into his thoughts on mycology (Torrend 1910b, 1910d, 1910g, 1910h), on the introduction of exotic fungi (e.g. Torrend 1909b), on phytopathology (Torrend 1909b, 1910f) and his detailed observations (Torrend 1908b, 1910d, 1910h). But he excelled in his reflections on myxomycetes. Then, these were already regarded as a singular group of organisms, a controversial issue much discussed by Torrend (1907, 1910k). He followed their life cycle in great detail, considered their feeding process similar to that of amoebae (they are now placed in the phylum Amoebozoa!) and discussed their taxonomic position. For Torrend, myxomycetes also became a tool for studying evolution (Torrend 1907, 1910k). In doing so, he revealed a wide knowledge of the natural history literature, whether it be geology, palaeontology, zoology, classifications, taxonomy, or species concept. His paper *Le transformisme dans les derniers échelons du règne végétal* (Torrend 1910k) re-



	1896 - 1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	n/a
Bresadola, G.	0	0	0	0	2	0	0	0	0	0	62
Jaap, O.	0	0	0	0	0	0	1	0	0	0	56
Rick, J.	1	113	0	1	0	1	0	1	0	0	209
Torrend, C.	2	145	215	334	75	4	13	102	107	27	26
Zimmermann, C.	0	44	6	3	0	0	0	1	0	0	0
other (including s.coll.)	13	12	26	32	29	12	13	17	28	16	113

Fig. 5. Summary of the mycological collection of the short-lived São Fiel Herbarium, based on specimen labels: collecting years, the five main collectors and the number of specimens they collected each year. At the turn of the 19th century, the activity was at its peak, coinciding with Torrend's period in São Fiel (1902–1905). It declined in 1905-07 while he was in Ireland, but the collection increased again in 1907–1909 with the duplicates he sent from Campolide. NOTES: (i) 466 out of the total 1854 specimens have no collecting date; (ii) for the full list of the 88 collectors, refer to the online Catalogue (https://coicatalogue.uc.pt/); (iii) there are eight specimens with two collectors, which means the total number of specimens shown on the graph is higher than the actual number in the collection (1862 vs 1854).

sults from Torrend's analytical mind and integrative capacity. Certainly, the scientific environment he was immersed in played the key role in his accomplishments. From his time at the College of São Fiel, where science was an intellectual motor following the principle of studying the Book of Nature, also the generator of *Brotéria* (Os Redactores 1902), to the network within natural history in which he found himself immersed in, all contributed to the development of this major scientist.

Torrend' scientific network

Camille Torrend was an experienced mycologist when he left Europe for Brazil. He was cosmopolitan and corresponded with other mycologists, scholars and amateurs, who supplied him with material from different parts of the world that saw its way into the collection of São Fiel. In this respect, the Society of Jesus and its missionaries constituted a global web that facilitated communication and the exchange of scientific materials (Romeiras 2019, Udías 2019, Županov 2019). These scientific liaisons constitute a good example of the networks that contributed to the progress of mycology in the late 19th and early 20th centuries. Torrend valued "… la facilité des communications modernes, ainsi que l'union de plus en plus étroite entre les mycologues de divers pays, permet en peu de jours de comparer entre elles des espèces reconnues jusqu'alors comme différentes, … permet ainsi une simplification progressive dans la nomenclature si encombrée de la mycologie." [… the ease of modern communication, and the increasingly close links between mycologists from different countries, which let to compare species previously recognised as different in a matter of days, ... thus allowing a gradual simplification of the intricate nomenclature in mycology.] (Torrend 1910i). Johannes Rick S.J., Giacomo Bresadola and Arthur Lister, all major figures in mycology, were at the core of Torrend's formative years and his network. Early on, he sought material identification from specialists, but later he was equally consulted ("… a todos atendia e dirigia." [… he assisted and guided everybody.] (Henriques 1920).

The nine-year-long regular correspondence between Torrend and Júlio Henriques discloses a steady exchange of information but mainly exchange and identification of specimens. In the Archive of Botany, there are several postcards of Torrend listing 96 specimens identified as requested by Henriques – not 'more than 100' as referred to by Pinto (1910). So far, only 17 of these specimens have been found in COI (Fig. 6). In three letters (Letters from Torrend to Henriques 1909b–d) Torrend refers to *Oidium quercinum* Thüm., a species described from material collected in Coimbra and sent to Thümen in 1877 by Mr. Mesnier. Torrend asks for infected leaves for his research on this widespread parasitic fungus, a subject he quickly published (Torrend 1909b). These are only two good examples of the *modus operandi* of personal liaisons in such networks.

Torrend's scientific network is apparent in the many outputs of his work: (1) the new taxa he described from material he received, (2) the many new taxa described by other mycologists from material collected by Torrend (mainly Bresadola, Lloyd, Boudier) and the types now scattered by many herbaria, (3) his mycological material from São Fiel for the high number of collectors and countries represented in a collection assembled in a short time (nine years in fact, Fig. 5), and (4) his concern in distributing his material via the Centuries. It is noted that similar materials to those in São Fiel, even duplicates, have existed in the Herbarium of Campolide, now in HURM, Brazil.

