INTRODUCTION

In 2020, we revised one of the oldest Estonian mycological collections compiled by Heinrich August Dietrich (1820–1897) including excicatae series, *Centuria Plantarum Florae Balticae cryptogamarum* (Pärtel et al., 2021). While inspecting additional historical material kept in Tartu (Estonia), we discovered some yet neglected specimens of myxomycetes and fungi. It turned out that these specimens certainly have not collected by H. A. Dietrich. Our effort to establish the authorship of this old, anonymous fungal collection lead us to a distinguished amateur bryologist, G. C. Girgensohn who apparently was a close friend of H. A. Dietrich. This finding allows us to add a short new paragraph to the history of Estonian mycology by introducing this forgotten collection to the wide mycological community.

Gustav Carl Girgensohn, a pedagogue and dedicated naturalist

Gustav Carl (alternatively Karl) Girgensohn (Fig. 1) was born on 23 March 1786 in Ērgli (Erāja, now in Latvia) in the Imperial Russian Baltic province, Livonian Governorate. He studied law at the University of Tartu (*Dorpat*) starting in 1803, and in 1807, he began his career as a teacher in Cēsis (*Wenden*, in present-day Latvia) and...
later in Vyborg (Wiborg, in present-day Lenin-grad oblast, Russia) gymnasium. From 1814 to 1839, he was a head teacher in the Tartu Gymnasium and for some time (1823–1827) also in the Tartu Girls’ School (Gottzmann & Hörner, 2007). From 1832–1841, he was the director of a private school (Liim, 1998). According to the rules of Imperial Russia, he received the title Hofrat (Court councilor) after 25 years as a civil servant (Gottzmann & Hörner, 2007; BBLD, 2021). From that point on, he probably had more time for his scientific interests.

Girgensohn’s main legacy in the Estonian and Latvian natural sciences are his bryophyte collections, consisting of approximately 3000 specimens deposited in different herbaria. A comprehensive overview of these collections is given by Ingerpuu & Vellak (2007). According to the open data of the Estonian natural history collections (PlutoF platform; Abarenkov et al., 2010), nearly 1400 plant specimens collected by Girgensohn are kept today in three Estonian herbaria (TU, TAA and TAM); however, the databasing process is continuous.

**MATERIALS AND METHODS**

Girgensohn’s fungal collection is kept in TAAM (Estonian University of Life Sciences). Ten fungal specimens, including nine lichenized, are deposited in Girgensohn’s bryophyte collection (TU-Girg) in TU (herbarium of the Natural History Museum of the University of Tartu). All vouchers were visually inspected under a stereomicroscope. When necessary, specimens were rehydrated in a 3% aqueous solution of potassium hydroxide (KOH), and microstructures were studied using razor-blade-cut sections mounted in a 3% solution of KOH and in Melzer’s solution. The microscopical structures were measured in 3% KOH. Slides of myxomycetes’ microstructures were produced with lactophenol cotton blue (LCB) or tap water as mounting media. Microphotos were taken using a Nikon 80i microscope. Occurrences were georeferenced.
using the map compiled by Rücker (1890), the Place Names Database (KNAB, 2001–2020), the German-Estonian place name list (Kongo, 2016) and the Estonian Manors’ Portal (Estonian Manors, 1999–2015). To ensure the concordance of toponyms in the text, we added historical names used by Baltic Germans in brackets after the current names in Estonian or Latvian, when first mentioned: e.g., Raadi Manor (Rathshof).

RESULTS & DISCUSSION

Girgensohn’s hidden mycological specimens

Fifty-six historical paper sheets of unknown origin were given to Erast Parmasto (1928–2012), Professor of Mycology. Most of the labels on these sheets were quite precise, including locations and dates of collection (Fig. 2A).

The specimens of this collection were adhered to thin paper strips as in plant herbaria, with up to eight items per sheet. At first, these specimens were attributed to H. A. Dietrich because the collecting years (1844–1859) nearly matched the period of Dietrich’s mycological activity (ca 1845–1861). However, when comparing handwriting on archival documents signed by Dietrich (National Archives of Estonia, EAA.29.3.5543), we found that his handwriting did not coincide with that on the labels of the anonymous collection. Also, the study area according to the labels was the surroundings of Tartu (60 specimens) and a wider range in the Livonian governorate, while the localities reported in Dietrich’s Cryptogamenwelt (Dietrich, 1856; 1859) were exclusively in the Estonian governorate (Fig. 3). Coincidentally, we received an autograph of G. C. Girgensohn in a letter to a professor at the University of Tartu, Johann Karl Simon Morgenstern (1770–1852) (Girgensohn, 1814), and we noticed a remarkable similarity to the handwriting on the labels in the bryophyte collection (see Fig. 2B). In addition, some specific collecting localities in his monograph (Girgensohn, 1860) (e.g., Griwing-Mühle bei Wolmar p. 81, Wehje-uppe p. 255, Eglekrug zwischen Walk und Wolmar p. 57) were repeated on the labels. Thus, the authorship of this anonymous mycological material was established.

There is evidence of an acquaintance between Girgensohn and Dietrich – in their books, it was clear that both acknowledged each other. Girgensohn (1860: 168) added to a moss description, “Ein Phascum, welches Hr. A. Dietrich bei Heimar in Ehstland an feuchten Wegerändern gesammelt hat”, while Dietrich has notes for some species, such as “Häufiger in Dorpat’s Umgebung”, with Hofr. Girgensohn as the collector (Dietrich, 1856: 406, 407, 411,

Fig. 2. Example of Girgensohn’s collection, sheet no. 24. A: a) Pilze, am faulende am Boden liegende Baumstam im feuchten gebüsch bei Ratheshof [Fungus on the rotting tree trunk lying on the ground near Raadi, Tartu], d. 7 April 1848 – unidentified discomycetes; b) Im Laubwald, Annenhof gegenüber [In deciduous forest opposite of Annemõisa, Tartu], d. 10 Mai 1853 – Microstoma protractum; c) unidentified agaric; B (in the red frame): herbarium label written by Girgensohn, no. 119 from Musci frondosi et Hepaticae exsiccatae, TU171695.
Fig. 3. Map of collecting sites of historical mycological specimens in Baltic provinces. Symbols: red rectangles, sites visited by H. A. Dietrich (based on information in Dietrich, 1856; 1859); blue circles, sites visited by G. C. Girgensohn (based on information on specimens’ labels). The borders of Baltic Governorates are marked with the following colours: Estonia: blue, Livonia: yellow, Courland: rose. Original map: Die Russischen Ost-See-Provinzen Livland, Estland und Kurland. Entworfen und gezeichnet von J. Grassl. Issleib sc. (Stahlstich, Druck und Verlag des Bibliographischen Instituts in Hildburghausen, 1860). Base map received from D. Rumsey Map Center at the Stanford University Library.
The proposal of a new species name, *Peziza girgensohni* H. A. Dietr. (Dietrich, 1856: 368), reflects Dietrich’s deep respect for Girgensohn. Girgensohn was already an experienced amateur scientist when Dietrich started his research activity, perhaps under his general tutorship – excluding mycological expertise. As far as we know, Girgensohn did not publish any mycological papers, and his fungal material was not structured. That corresponds with his own words\(^1\) – he was dedicated to mosses.

**Data on preserved fungi collected by G. C. Girgensohn**

All 56 sheets of Girgensohn’s collection in TAAM collection were photographed, and data of 115 specimens were entered into a database. Detailed information about localities, substrates/hosts and photos for all specimens can be found at the Estonian eBiodiversity portal and the PlutoF data management platform (Revised collections of G. C. Girgensohn, XIX century: fungi, myxomycetes, 2020). The collecting sites of 22 specimens are in present-day Latvia, in case of four specimens collecting locations remain unclear. The rest of the material (89 specimens) was collected in Estonia. All labels were written by Girgensohn, and we conclude that these specimens were collected by him\(^2\). The exceptions are four specimens, in which the labels clearly indicate that these were given to him by A. von Bunge (one specimen in 1851), and Alexander von Schrenk (1816–1876), a geologist of the University of Tartu (one specimen in 1852). One person “Herr M. Fr. Schmidt”\(^3\) provided two specimens, in 1844 and 1854.