Final remarks

Our search for Camille Torrend's contributions to science owes much to his biological collection of the Jesuit College of São Fiel, now at the Herbarium of the University of Coimbra, to his publications, mainly in *Brotéria* and the *Bulletin de la Société*

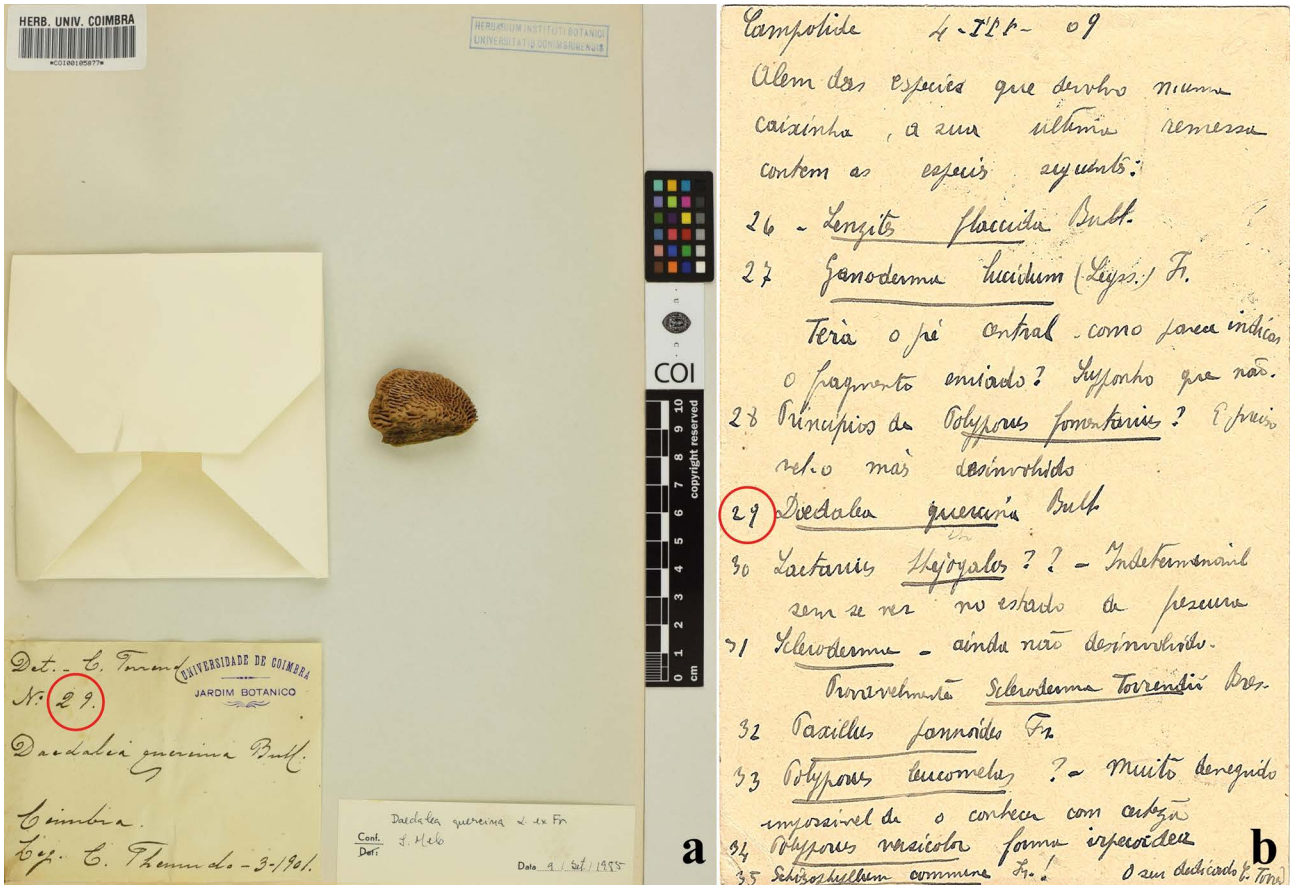


Fig. 6. a. Specimen no. 29 (COI00105877) identified by Torrend in (**b**) his postcard to Henriques in 1909. This specimen in the Herbarium of the University of Coimbra prior to the relocation of the São Fiel collection in 1912, illustrates the steady exchange of information between these two researchers.

portugaise des sciences naturelles and to his letters to Júlio Henriques in the Archive of Botany.

Torrend changed the *status quo* of Mycology in Portugal. For the first time, many of the specimens collected in the country were studied here and remained here. He would have achieved more for Portuguese mycology had he not been forced into exile. Although outside the academy and with other professional obligations ("… cet ouvrage, fruit de longues heures arrachées à des travaux plus urgents.") [… this work, the result of many hours taken from more urgent chores.] (Torrend 1907) he became a reputed mycologist and made an impressive contribution to science. Besides collecting and describing fungi, Torrend discussed his observations and assessed relationships, which enriched the introductions of most of his papers or were published separately.

The availability of the mycological collection of São Fiel on the online Catalogue of the Herbarium the University of Coimbra contributes to today's mycology and to the vitality of scientific networks.

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Letter from Torrend to Henriques, 5 October 1909c, sent from Collégio de Campolide (*SR:Correspondência recebida*).

Letter from Torrend to Henriques, 8 October 1909d, sent from Collégio de Campolide (*SR:Correspondência recebida*).

Letter from Torrend to Henriques, 8 May 1910, sent from Collégio de Campolide (*SR:Correspondência recebida*).

Letter from Mendes to Henriques, 26 January 1912, sent from Sapin (*SR:Correspondência recebida*).

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