\(^{1}\) “Flechten und Pilze habe ich zwar fortgesetzt gesammelt, aber nicht die Musse finden können sie gehörig zu untersuchen und zu ordnen. Auch fehlt es mir dazu an einem eigenen, für dieser Zweck genügenden Mikroskop” (Girgensohn, 1855: 12)

\(^{2}\) Girgensohn (1860) has acknowledged for moss specimens „Prof. A. v. Bunge, Privatdoc. Dr. Friedrich Schmidt, Mag. Nik. v. Seiditz und Pharmaceut Bienert” – these persons collaborated with Girgensohn

\(^{3}\) Friedrich Schmidt (1832–1908) was an active botanist in his Tartu period, who collected samples to send to Girgensohn, and later a distinguished geologist (Kongo, 1975). According to the specimen label data, Schmidt was only 12 years old when he collected the first of the fungi included in the collection.

From 115 specimens 90 were originally unidentified and two specimens were misidentified. One specimen turned out to be an entomological object, a mite, with Girgensohn’s original identification as *Erineum roseum* Schultz (Fungi, *incertae sedis*). Five specimens were mosses, and apparently the fungi growing on them have disappeared over time.

Additionally, there were ten specimens (nine lichens and one fungus) deposited in Girgensohn’s bryophyte collection in TU. This collection consists of four volumes of leather-bound books in which specimens are glued on sheets using paper sticks. Each sheet is equipped with handwritten labels with species names. Locality data are given for only three out of ten specimens, but quite accurate descriptions of the substrate or habitat are given for the rest.

**LIST OF SPECIES**

In the list we use current taxon names following Index Fungorum database (Index Fungorum, 2021), and if the Girgensohn’s original determination is present, it is written in brackets.

Abbreviations: GCG = Gustav Carl Girgensohn, and G with numbers in brackets (e.g., G 1) refers to Girgensohn’s original sheet number, AS = Ave Suija, IY = Irina Yatsiuk, KK = Kuulo Kalamees, KP = Kadri Pärtel.

**Eumycetozoa**

Eleven specimens were identified, which represent six species, two with original identification.

*Arcyria denudata* (L.) Wettst. (as *Cribraria purpurea* Schrad. det. GCG). Estonia, Tartu, Toomemägi, Garden of Morgenstern (*Dom, Morgensternscher Garten*), on an old trunk, 1853-10-02, leg. GCG, det. IY, TAAM210672 (G 51) (Fig. 4A).

*Didymium melanospermum* (Pers.) T. Macbr. Estonia, Tartu County, Vasula (*Wasu/Wassulascher Wald, here and hereafter = the forest around Vasula Lake*), on a decaying stump, 1851-09-29, leg. GCG, det. IY, TAAM210528 (G 1) (Fig. 4B).

*Didymium melanospermum* (Pers.) T. Macbr. Estonia, Tartu Co., Vasula, on *Rhytidia delphius triquestrus* (Hedw.) Warnst., 1851-09-14, leg. GCG, det. IY, TAAM210548.2 (G 21_2).
**Lycogala epidendrum** (J. C. Buxb. ex L.) Fr. Estonia, Tartu Co., Vasula, on rotten wood, 1859-05-21, leg. GCG, det. IY, TAAM210658.5 (G 30_5); Tartu, Tähtvere (Tehlefer), on rotting trunk, 1850-09-03, leg. GCG, det. IY, TAAM210663 (G 35); Annemõisa (Annenhof), on rotting stump, 1851-10-26, leg. GCG, det. IY, TAAM210664.7 (G 36_7); *idem*, on rotten wood, 1853-08-19, leg. GCG, det. KP, TAAM210614.2 (G 39_2).

**Stemonitis axifera** (Bull.) T. Macbr. Latvia, “Griwing-Mühle” in Valmiera surroundings, on bark of dry wood, 1855-06-21, leg. GCG, det. IY, TAAM210658.2 (G 30_2); Estonia, locality data unspecified, 1852, leg. A. G. von Schrenk, det. IY, TAAM210664.8 (G 36_8).

**Stemonitis fusca** Roth, Estonia, Tartu, Toome-mägi, Garden of Morgenstern, on old trunk, 1853-10-02, leg. GCG, det. IY, TAAM210673.a (G 52_a).

**Stemonitis cf. fusca** Roth, Estonia, Tartu Co., Vasula, on old trunk, 1853-05-21, leg. GCG, det. IY, TAAM210673.b (G 52_b).

**Fungi**

Fourteen unidentified specimens from the studied collection were too rotten or poor for any further investigations.
**Mucoromycota**
The list includes only one specimen.

*Syzygites megalocarpus* Ehrenb. Estonia, Viljandi Co., Pärsti (*Persth*), on old agaric fruitbodies, 1853, leg. & det. GCG, TAAM210544.2 (G 17_2).

Very rotten specimen.

**Ascomycota**
The list includes 26 specimens (17 from TAAM and nine from TU), which represent 21 taxa identified at least to genus level (see the list below). For three specimens, the identification was possible only in order or higher level (data not shown).

*Anaptychia ciliaris* (L.) Körb. (as *Parmelia ciliaris* Ach.). Locality not given, on bark of many trees, leg. & det. GCG, conf. AS, TU173942 (G 207).

*Baeomyces rufus* (Huds.) Rebent. (as *Baeomyces rupestris* Pers.). Estonia, near Pühajärve, by the ditch (*ad fossum viae glareosam in sylva milliarium c. prope ps. Heiligensee*), leg. & det. GCG, conf. AS, TU173937 (G 202).

*Chaenotheca furfuracea* (L.) Tibell (as *Coniocybe furfuracea* Ach.). Estonia, Harju Co., c. 7.5 km from Paunküla to Jäneda (*7 Werst von Pannküll nach Jendel*), on rotting wood, 1855-05-24, leg. & det. GCG, conf. AS, TAAM210541 (G 14).

*Cetraria islandica* (L.) Ach. Locality not given, on ground in dry forests, leg. & det. GCG, conf. AS, TU173941 (G 206) (Fig. 4C).

*Cladonia cervicornis* subsp. *verticillata* (Hoffm.) Ahti (as *Cladonia verticillata* Schaeer.). Estonia, Tartu Co., in bog near Ropka (*in palude turfosa infra pr. Ropkoy*), leg. & det. GCG, conf. AS, TU173943 (G 208).

*Cladonia stygia* (Fr.) Ruoss (as *Cladonia rangiferina* Ach. det. GCG). Locality not given, most abundantly in dry and sandy forests, leg. GCG, det. AS & P. Lõhmus, TU173944 (G 155).

*Encoelia furfuracea* (Roth) P. Karst. Estonia, Valga Co., Pühajärve (*Heiligensee*), in park, on *Alnus* trunk, on bark, 1854-05-23, leg. GCG, det. KP, with co-occurring *Graphis scripta* (L.) Ach., det. AS, TAAM210660 (G 32).

*Gyromitra esculenta* (Pers.) Fr. Estonia, Tartu, Tähtvere, 1854-05-09, leg. GCG, det. KP, TAAM210667 (G 42).

*Lobaria pulmonaria* (L.) Hoffm. (as *Sticta pulmonacea* Ach.). Locality not given, on old trees (Quercus, *Alnus*), leg. & det. GCG, conf. AS, TU173945 (G 156).

*Microstoma protractum* (Fr.) Kanouse. Estonia, Tartu, Annemõisa, 1853-05-10, leg. GCG, det. KP, TAAM210652.b (G 24_b) (Fig. 2A).

*Morchella conica* Pers. Estonia, Tartu, Toomemägi, on the ground under trees, 1854-05-04, leg. & det. GCG, conf. KP (*Morchella conicaelata group*), TAAM210530.a (G 4).

*Morchella esculenta* (L.) Pers. Estonia, Tartu, Toomemägi, on the ground under trees, 1854-05-04, leg. & det. GCG, conf. KP, TAAM210530.c (G 4).

*Nectria cinnabarina* (Tode) Fr. Estonia & Latvia, *Sorbus aucuparia* L., on dry twigs, 1848-03-27, leg. & det. GCG, conf. KP, TAAM210658.6 (G 30_6) (Fig. 4D).

*Pseudevernia furfuracea* (L.) Zopf (as *Parmelia furfuracea* Ach.). Locality not given, on trunk and branches mainly on coniferous trees, leg. & det. GCG, conf. AS, TU173939 (G 204).

*Ramalina fraxinea* (L.) Ach. (as *Parmelia fraxinea* (L.) Ach.). Locality not given, grows on willows, aspens, rowsan, abundant, leg. & det. GCG, conf. AS, TU173940 (G 205).

*Sarcoscypha austriaca* (O. Beck ex Sacc.) Boud. Estonia, Tartu Co., Vasula, 1851-05-14, leg. GCG, det. KP, TAAM210657.3 (G 29_3).

*Scutellinia* (Cooke) Lambotte. Latvia, Salacgrīva Municipality, Liepupe (*Pernigelscher Strand*), on the ground, 1851-07-07, leg. GCG, det. H. Tamm & KP, TAAM210657.6 (G 29_6).

*Trichoglossum* Boud., Estonia, Jõgeva maakond, Kärde (*Kardis*), among mosses, 1851-09-22, leg. A. von Bunge, det. KP & KK, TAAM210662.5 (G 34_5).

*Xanthoria parietina* (L.) Th. Fr. (as *Parmelia parietina* Ach.). Locality not given, on tree bark, almost everywhere, leg. & det. GSC, conf. AS, TU173938 (G 203).

*Xylaria hypoxylon* (L.) Grev. Grev. Estonia, Tartu, Annemõisa, on rotting stump, 1852-05-11, leg. & det. GCG, TAAM210664.6 (G 36_6).
**Basidiomycota**

The condition of 28 specimens of Agaricomycotina, including 23 with gills, was too bad for further examination due to the decaying process or absence of generative structures. Thirty-nine specimens were identified, which represent 35 taxa.

*Agaricus* L. Estonia, Tartu, Toomemägi, 1855-09-18, leg. GCG, det. KK, TAAM210677.1 (G 53_1).

*Amanita* Pers. Estonia, Tartu, Toomemägi, 1855-09-18, leg. GCG, det. KK, TAAM210677.2 (G 53_2).

*Clavulinopsis corniculata* (Schaeff.) Corner. Estonia, Tartu Co., Vasula, on rotting stumps, 1851-09-14, leg. & det. GCG, TAAM210664.2 (G 36_2).

*Coleosporium sonchi* Lév. (as *Puccinia succoaeolens* (Pers.) Rostr. det. GCG). Estonia, Valga Co., Kuigatsi (Postirung Kuikatz), on leaves, 1853-06-07, leg. GCG, det. K. Põldmaa TAAM210665.1 (G 37_1).

*Coltricia perennis* (L.) Murrill. Estonia & Latvia, 1854-06-07, leg. & det. GCG, conf. KK, TAAM210543.a (G 16_a); Estonia, Tartu, Tähtvere, 1853-08-31, leg. & det. GCG, conf. KK, TAAM210543.b (G 16_b); Latvia, Smiltene Municipality, between Valmiera and Valka, E of Strenči, “bei Eggle Krug”, 1851-06-11, leg. GCG, det. KP, TAAM210661.2 (G 33_2).

*Connopus acervatus* (Fr.) K. W. Hughes, Mather & R. H. Petersen. Estonia, the vicinity of Tartu, on a tree, 1850-09-02, leg. GCG, det. KK, TAAM21053 (G 5).

*Coprinellus disseminatus* (Pers.) J. E. Lange. Estonia, Tartu Co., Vasula, on rotting wood, 1851-05-21, leg. & det. GCG, conf. KK, TAAM210675.b (G 49_b).

*Coprinus sensu lato*, Estonia, Tartu Co., Vasula, 1851-09-14, leg. GCG, det. KK, TAAM210667.2 (G 34_7).

*Cyathus olla* (Batsch) Pers. Estonia, Tartu, Botanical Garden of Tartu university, in flower pot, 1851, leg. & det. GCG, conf. KK, TAAM210662.6 (G 34_6).

*Cytidia salicina* (Fr.) Burt. Latvia, Aizpute Municipality, Cirava (Zierau), on wood used for building a bridge, 1856-06-28, leg. GCG, det. KP, TAAM210658.3 (G 30_3).

*Entoloma* (Fr.) P. Kumm. Estonia, Valga Co., surroundings of Helm (Helmet), on the ground, 1851-07-12, leg. GCG, det. KK, TAAM210657.5 (G 29_5).

**Entolomataceae** (as *Agaricus fumosus* Pers. det. GCG). Estonia & Latvia, locality data absent, 1852-09-25, leg. GCG, det. KK, TAAM210534 (G 7). Basidiospores angular-ellipsoidal, 6–9 × 5–7 μm.

*Geastrum fornicatum* (Huds.) Hook. Estonia, Tartu Co., Vasula, on spruce roots, 1851-10, leg. & det. GCG, TAAM210664.3 (G 36_3). Identification confirmed in genus level by KP.

*Gymnosporangium clavariiforme* (Wulff) DC. Estonia, Jõgeva Co., Kärde, *Juniperus*, on bark of twigs, 1850-05-14, leg. & det. GCG, TAAM210669 (G 47).

*Inocutis rheades* (Pers.) Fiasson & Niemelä. Estonia, Tartu, Tähtvere, 1850-10-05, leg. GCG, det. I. Zettur, TAAM210612.a (G 41_a).

*Lentinus cf. ciliatus* (Fr.) Zmitr. Estonia, “Köpposcher Urwald” (probably Köpu in Viljandi Co.), 1844-05, leg. Fr. Schmidt, det. KP, TAAM210614.1 (G 39_1).

*Lichenomphalia umbellifera* (L.) Redhead, Lutzoni, Moncalvo & Vilgalys. Estonia, Pärnu Co., Kõima, on peat-rich soil (Torfgruben bei Kaima), 1855-06-12, leg. & det. GCG, TAAM210546 (G 19).

*Lycoperdon cf. pyriforme* Schaeff. Estonia, Tartu, Ropka (Ropkoy), on rotting stumps, 1850-09-12, leg. GCG, det. KK, TAAM210539.a (G 12_a).

*Lycoperdon utriforme* (Bull.) Jaap. Estonia, “Arro” (Aru manor or Aruküla has many homonyms in different Estonian parishes), on dry twigs, 1852-08, leg. & det. GCG, conf. KP, TAAM210671 (G 50).

*Lycoperdon Pers. Estonia, Tartu Co., Vasula, 1851-10, leg. GCG, det. KK, TAAM210657 (G 29_4); Tähtvere, 1853-08-31, leg. & det. GCG, conf. KK, TAAM210614.3 (G 39_3).

*Lycoperdon Pers. (as Lycoperdon gemmatum β perlatum Fr.), Estonia, Tartu Co., in forest near Vasula, leg. GCG, conf. KP, TU173936 (G 201).

*Macrotyphula* R.H. Petersen. Estonia, Tartu Co., Vasula, on the ground on wood, decaying leaves, 1851-09-14, leg. GCG, det. KP, TAAM210664.1 (G 36_1).

*Merulius tremellosus* Schrad., Estonia, Tartu, Annemõisa, on rotting stumps, 1853-04-25, leg. GCG, det. KP, TAAM210666.1 (G 38_1).

*Mycenella corticola* (Pers.) Gray. Estonia, Tartu, Raadi, on a rotting stump, 1850-09-29, leg. & det. GCG, TAAM210675.a (G 49_a).
Phaeoclavulina flaccida (Fr.) Giachini, Estonia, locality unspecified, 1851-09-23, leg. & det. GCG, TAAM210615 (G 46).

Phellinus igniarius (L.) Quél., Estonia, Valga Co., Pühajärve, in park, on a tree, 1854-05-23, leg. & det. GCG, TAAM210659 (G 31).

Porylurus P. Micheli ex Adans. sensu lato, Estonia, locality unspecified, on old stumps, 1851-08, leg. GCG, det. KP, TAAM210613 (G 45).

Puccinia calcitrapae DC. Estonia, locality unspecified, Carduus crispus L., on leaves, 1853-09, leg. GCG, det. K. Põldmaa, TAAM210537 (G 10). Teliospores 2-celled, 34 × 20–23 μm.

Puccinia suaveolens (Pers.) Rostr. Estonia, Tallinn, Kadriorg (Katharienenthal bei Reval), on leaves of Cirsium arvense var. arvense (L.) Scop. (det. T. Kukk), 1858-07-15, leg. GCG, det. KP, TAAM210651.2 (G 23_2).

Stereum subtomentosum Pouzar. Estonia, the vicinity of Tartu, on trees, 1850-09-02, leg. GCG, det. I. Zettur, TAAM210655.a (G 27_a).

Stereum Hill ex Pers., Estonia, Tartu, Raadi, on a fallen trunk, 1848-04-18, leg. GCG, det. KP, TAAM210549.c (G 22_c).

cf. Suillus bovinus (Pers.) Kuntze. Estonia, Tartu, Tähtvere, 1853-08-31, leg. GCG, det. KK, TAAM210665.3 (G 37_3).

Tapinella atrotomentosa (Batsch) Šutara. Estonia, Tartu, Jäamamõisa (Jamascher Allee), 1855-09-18, leg. GCG, det. U. Kõljalg, TAAM210658.1 (G 30_1); 1856-08-17, leg. GCG, det. U. Kõljalg, TAAM210658.7 (G 30_7).

cf. Tricholoma squarrosulum (as Tricholoma vaccinum (Schaeff.) P. Kumm. det. GCG) Estonia, “an Obstbäumen”, 1850-09-04, leg. GCG, det. KK, TAAM210529 (G 2). Basidiospores broadly ellipsoidal, 6 × 4 μm.

The value of Girgensohn’s historical collections

The enthusiasm of early Baltic German natural scientists started in Tartu in the middle of 19th century in the society Die Dorpater Naturforscher-Gesellschaft, in which educated people from different occupations participated. As a result, besides their publications, we have the physical base of their studies—their collections. It is beneficial for today’s researchers to revise collections using modern methods and apply modern taxonomic concepts to update data on species distribution and occurrences in certain regions. For example, the revision of the excisate of A. von Bunge revealed many plant taxa that are currently under protection (Kalda & Orav, 2014). While checking on the more than 160-year-old ascomycetes in Girgensohn’s collection, we found the oldest evidence of two Estonian red listed fungi. Poronia punctata (Xylariaceae, Sordariomycetes) ascostromas collected in 1854 were well-preserved in Girgensohn’s sheet 30. An IUCN assessment listed this species as Critically Endangered (Saar et al., 2019), last seen in 1960 in the Estonian Western islands (Pärtel et al., 2019). The most remarkable finding among lichenized fungi is Lobaria pulmonaria (Lobariaceae, Lecanoromycetes), however, it is not clear whether the specimen was collected from nowadays Estonia or Latvia. Nevertheless, the species is red-listed and / or protected in many countries (Lobaria pulmonaria, 2021), including Estonia (Lõhmus et al., 2019) and Latvia (Noteikumi …, 2000).

The endangered early-spring fungus, Microstoma protractum (Sarcoscyphaceae, Pezizomycetes), also was included in the Girgensohn collection from Tartu in 1853.

Myxomycetes occurred only sporadically (11 specimens) in the collections of G. C. Girgensohn. Most of them were either unidentified or bore incorrect identifications, which suggests that this group was also outside of his research focus. Nevertheless, almost all of the specimens survived until the present time in good condition, and therefore were identified to a (morpho) species level. Among them are quite common species of myxomycetes, such as Arcyria denudata, Stemonitis fusca or Lycogala epidendrum; others, e.g. Diderma radiatum, are considered less common (Diderma radiatum, 2021).

Although mycological interest was occasional for G. C. Girgensohn, these hidden records of fungi and myxomycetes show the collector’s comprehensive interest in nature. While bryologists pointed out 16 rare species (in three or fewer localities) from present-day Estonia and/or Latvia from Girgensohn’s collections (Ingerpuu & Vellak 2007), we showed here that vouchers
of historical fungal samples complement the occurrence data of Estonian fungi, including currently endangered species.

ACKNOWLEDGEMENTS

We thank Märt Rahi (Estonian University of Life Sciences) and Mari Müür (University of Tartu) for photographs and technical help. Reet Bender and Inge Kukk (University of Tartu) are gratefully acknowledged for transcription of Gothic text and translation of German, as well as Lea Leppik (University of Tartu) for confirmation of Girgensohn’s handwriting and correcting historical facts. Inge Kukk kindly shared information about Girgensohn’s portrait. Urmas Kõljalg, Kristjan Mõistlik, Eero Kallaste, Meelis Pärtel compiled the locality map of historical specimens, and Kai Vellak (both University of Tartu) introduced to Girgensohn’s bryophyte collection. Linguistic correction was made by Keelekord OÜ and by Mariliis Ruutma. This work was supported by an Estonian Research Council grant (PRG1170), and by the European Regional Development Fund (Centre of Excellence EcolChange).

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